INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Financial Statements for the Years Ended December 31, 2022, 2021 and 2020

Consolidated income statements

in 000€, except per share data	Notes	For the year ended December 31, 2022	2021	2020
Revenue	22.1	232,023	205,450	170,449
Cost of sales	22.2	(103,255)	(87,278)	(76,446)
Gross profit		**128,768**	**118,172**	**94,003**
Research and development expenses	22.3	(37,568)	(26,891)	(27,104)
Sales and marketing expenses	22.4	(62,125)	(49,151)	(44,636)
General and administrative expenses	22.5	(35,143)	(33,315)	(29,337)
Net other operating income	22.6	3,196	3,402	2,436
Operating profit (loss)		**(2,872)**	**12,217**	**(4,638)**
Financial expenses	22.8	(4,420)	(4,101)	(5,995)
Financial income	22.9	6,114	5,620	2,452
Share in loss of joint venture, after tax	8	–	–	(39)
Profit (loss) before taxes		**(1,178)**	**13,736**	**(8,221)**
Income tax benefit/(expense)	22.10	(975)	(591)	1,028
Net profit (loss) for the year		**(2,153)**	**13,145**	**(7,193)**
Net profit (loss) attributable to:				
The owners of the parent		(2,123)	13,154	(7,044)
Non-controlling interest		(29)	(9)	(148)

Earnings per share attributable to the owners of the parent

Basic	23	(0.04)	0.23	(0.13)
Diluted	23	(0.04)	0.23	(0.13)

The accompanying notes from an integral part of these consolidated financial statements.

Consolidated statements of comprehensive income

in 000€		For the year ended December 31, 2022	2021	2020
Net profit (loss) for the year		**(2,153)**	**13,145**	**(7,193)**
Other comprehensive income/(loss)				
Items that are or may be reclassified subsequently to profit or loss				
Exchange differences on translation of foreign operations		(1,427)	1,565	(6,176)
Items that will not be reclassified to profit or loss				
Fair value adjustment through OCI - Equity instruments	10	(92)	(3,443)	489
Other comprehensive loss, net of taxes		**(1,519)**	**(1,878)**	**(5,687)**
Total comprehensive income/(loss), net of taxes		**(3,672)**	**11,267**	**(12,880)**
Total comprehensive (loss)/ income attributable to:				
The owners of the parent		(3,643)	11,276	(11,817)
Non-controlling interest		(29)	(9)	(1,063)

The accompanying notes from an integral part of these consolidated financial statements.

Consolidated statements of financial position

in 000€	Notes	As of December 31, 2022	2021	2020
Assets				
Non-current assets				
Goodwill	5	44,155	18,726	18,599
Intangible assets	6	37,875	31,668	32,981
Property, plant & equipment	7	94,276	84,451	88,267
Right-of-use assets	7	8,420	9,054	10,996
Investments in joint ventures	8	–	–	–
Deferred tax assets	22.10	1,186	227	201
Investments in convertible loans	10	3,494	3,560	6,203
Investments in non-listed equity instruments	10	307	399	3,842
Other non-current assets	10	5,136	7,519	4,093
Total non-current assets		**194,847**	**155,604**	**165,182**
Current assets				
Inventories and contracts in progress	9	16,081	11,295	10,043
Trade receivables	11	51,043	41,541	30,871
Other current assets	10	8,424	8,940	8,290
Cash and cash equivalents	12	140,867	196,028	111,538
Total current assets		**216,414**	**257,804**	**160,742**
Total assets		**411,262**	**413,408**	**325,924**

The accompanying notes from an integral part of these consolidated financial statements.

Consolidated statements of financial position

in 000€	Notes	As of December 31, 2022	2021	2020
Equity and liabilities				
Equity				
Share capital	13	4,487	4,489	4,096
Share premium	13	233,895	233,872	141,274
Retained earnings	13	(1,158)	965	(7,316)
Other reserves	13	(8,268)	(6,749)	(4,871)
Equity attributable to the owners of the parent		**228,955**	**232,577**	**133,183**
Non-controlling interest	13	(28)	1	–
Total equity		**228,928**	**232,578**	**133,183**
Non-current liabilities				
Loans & borrowings	15	55,873	72,637	90,502
Lease liabilities	15	5,147	5,268	7,086
Deferred tax liabilities	22.10	4,312	4,371	4,983
Deferred income	18	9,277	4,952	5,327
Other non-current liabilities	16	1,611	2,167	398
Total non-current liabilities		**76,220**	**89,395**	**108,295**
Current liabilities				
Loans & borrowings	15	17,058	17,849	13,984
Lease liabilities	15	2,902	3,353	3,539
Trade payables		23,230	20,171	17,698
Tax payables	17	1,246	783	974
Deferred income	18	41,721	33,307	29,555
Other current liabilities	19	19,957	15,972	18,695
Total current liabilities		**106,114**	**91,435**	**84,445**
Total equity and liabilities		**411,262**	**413,408**	**325,924**

The accompanying notes from an integral part of these consolidated financial statements.

Consolidated statements of changes in equity

in 000€	Notes	Attributable to the owners of the parent: Share capital	Share premium	Retained earnings	Other reserves	Total	Non-controlling interest	Total equity
At January 1, 2022	2	**4,489**	**233,872**	**965**	**(6,749)**	**232,577**	**1**	**232,578**
Net profit (loss) for the year		–	–	(2,123)	–	(2,123)	(29)	(2,153)
Other comprehensive income (loss)		–	–	–	(1,519)	(1,519)	–	(1,519)
Total comprehensive income (loss)		**–**	**–**	**(2,123)**	**(1,519)**	**(3,642)**	**(29)**	**(3,672)**
Capital increase through exercise of warrants	13	(2)	22	–	–	20	–	20
Equity-settled share-based payment expense	14	–	–	–	–	–	–	–
At December 31, 2022		**4,487**	**233,895**	**(1,158)**	**(8,268)**	**228,955**	**(28)**	**228,928**

The accompanying notes from an integral part of these consolidated financial statements.

in 000€	Notes	Attributable to the owners of the parent: Share capital	Share premium	Retained earnings	Other reserves	Total	Non-controlling interest	Total equity
At January 1, 2021		**4,096**	**141,274**	**(7,316)**	**(4,871)**	**133,183**	**–**	**133,183**
Net profit (loss) for the year		–	–	13,154	–	13,154	(9)	13,145
Other comprehensive income (loss)		–	–	–	(1,878)	(1,878)	–	(1,878)
Total comprehensive income (loss)		**–**	**–**	**13,154**	**(1,878)**	**11,276**	**(9)**	**11,267**
Capital increase through public offering	13	371	90,235	(4,873)	–	85,733	–	85,733
Capital increase through exercise of warrants	13	22	2,322	–	–	2,344	–	2,344
Incorporation NCI Tianjin Zhenyuan Materialise Medical Technology Ltd	13	–	–	–	–	–	10	10
Equity-settled share-based payment expense	14	–	41	–	–	41	–	41
At December 31, 2021		**4,489**	**233,872**	**965**	**(6,749)**	**232,577**	**1**	**232,578**

in 000€	Notes	Attributable to the owners of the parent: Share capital	Share premium	Retained earnings	Other reserves	Total	Non-controlling interest	Total equity
At January 1, 2020		**3,066**	**138,090**	**(272)**	**(1,378)**	**139,506**	**3,276**	**142,782**
Net profit (loss) for the year		–	–	(7,045)	–	(7,045)	(148)	(7,193)
Other comprehensive income (loss)		–	–	–	(4,772)	(4,772)	(915)	(5,687)
Total comprehensive income (loss)		**–**	**–**	**(7,045)**	**(4,772)**	**(11,817)**	**(1,063)**	**(12,880)**
Capital increase through conversion of convertible bonds	13	1,000	–	–	–	1,000	–	1,000
Capital increase through exercise of warrants	13	30	3,082	–	–	3,112	–	3,112
Acquisition NCI Engimplan		–	–	–	1,279	1,279	(2,213)	(934)
Equity-settled share-based payment expense	14	–	103	–	–	103	–	103
At December 31, 2020		**4,096**	**141,274**	**(7,316)**	**(4,871)**	**133,183**	**–**	**133,183**

Consolidated cash flow statements

in 000€	Notes	For the year ended December 31, 2022	2021	2020
Operating activities				
Net profit (loss) for the year		(2,153)	13,145	(7,193)
Non-cash and operational adjustments				
Depreciation of property, plant & equipment	7	14,940	15,574	14,932
Amortization and impairment of intangible assets	6	7,628	4,975	4,742
Impairment of goodwill and intangible assets from business combinations	5; 6	–	177	4,606
Share-based payment expense	14	(140)	(1,036)	752
Loss (gain) on disposal of property, plant & equipment	7	347	210	10
Movement in provisions		1,781	99	137
Movement in reserve for bad debt and slow moving inventory		(23)	255	516
Financial income	22.9	(6,114)	(5,620)	(2,300)
Financial expense	22.8	4,420	4,101	5,821
Impact of foreign currencies		(39)	40	61
Share in loss of joint venture (equity method)	8	–	–	39
Income taxes and deferred taxes	22.10	975	591	(1,049)
Fair value adjustment	4; 10	–	–	(1,093)
Other		–	–	–
Working capital adjustment and income tax paid				
Decrease (increase) in trade receivables and other current assets		(6,330)	(10,920)	9,205
Decrease (increase) in inventories and contracts in progress		(5,011)	(1,423)	2,724
Increase in trade payables and other payables		12,365	6,453	583
Income tax paid		(1,425)	(1,152)	(2,618)
Interest received		1,067	376	103
Net cash flow from operating activities		**22,288**	**25,845**	**29,978**

The accompanying notes from an integral part of these consolidated financial statements.

Consolidated cash flow statements

in 000€	Notes	For the year ended December 31, 2022	2021	2020
Investing activities				
Purchase of property, plant & equipment	7	(21,608)	(7,934)	(11,032)
Purchase of intangible assets	6	(3,165)	(3,788)	(6,618)
Proceeds from the sale of property, plant, equipment and intangibles (net)		205	462	552
Acquisition of subsidiary (net of cash)	4	(29,293)	(875)	(8,031)
Investments in joint-ventures / shares	8	–	–	–
Convertible loan granted	10	–	(999)	(2,836)
Other equity investments in non-listed entities	10	–	–	(300)
Net cash flow used in investing activities		**(53,861)**	**(13,134)**	**(28,265)**
Financing activities				
Repayment of loans & borrowings	15	(17,708)	(14,277)	(13,736)
Repayment of leases	15	(3,379)	(3,775)	(3,640)
Capital increase in parent company	13	23	88,117	4,112
Interest paid		(1,990)	(2,326)	(2,268)
Other financial income (expense), net		544	3,417	(1,356)
Net cash flow from financing activities		**(22,510)**	**71,156**	**(16,888)**
Net increase/(decrease) of cash and cash equivalents		**(54,082)**	**83,867**	**(15,175)**
Cash and cash equivalents at beginning of the year	12	196,028	111,538	128,897
Exchange rate differences on cash and cash equivalents		(1,078)	624	(2,184)
Cash and cash equivalents at end of the year	12	140,867	196,028	111,538

The accompanying notes from an integral part of these consolidated financial statements.

Notes to the consolidated financial statements

1 Corporate information

Materialise NV is a limited liability company with its office at Technologielaan 15, 3001 Leuven, Belgium. The consolidated financial statements comprise Materialise NV (the "Company" or "Parent") and its subsidiaries (collectively, the "Group" or "we," "us" and "our"). See Note 28 for a list of subsidiaries of the Company.

We are a leading provider of additive manufacturing and medical software and of sophisticated 3D printing services. Our products and services are offered through a market oriented organization that is active across three principal market segments: (i) Materialise Software, (ii) Materialise Medical, and (iii) Materialise Manufacturing. We sell our products and services in Europe, the Americas, Africa and Asia-Pacific.

These consolidated financial statements for the year ended December 31, 2022 were approved on May 12, 2023.

2 Basis of preparation

The consolidated financial statements of the Group for the three years ended December 31, 2021, 2020 and 2019 are prepared in accordance with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB) and as adopted by the EU (collectively "EU-IFRS").

These consolidated financial statements have been prepared on a historical cost basis, except for the assets and liabilities that have been acquired as part of a business combination, which have been initially recognized at fair value, and certain financial assets such as the non-listed equity instruments and the convertible loan receivable which are both included in the other non-current assets and the share appreciation rights are measured at fair value.

The financial statements are prepared on a going concern basis. The consolidated financial statements are presented in thousands of euros (K€ or thousands of €) and all "currency" values are rounded to the nearest thousand (€000), except when otherwise indicated.

The preparation of financial statements in compliance with IFRS requires the use of certain critical accounting estimates. It also requires Group management to exercise judgment in applying the Group's accounting policies. The areas where significant judgment and estimates have been made in preparing the financial statements and their effect are disclosed in Note 3.

New standards, interpretations and amendments adopted by the Group

The following amendments and interpretations issued by the IASB and IFRIC apply for the first time in 2022, but do not have a significant impact on the consolidated financial statements of the Group.

- Amendments to IAS 37 Cost of Fulfilling a Contract (issued on 14 May 2020)
- Amendments to IAS 16 Property, Plant and Equipment: Proceeds before intended Use (issued on 14 May 2020)
- Amendments to IFRS 3 Reference to the Conceptual Framework (issued on 14 May 2020)
- Annual improvements to IFRS Standards 2018-2020 (issued on 14 May 2020)
- IFRS 9 Financial Instruments Annual Improvements to IFRSs 2018-2020 Cycle: Fees in the '10 per cent' test for derecognition of financial liabilities (issued 2 July 2021)

A number of new standards, amendments to standards and interpretations are not yet effective for the year ended 31 December 2022 and have not been applied in preparing these consolidated financial statements. The amendments are not expected to have a material impact on the Group's consolidated financial statements.

Amendments to IAS 1 Presentation of Financial statements: Classification of Liabilities as Current or Non-current, issued on 23 January 2020, clarify a criterion in IAS 1 for classifying a liability as non-current: the requirement for an entity to have the right to defer settlement of the liability for at least 12 months after the reporting period.

The amendments:

- specify that an entity's right to defer settlement must exist at the end of the reporting period;
- clarify that classification is unaffected by management's intentions or expectations about whether the entity will exercise its right to defer settlement;
- clarify how lending conditions affect classification; and
- clarify requirements for classifying liabilities an entity will or may settle by issuing its own equity instruments.

However, the 2020 amendments are subject to future developments. In November 2021, the IASB published exposure draft *Non-current Liabilities with Covenants – Proposed amendments to IAS 1*, which proposed further amendments to IAS 1 and the deferral of the effective date of the 2020 amendments to no earlier than 1 January 2024.

Amendments to IAS 1 Presentation of Financial Statements and IFRS Practice Statement 2: Disclosure of Accounting policies, issued on 12 February 2021, include narrow-scope amendments to improve accounting policy disclosures so that they provide more useful information to investors and other primary users of the financial statements. The amendments to IAS 1 require companies to disclose their material accounting policy information rather than their significant accounting policies. The amendments to IFRS Practice Statement 2 provide guidance on how to apply the concept of materiality to accounting policy disclosures.

These amendments are effective for annual periods beginning on or after 1 January 2023 with early application permitted.

Amendments to IAS 8 Accounting policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates, issued on 12 February 2021, clarify how companies should distinguish changes in accounting policies from changes in accounting estimates. The distinction is important because changes in accounting estimates are applied prospectively only to future transactions and other future events, but changes in accounting policies are generally also applied retrospectively to past transactions and other past events.

These amendments are effective for annual periods beginning on or after 1 January 2023 with early application permitted.

Amendments to IAS 12 Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction, issued on 7 May 2021, clarifies how companies should account for deferred tax on transactions such as leases and decommissioning obligations. IAS 12 Income Taxes specifies how a company accounts for income tax, including deferred tax, which represents tax payable or recoverable in the future. In specified circumstances, companies are exempt from recognizing deferred tax when they recognize assets or liabilities for the first time. Previously, there had been some uncertainty about whether the exemption applied to transactions such as leases and decommissioning obligations—transactions for which companies recognize both an asset and a liability. The amendments clarify that the exemption does not apply and that companies are required to recognize deferred tax on such transactions. The aim of the amendments is to reduce diversity in the reporting of deferred tax on leases and decommissioning obligations.

These amendments are effective for annual periods beginning on or after 1 January 2023 with early application permitted.

Amendment to IFRS 16 Leases Liability in a Sale and Leaseback

On September 22, 2022, the IASB issued Lease Liability in a Sale and Leaseback (Amendments to IFRS 16) with amendments that clarify how a seller-lessee subsequently measures sale and leaseback transactions that satisfy the requirements in IFRS 15 to be accounted for as a sale. These amendments are effective for annual periods beginning on or after 1 January 2024 with early application permitted.

3 Summary of significant accounting policies

Basis for consolidation

The consolidated financial statements comprise the financial statements of the Group and its subsidiaries.

Entities are fully consolidated from the date of acquisition, which is the date when the Group obtains control, and continue to be consolidated until the date when such control ceases. The financial statements of the entities are prepared for the same reporting period as the parent company, using consistent accounting policies. All intra-Group balances, transactions, unrealized gains and losses resulting from intra-Group transactions and dividends are fully eliminated.

The Group attributes profit or loss and each component of other comprehensive income to the owners of the parent company and to the non-controlling interest based on present ownership interests, even if the results in the non-controlling interest have a negative balance.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction. If the Group loses control over the subsidiary, it will derecognize the assets (including goodwill) and liabilities of the subsidiary, any non-controlling interest and the other components of equity related to the subsidiary. Any surplus or deficit arising from the loss of control is recognized in profit or loss. If the Group retains an interest in the previous subsidiary, then such interest is measured at fair value at the date the control is lost.

The proportion allocated to the parent and non-controlling interests in preparing the consolidated financial statements is determined based solely on present ownership interests.

On January 4, 2022, the Group acquired full ownership of Link3D, an additive workflow and digital manufacturing software company that supports customers in major manufacturing industries to scale and integrate their AM operations across complex supply chains and IT environments. The acquisition was realized by the Group's U.S. subsidiary, Materialise USA, LLC by exercising the call option. On October 1, 2022, Link3D and Materialise USA merged. See also Note 4.

On September 1, 2022, the Group acquired full ownership of Identify3D, a company that develops software to encrypt, distribute, and trace the flow of digital parts across complex supply chains. The acquisition was realized by the Group's U.S. subsidiary, Materialise USA, LLC. On December 31, 2022 Identify3D and Materialise USA merged. See also Note 4.

Non-controlling interests

The Group has the choice, on a transaction by transaction basis, to initially recognize any non-controlling interest in the acquiree which is a present ownership interest and entitles its holders to a proportionate share of the entity's net assets in the event of liquidation at either acquisition date fair value or, at the present ownership instruments' proportionate share in the recognized amounts of the acquiree's identifiable net assets. Other components of non-controlling interest such as outstanding share options are generally measured at fair value. The Group has not elected to take the option to use fair value in acquisitions completed to date. As of December 31, 2021, the only non-controlling interest relates to Tianjin Zhenyuan Materialise Medical Technology Ltd., a subsidiary that Materialise, together with Zhenyuan (Tianjin) Medical Appliances Technology Co., Ltd., incorporated on June 22, 2021. Materialise holds 51% of the shares of this subsidiary. See also Note 4.

Foreign currency translation

The Group's consolidated financial statements are presented in euros, which is also the parent company's functional currency. For each entity, the Group determines the functional currency, and items included in the financial statements of each entity are measured using the functional currency.

Financial statements of foreign subsidiaries

Foreign subsidiaries use the local currencies of the country where they operate. The statement of financial position is translated into euro at the closing rate on the reporting date and their income statement is translated at the average exchange rate at each month-end. Differences resulting from the translation of the financial statements of said subsidiaries are recognized in other comprehensive income as "exchange differences on translation of foreign operations".

Foreign currency transactions

Transactions denominated in foreign currencies are translated into euro at the exchange rate of the previous day. Monetary items in the statement of financial position are translated at the closing rate at each reporting date and the relevant translation adjustments are recognized in financial or operating result depending on its nature.

Business combinations and goodwill

Business combinations are accounted for using the acquisition method at the acquisition date, which is the date at which the Group obtains control over the entity. The cost of an acquisition is measured as the amount of the consideration transferred to the seller, measured at the acquisition date fair value, and the amount of any non-controlling interest in the acquiree.

The Group measures goodwill initially at cost at the acquisition date, being:

- the fair value of the consideration transferred to the seller, plus
- the amount of any non-controlling interest in the acquiree, plus
- if the business combination is achieved in stages, the fair value of the existing equity interest in the acquiree re-measured at the acquisition date, less
- the fair value of the net identifiable assets acquired and assumed liabilities

Goodwill is recognized with any impairment in carrying value being charged to the consolidated income statement. Where the fair value of identifiable assets, liabilities and contingent liabilities exceeds the fair value of consideration paid, the excess is credited in full to the consolidated income statement on acquisition date.

Acquisition costs incurred are expensed and included in general and administrative expenses.

Any contingent consideration to be transferred by the acquirer will be recognized at fair value at the acquisition date. Subsequent changes to the fair value of the contingent consideration, which is deemed to be an asset or liability, will be recognized in profit or loss. If the contingent consideration is classified as equity, it is not re-measured until it is finally settled within equity.

Acquisition of non-controlling interests are accounted for as an equity transaction.

Investments in joint ventures

At December 31, 2022, Materialise had no investments in joint ventures.

Property, plant & equipment

Property, plant and equipment is stated at cost, net of accumulated depreciation and/or accumulated impairment losses, if any. Such cost includes borrowing costs directly attributable to construction projects if the asset necessarily takes a substantial period of time to get ready for its intended use, it is probable that they will result in future economic benefits to the Group and the cost can be measured reliably. When significant parts of property, plant and equipment are required to be replaced at intervals, the Group recognizes such parts as individual assets with specific useful lives and depreciates them accordingly. Likewise, when a major inspection is performed, its cost is recognized in the carrying amount of the property, plant and equipment as a replacement if the recognition criteria are satisfied. All other repair and maintenance costs are recognized in the income statement as incurred.

Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets as follows:

- Buildings: 20-30 years
- Machinery: 5-12 years
- IT assets: 3-5 years
- Fixtures & Furniture: 10-15 years
- Vehicles: 2-4 years
- Leasehold Building Improvements: 10 years

Land is not depreciated.

An item of property, plant and equipment and any significant part initially recognized is derecognized upon disposal or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the income statement when the asset is derecognized.

The assets' residual values, useful lives and methods of depreciation are reviewed at each financial year-end and adjusted prospectively, if appropriate.

Right-of-use assets and related liabilities

Right-of-use assets:

The Company recognizes right-of-use assets at the commencement date of the lease (i.e., the date the underlying asset is available for use). Right-of-use assets are measured at cost, less any accumulated depreciation and impairment losses, and adjusted for any remeasurement of lease liabilities. The cost of right-of-use assets includes the amount of lease liabilities recognized, initial direct costs incurred, the estimated cost of any asset retirement obligation and lease payments made at or before the commencement date less any lease incentives received. Unless the Company is reasonably certain to obtain ownership of the leased asset at the end of the lease term, the recognized right-of-use assets are depreciated on a straight-line basis over the shorter of its estimated useful life and the lease term:

- Property leased Assets: Lease terms up to 10 years or useful life of 10-15 years when reasonably certain that ownership will be obtained at the end of the lease
- Leased machines: Lease terms up to 10 years or useful life of 5-10 years when reasonably certain that ownership will be obtained at the end of the lease
- Leased vehicles: Lease terms up to 4 years or useful life of 4 years when reasonably certain that ownership will be obtained at the end of the lease

Right-of-use assets are subject to impairment.

Lease liabilities:

At the commencement date of the lease, the Company recognizes lease liabilities measured at the present value of lease payments to be made over the lease term. The lease payments include fixed payments (including in substance fixed payments) less any lease incentives receivable, variable lease payments that depend on an index or a rate, and amounts expected to be paid under residual value guarantees. The lease payments also include the exercise price of a purchase option reasonably certain to be exercised by the Company and payments of penalties for terminating a lease, if the lease term reflects the Company exercising the option to terminate. The variable lease payments that do not depend on an index or a rate are recognized as expense in the period on which the event or condition that triggers the payment occurs. In calculating the present value of lease payments, the Company uses the incremental borrowing rate at the lease commencement date if the interest rate implicit in the lease is not readily determinable. After the commencement date, the amount of lease liabilities is measured at amortized cost using the effective interest rate method.

In addition, the carrying amount of lease liabilities is remeasured when there is a change in future lease payments arising from a change in an index or a rate, if there is a change in the Group's estimate of the amount expected to be payable under a residual value guarantee, if the Group changes its assessment of whether it will exercise a purchase, extension or termination option or if there is a revised in-substance fixed lease payment. When the lease liability is remeasured in this way, a corresponding adjustment is made to the carrying amount of the right-of-use asset, or is recorded in profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

Short-term leases and leases of low-value assets:

The Company applies the short-term lease recognition exemption to its short-term leases of machinery and equipment (i.e., those leases that have a lease term of 12 months or less from the commencement date and do not contain a purchase option) however this exemption is not applied for property leases. It also applies the lease of low-value assets recognition exemption to leases of office equipment that are considered of low value (i.e., below € 5k). Lease payments on short-term leases and low-value assets are recognized in the income statement when incurred.

Borrowing costs

Borrowing costs directly attributable to the acquisition, construction or production of a qualified asset that necessarily takes a substantial period of time to prepare for its intended use or sale are capitalized as part of the cost of the respective assets. All other borrowing costs are expensed in the period they occur. Borrowing costs consist of interest and other costs that an entity incurs in connection with the borrowing of funds.

Research and development

Research and development includes the costs incurred by activities related to the development of software solutions (new products, updates and enhancements), guides and other products.

Development activities involve the application of research findings or other knowledge to a plan or a design of new or substantially improved (software) products before the start of the commercial use.

Development expenditures on an individual project are recognized as an intangible asset when the Group can demonstrate:

- the technical feasibility of completing the intangible asset so that the asset will be available for use or sale;
- its intention to complete and its ability to use or sell the asset;
- how the asset will generate future economic benefits;
- the availability of resources to complete the asset; and
- the ability to measure reliably the expenditure during development.

The Group has determined that the conditions for recognizing internally generated intangible assets from proprietary software, guide and other product development activities are not met until shortly before the products are available for sale, unless either (i) the Group has strong evidence that the above criteria are met and a detailed business plan is available showing the asset will on a reasonable basis generate future economic benefits or (ii) the development is done based upon specific request of the customer, it is highly likely that the Group will be able to market the product also to other parties than the customer, the development is subject to an agreement and the substance of the agreement is that the customer reimburses the Group for a significant portion, but not all, of the development expenses incurred. As such, development expenditures not satisfying the above criteria and expenditures on the research phase of internal projects are recognized in the consolidated income statement as incurred. Internally generated intangible assets from proprietary software are amortized over their useful lives, starting from the moment they are ready for use/available for sale.

Following initial recognition of the development expenditure as an asset, the asset is carried at cost less any accumulated amortization and accumulated impairment losses. Amortization of the asset begins when development is complete and the asset is available for use. It is amortized over the period of expected future benefit, which is determined on a project-by-project basis. Amortization is recorded in research and development expenditure. During the period of development, the asset is tested for impairment at least annually or whenever there is an indication of impairment.

Intangible assets other than goodwill and capitalized development expenditures

Intangible assets comprise acquired technology and customer portfolio, patents and licenses and technology and customers acquired in connection with business combinations. Those intangible assets are measured on initial recognition at cost, except for the acquired technology and customers arising from business combinations, which are measured initially at fair value. Following initial recognition, intangible assets other than goodwill are carried at cost less any accumulated amortization and accumulated impairment losses, if any.

The useful life of the intangible assets is as follows:

- Software: 3 years;
- Perpetual licences for ERP & front end software : 10 years;
- Software with subscription license : subscription term
- Patents and licenses: 10 years;
- Acquired customers and Technology: 5-20 years;
- Order Backlog: Period over which orders will be completed.

The intangible assets with finite lives are amortized over their useful economic life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at least at the end of each reporting period. The amortization expense on intangible assets with finite lives acquired through business combination is recognized in the consolidated income statement in the line "net other operating income".

Impairment of goodwill and other non-financial assets (excluding inventories and deferred tax assets)

Impairment tests on goodwill and other intangible assets with indefinite useful economic lives, assets under construction or capitalized development expenses which are not amortized yet, are undertaken annually at the financial year end. Other non-financial assets and goodwill are subject to impairment tests whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. Where the carrying value of an asset exceeds its recoverable amount (i.e. the higher of value in use and fair value less costs to sell), the asset is written down accordingly.

Where it is not possible to estimate the recoverable amount of an individual asset, the impairment test is carried out on the smallest Group of assets to which it belongs for which there are separately identifiable cash flows: its cash generating units (CGUs). Goodwill is allocated on initial recognition to each of the Group's CGUs that are expected to benefit from the synergies of the combination giving rise to the goodwill.

The Group bases its impairment calculation on detailed budgets and forecast calculations, which are prepared separately for each of the Group's CGUs to which the individual assets are allocated. These budgets and forecast calculations generally cover a period of five years. For longer periods, a long-term growth rate is calculated and applied to future cash flows projected after the fifth year.

Impairment charges are included in profit or loss, except, where applicable, to the extent they reverse gains previously recognized in other comprehensive income. An impairment loss recognized for goodwill is not reversed.

Where goodwill forms part of a cash-generating unit and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal of the operation. Goodwill disposed of in this circumstance is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

Inventories and Contracts in progress

Inventories are valued at the lower of cost and net realizable value. Costs incurred in bringing each product to its present location and condition are accounted for as follows:

- Raw materials: purchase cost on a first in, first out basis; and
- Finished goods and work in progress: cost of direct materials and labor and a proportion of manufacturing overheads based on the normal operating capacity, but excluding borrowing costs.

Net realizable value is the estimated selling price in the ordinary course of business, less estimated costs of completion and the estimated costs necessary to make the sale.

A write-off of inventories is estimated based on an ageing or rotation analysis.

Work in progress relates to production of inventory for which a customer has not yet been secured, while contracts in progress are contract assets that relate to production for specific customers in performance of a signed contract. We refer also to the accounting policy on revenue recognition.

Financial assets

Trade receivables and debt instruments issued are initially recognized when they are originated. All other financial assets are initially recognized when the Group become a party to the contractual provisions of the instrument.

Financial assets are classified at initial recognition, and subsequently measured either at amortized cost, either fair value through other comprehensive income (OCI), and fair value through profit or loss. The classification of financial assets at initial recognition depends on the financial asset's contractual cash flow characteristics and the Group's business model for managing them.

Except for trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient, the Group initially measures a financial asset at its fair value plus transaction costs, in the case of a financial asset not at fair value through profit or loss. Trade receivables that do not contain a significant financing component or for which the Group has applied the practical expedient are measured at the transaction price.

For purposes of subsequent measurement, financial assets are classified in four categories:

- Financial assets at amortized cost;
- Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments);
- Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments); and

- Financial assets at fair value through profit or loss.

Financial assets measured at amortized cost

This category is the most relevant to the Group. The Group measures financial assets at amortized cost if both of the following conditions are met:

- The financial asset is held within a business model with the objective to hold financial assets in order to collect contractual cash flows; and
- The contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Financial assets, trade and other receivables, cash and cash equivalents at amortized cost are subsequently measured using the effective interest rate (EIR) method and are subject to impairment. Gains and losses are recognized in profit or loss when the asset is derecognized, modified or impaired.

Financial assets at fair value through OCI with recycling of cumulative gains and losses (debt instruments)

The Group currently does not have financial assets at fair value through OCI with recycling of cumulative gains and losses.

Financial assets designated at fair value through OCI with no recycling of cumulative gains and losses upon derecognition (equity instruments)

The Group has irrevocably elected at initial recognition to classify the minority equity investment in the non-listed company AM-Flow BV, as disclosed in Note 10 and Note 20, as financial asset designated at fair value through OCI as this measurement is most representative of the business model for these assets. Gain and losses on these financial assets are never recycled to profit and loss. Equity instruments designated at fair value through OCI are not subject to impairment assessment.

Financial assets measured at fair value through profit or loss

The Group has the following financial assets classified as financial assets at fair value through profit or loss:

- Derivatives as disclosed in Note 10;
- convertible loan granted to the company Fluidda as disclosed in Note 10.

Those financial assets are carried in the statement of financial position at fair value with changes recognized in the income statement in the lines financial income/expense.

Derecognition

A financial asset is derecognized when:

- The rights to receive cash flows from the asset have expired, or
- The Group has transferred its rights to receive cash flows from the assets.

The Group has a factoring agreement in place with one subsidiary whereby its rights to receive the cash flows from the trade receivables are transferred to the factor on a non-recourse basis. The related trade receivables are derecognized at the moment that the cash is received from the factor.

Impairment of financial assets

Further disclosures relating to impairment of financial assets are also provided in Note 3 Significant accounting judgments, estimates and assumptions.

The Group recognizes an allowance for expected credit losses (ECLs) for all debt instruments not held at fair value through profit or loss.

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. A loss allowance is recognized at each reporting date based on lifetime ECLs. The Group established a provision matrix that is based on its historical loss experience, adjusted for forward-looking factors specific to the debtors and the economic environment.

For all other receivables, ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms. ECLs are recognized in two stages. For credit exposures for which there has not been a significant increase in credit risk since initial recognition, ECLs are provided for credit losses that result from default events that are possible within the next 12-months (a 12-month ECL). For those credit exposures for which there has been a significant increase in credit risk since initial recognition, a loss allowance is required for credit losses expected over the remaining life of the exposure, irrespective of the timing of the default (a lifetime ECL). When determining whether the credit risk has increased significantly since initial recognition, the group considers reasonable and supportable information that is relevant and available with undue cost or effort, including both quantitative and qualitative information and analysis, based on the Group's historical experience and informed credit assessments, that includes forward-looking information. The Group assumes that the credit risk on a financial asset has increased significantly if it is more than 30 days past due. An event of default takes place when the debtor is unlikely to pay its credit obligations to the Group in full or when the financial asset is more than one year past due.

Financial liabilities

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

The Group's financial liabilities include trade and other payables, loans and borrowings including bank overdrafts and derivative financial instruments including written put options over non-controlling interests.

Financial liabilities at amortized cost

The trade and other payables, and loans and borrowings are classified as financial liabilities at amortized cost.

Those financial liabilities are measured at amortized cost using the effective interest rate method. Gains and losses are recognized in the income statement when the liabilities are derecognized as well as through the effective interest rate method amortization process.

Financial liabilities at fair value through profit and loss

The derivative financial instruments are classified as financial liabilities at fair value through profit and loss.

Compound financial instruments

The Group has issued convertible debt which is accounted for as a compound financial instrument. For those instruments, the Group determines the carrying amount of the liability component by measuring the fair value of a similar liability (including any embedded non-equity derivative features) that does not have an associated equity component. The carrying amount of the equity instrument is then determined by deducting the fair value of the financial liability from the fair value of the compound financial instrument as a whole. Directly attributable transaction costs are apportioned between the liability and equity components of the convertible debt instrument, based on the allocation of proceeds to the liability and equity components when the instruments are initially recognized. Subsequent to initial recognition, the liability component of a compound financial instrument, is measured at amortized cost using the effective interest method. The equity component of a compound financial instrument is not remeasured.

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires.

Offsetting

Financial assets and financial liabilities are offset and the net amount is reported in the consolidated statement of financial position if there is a currently enforceable legal right to offset the recognized amounts and there is an intention to settle on a net basis, or to realize the assets and settle the liabilities simultaneously.

Share capital

Financial instruments issued by the Group are classified as equity only to the extent that they do not meet the definition of a financial liability or financial asset. The Group's ordinary shares are classified as equity instruments.

Provisions

Provisions are recognized when the Group has a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation.

Pension benefits

The Group has a defined contribution obligation where the Group pays contributions based on salaries to an insurance company, in accordance with the laws and agreements in each country.

The Belgian defined contribution pension plans are by law with variable minimum returns based on the Belgian government bonds, with a minimum of 1.75% and a maximum of 3.75%, effective for contributions paid as from 2016. For contribution paid until 2015, the minimum guaranteed return is 3.25% on employer contributions and 3.75% on employee contributions.

These plans qualify as defined benefit plans. Contributions are recognized as expenses for the period in which employees perform the corresponding services. Outstanding payments at the end of the period are shown as other current liabilities.

Share based payments

Directors and employees (including senior executives) of the Group receive remuneration in the form of share-based payments, whereby employees render services as consideration for equity instruments (equity-settled transactions). The Group currently has only warrants and share-appreciation rights as share-based payments.

Equity-settled transactions

Equity-settled share-based payments to employees and others providing similar services are measured, indirectly, at the fair value of the equity instruments granted. The cost of equity-settled transactions is recognized, together with a corresponding increase in other capital reserves in equity, over the period in which the performance and/or service conditions are fulfilled. The cumulative expense recognized for equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired and the Group's best estimate of the number of equity instruments that will ultimately vest. The income statement expense or credit for a period represents the movement in cumulative expense recognized at the beginning and end of that period and is recognized as employee benefits expense.

The Group does currently only have equity-settled share-based payments that have service-based vesting conditions and no instruments with market vesting conditions.

No expense is recognized for awards that do not ultimately vest.

When the terms of an equity-settled award are modified, the minimum expense recognized is the expense as if the terms had not been modified, if the original terms of the award are met. An additional expense is recognized for any modification that increases the total fair value of the share-based payment transaction or is otherwise beneficial to the employee as measured at the date of modification.

When an equity-settled award is cancelled, it is treated as if it vested on the date of cancellation, and any expense not yet recognized for the award is recognized immediately. This includes any award where non-vesting conditions within the control of either the entity or the employee are not met. However, if a new award is substituted for the cancelled award and designated as a replacement award on the date that it is granted, the cancelled and new awards are treated as if they were a modification of the original award, as described in the previous paragraph.

Cash-settled transactions

The Group has cash-settled share-based payment transactions for certain employees in certain countries due to legal requirements (in the form of share-appreciation rights). The cost of cash-settled transactions is measured initially at fair value at the grant date. This fair value is expensed over the period until the vesting date with recognition of a corresponding liability. The liability is remeasured to fair value at each reporting date up to, and including the settlement date, with changes in fair value recognized in employee benefits expense.

Other long-term employee benefits

The Group's net obligation for long-term employee benefits is equal to the value of future benefits acquired by personnel in exchange for services rendered in the current and prior periods. This expense is mainly shown under the research and development expenses in the consolidated income statement.

Revenue from contracts with customers

The Group's revenue, which is presented net of sales taxes, is primarily generated by the sale of our software and 3D printed products and services. Software revenue is comprised of perpetual and periodic licenses, maintenance revenue and software development service fees. Perpetual license holders may opt to take an annual maintenance contract, which leads to annual fees. Periodic licenses entitle the customer to maintenance, support and product updates without additional charge. Revenue from prototypes and end products involving 3D printing technology is derived from our network of production centers and may include support and services such as pre-production collaboration prior to the actual production.

The Group sells its products and software through its direct sales force and through authorized distributors.

Software license revenue, maintenance and/or software development service fees may be bundled in one arrangement or may be sold separately.

The Group recognizes revenue for goods including software based on the five-step model per the requirements of IFRS 15.

- Identify the contract(s) with a customer;
- Identify the performance obligations in the contract;
- Determine the transaction price;
- Allocate the transaction price to the performance obligations in the contract; and
- Recognize revenue when (or as) the entity satisfies a performance obligation.

Revenue from contracts with customers is recognized when control of the goods or services are transferred to the customer at an amount that reflects the consideration to which the Group is expected to be entitled in exchange from those goods and services.

If the consideration in a contract includes a variable amount, the Group estimates the amount of consideration to which it will be entitled in exchange for transferring the goods to the customer. The variable consideration is estimated at contract inception and constrained until it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with the variable consideration is subsequently resolved. Variable consideration is mainly related to quantities sold, volume (step-based) rebates and development time spent.

Prototypes and end products involving 3D printing technology

The Group recognizes revenue on the sale of goods to the customer or distributor at a point in time when control of the asset is transferred, generally upon shipment or delivery considering the shipment terms (usually Ex-works or FOB Time of Shipment Incoterms (International Commercial Terms)).

Perpetual licensed software

The sale and/or license of software products is deemed to have occurred at a point in time, i.e. when a customer either has taken possession of or has the ability to take immediate possession of the software and the software key.

Most of the perpetual software licenses include one year maintenance and support services as a separate performance obligation. The Company sells these maintenance services also on a stand-alone basis and is therefore capable of determining their stand-alone selling price. On this basis, the amount of the embedded maintenance is separated from the fee for the perpetual license and is recognized ratably over the period to which they relate.

Time-based licensed software

The time-based license agreements include the use of a software license for a fixed term and maintenance and support services during the same period. The Company does not sell time-based licenses without maintenance and support services and therefore revenues are satisfied over time for the entire arrangements and are recognized ratably over the term.

Maintenance and support services

Maintenance and support services are satisfied over time and as such, the Group recognizes this revenue ratably on a straight-line basis over the term that the maintenance service is provided. In general, maintenance services are not automatically renewed.

A maintenance and support contract may include a reinstatement for previous years when the customer did not have a maintenance and support contract previously. Revenue from reinstatements is recognized immediately when the maintenance and support services commence.

Software development services (SDS)

SDS include customized development of software components for customers. Revenue from SDS agreements when distinct from other performance obligations is satisfied over time or at a point in time, depending whether one of the IFRS 15.35 criteria for performance obligations to be satisfied over time is met or not. In case of recognition over time, revenue is recognized either on time and material basis or on the stage of completion of each service when the percentage of completion can be measured reliably.

The Company determines the percentage-of-completion by comparing labor hours incurred to-date to the estimated total labor hours required to complete the project. The Company considers labor hours to be the most reliable available measure of progress on these projects. Adjustments to the Company’s estimates of the time to completion are made when facts resulting in a change become known. When the estimate indicates that a loss will be incurred, such loss is recognized immediately.

In case of recognition at a point in time revenue is recognized when control over the product is transferred to the customer.

Contracts with multiple performance obligations

The Group has entered into a number of contracts with multiple performance obligations, such as when selling perpetual licenses that may include maintenance and support (included in the price of perpetual licenses) and time-based licenses (that include embedded maintenance and support, both of which may be sold with software development services, training, and other product sales). In some cases, the Group delivers software development services bundled with the sale of the software.

The Group evaluates whether each performance obligation is distinct from each other, i.e. the customer can benefit from the good or service on its own, or with readily available resources. Certain development services significantly modify and/or enhance the software license and as such are not considered distinct and combined with the software license.

In those contracts, whether sold to end-customers or to collaboration partners, the Group uses either price list, historical pricing information or management’s best estimate of selling prices (e.g. also using a cost-plus method) to determine the stand-alone selling price for each distinct performance obligation, including software and software-related services such as maintenance and support. In general, elements in such arrangements are also sold on a stand-alone basis and stand-alone selling prices are readily available. If the stand-alone selling price of one or more goods or services in such arrangements is highly variable or uncertain, the Group estimates the stand-alone selling price with reference to the total transaction price less the sum of the observable stand-alone selling prices of other goods or services promised in the contract.

Revenue is allocated to each distinct performance obligation ("PO") based on the relative percentage of the stand-alone selling price for each PO compared to the total of stand-alone selling prices for all PO over the total transaction price and is recognized when the revenue recognition criteria described above are met.

Contracts with collaboration partners in the medical segment also include multiple elements such as software, maintenance and support services, training, software development services, 3D printed products and royalties. Revenue from those contracts is determined and recognized consistent with other multiple element arrangements.

For certain contracts with collaboration partners, the Company receives up-front fees, paid by customers for certain exclusivity rights, which may be bundled with transfer of title, rights and ownership of certain software products and maintenance and support services. In case the up-front fees do not relate to already delivered good or services, the Group includes the up-front fees in the total transaction price which is then allocated to all the distinct performance obligations. Other contracts with collaboration partners include prepaid fees to purchase a maximum number of "Plan Only" cases or case ‘bundles’ during a 12-month period. In this case, the prepaid fees are recognized over the period of 12 months based on the expected number of cases that will be purchased.

Contract assets

A contract asset is the right to consideration in exchange for goods or services transferred to the customer. If the Group performs by transferring goods or services to a customer before the customer pays consideration or before payment is due, a contract asset is recognized for the earned consideration that is conditional. Contract assets are only contracts in progress that are disclosed with the line inventory and contracts in progress in the statement of financial position. We refer to our accounting policies regarding Inventories and Contracts in Progress.

Contract liabilities

A contract liability is the obligation to transfer goods or services to a customer for which the Group has received consideration (or an amount of consideration is due) from the customer. If a customer pays consideration before the Group transfers goods or services to the customer, a contract liability is recognized when the payment is made or the payment is due (whichever is earlier). Contract liabilities are recognized as revenue when the Group performs under the contract. Contract liabilities are presented as deferred income in the statement of financial position.

Contract costs

The Group does not have significant costs to obtain contracts and those costs are expensed as incurred.

The Group may have costs incurred in fulfilling contracts that are accounted for as intangible assets. When those costs are not in scope of another standards, these costs are accounted for under contracts in progress (see contract assets). For certain contracts, the Group may have significant software development expenses that are not considered a "distinct performance obligation" which are accounted for as an intangible asset. The Group evaluates whether those costs meet the recognition criteria for an intangible asset and when criteria are not met, expenses those costs as incurred.

Government grants

Government grants are recognized when there is reasonable assurance that the grant will be received and all attached conditions will be complied with. When the grant relates to development costs or another expense, it is recognized as income over the grant period necessary to match the income on a systematic basis to the costs that it is intended to compensate. When the grant relates to the construction of buildings, it is recognized as income over the depreciation period of the related building.

Such grants have been received from the federal and regional governments and from the European Union in the forms of grants linked to certain of its research and development programs, reduced payroll taxes and the financing of the construction of an office building in Leuven (Belgium) and in Freiberg (Germany).

Where retention of a government grant related to assets or to income, is dependent on the Company satisfying certain criteria, it is initially recognized as deferred income. When the criteria for retention have been satisfied, the deferred income balance is released to other operating income in the consolidated income statement on a systematic basis over the periods in which the entity recognizes as expenses the related costs for which the grants are intended to compensate.

Other financial income and expenses

Other financial income and expenses include mainly foreign currency gains or losses on financial transactions and bank related expenses.

Taxes

Current income tax

Income tax assets and liabilities for the current period are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted, at the reporting date.

Current income tax relating to items that are recognized directly in equity is recognized in equity and not in the income statement. Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred tax

Deferred tax is calculated using the liability method on temporary differences at the reporting date between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes.

Deferred tax liabilities are recognized for all taxable temporary differences. Deferred tax assets are recognized for all deductible temporary differences, carry forward of unused tax credits and unused tax losses, to the extent that it is probable that taxable profit will be available against which the deductible temporary differences or the carry forward of unused tax credits and unused tax losses can be utilized. In order for any deferred tax assets to be recognized, and at a minimum, the respective Materialise entity should have recorded a taxable profit in the current year and it should be probable that a taxable profit will be achieved in the subsequent year.

The carrying amount of deferred tax assets is reviewed at each reporting date and reduced to the extent that it is no longer probable that sufficient taxable profit will be available to allow all or part of the deferred tax asset to be utilized. Unrecognized deferred tax assets are reassessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year when the asset is realized or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Deferred tax assets and deferred tax liabilities are offset, if a legally enforceable right exists to set off current tax assets against current income tax liabilities and the deferred taxes relate to the same taxable entity and the same taxation authority.

Sales tax

Revenue, expenses and assets are recognized net of the amount of VAT, except:

- Where the sales tax incurred on a purchase of assets or services is not recoverable from the taxation authority, in which case the sales tax is recognized as part of the cost of acquisition of the asset or as part of the expense item as applicable; and
- Receivables and payables that are stated with the amount of sales tax included.

The net amount of sales tax recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the statement of financial position.

Significant accounting judgments, estimates and assumptions

The preparation of the Group's consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenue, expenses, assets and liabilities, and related disclosures. Uncertainty about these assumptions and estimates could lead to outcomes that require a material adjustment to the carrying amount of assets or liabilities for future periods.

The Group reviews its estimates, assumptions and judgments on an ongoing basis, including those related to revenue recognition, development expenses, share-based payment transactions, income taxes, impairment of goodwill, intangible assets and property, plant & equipment and business combinations, provisions for expected credit losses, convertible loans, equity instruments, useful lives of certain assets and leases.

The Group has based its assumptions and estimates on the parameters that were available when the consolidated financial statements were prepared. However, existing conditions and assumptions about future developments, may change due to market changes or circumstances beyond the Group's control. Such changes are incorporated into the assumptions as they occur.

Revenue recognition

Our revenue recognition policy requires management to make significant estimates. Management analyzes various factors, including an evaluation of specific transactions, historical experience, creditworthiness of customers and current market and economic conditions. Changes in judgments based upon these factors may affect the timing and amount of revenues and expenses recognized and, consequently, the results of operations and financial condition. Significant estimates and judgments relate to:

- Assessing whether a performance obligation is distinct in a bundled sales transactions;
- Estimation of the variable considerations and the revenue constraint;
- Estimation of stand-alone selling prices for each distinct performance obligation; and
- The stage of completion of our custom development of software components for customers when revenues are satisfied over time.

The Group makes significant judgments when performing the assessment of whether a performance obligation is distinct from the other performance obligations in a contract, i.e. whether the good or service has a benefit to the customer in its own or together with readily available resources and/or whether the good or service is highly interrelated or constitutes a significant input with another good or service provided, or whether it significantly modifies or tailors another good or service. The relevant assessments include but are not limited to the following:

- Whether the software license is distinct from the 3D printed guides - in most cases with contracts with collaborative partners in the Materialise Medical segment, the software licenses are combined with the manufacturing of the 3D printed guides, as the software license has no benefit to the customer without the manufacturing services.
- Whether the development services are distinct from other performance obligations - in most cases these performance obligations are distinct but for certain contracts, the software license may be combined with the license and the 3D printed guides as one distinct performance obligation.

For stand-alone selling prices, the Group uses prices from price lists or historical prices for similar transactions. However, in certain cases such information is not readily available and in those cases the Group estimates the stand-alone selling price based on a cost plus mark-up or other estimate. In addition, for certain performance obligations such as development services, the stand-alone selling prices also require an estimate of the time required to complete the development. If the Group determines that the stand-alone selling price of one or more goods or services in a multiple element arrangement is highly variable or uncertain, the Group estimates the stand-alone selling price with reference to the total transaction price less the sum of the observable stand-alone selling prices of other goods or services promised in the contract.

Certain contracts include estimates of variable considerations within the transaction price and assessing the revenue constraint, such as:

- Quantities/volume sold at fixed prices related to, but not limited to, the manufacturing of 3D printed products, software licenses sold, maintenance renewals;
- Contractual prices may vary based on volume purchased during a given period;
- FTE expenses for development or other services billed on a time and material basis; and
- Volume rebates.

The method used to estimate the variable consideration depends on the number of possible scenarios and the probability of each scenario. If there are many possible scenarios with a high probability (each less than 50%), the Group will use the expected value method, while the most likely method is used when there is a scenario with a higher probability (more than 50%).

Variable consideration is not constrained when the Group determines, based on historical experience, a high reliable business forecast and/or the time frame of the estimates, that there is a high probability that it will not result in a future reversal of revenue.

We determine the stage of completion for development contracts satisfied over time by comparing the labor hours incurred to date with the estimated total labor hours required to complete the project. We consider labor hours to be the most reliable, available measure of progress on these projects. Adjustments to estimates are made in the period when facts that give rise to a change become known. When the estimate indicates that a loss will be incurred, the loss is recorded in the relevant period. Significant judgments and estimates are involved in determining the percentage of completion for each contract. Different assumptions can produce materially different results.

Development expenses

Under IAS 38, internally generated intangible assets from the development phase are recognized if certain conditions are met. These conditions include technical feasibility, the intention to complete, the ability to use or sell the asset under development, the availability of adequate technical, financial and other resources to complete the development, the ability to reliably measure the expenditure attributable to the intangible asset during development and evidence of how the asset will generate probable future economic benefits. The cost of a recognized internally generated intangible asset includes all directly attributable costs necessary to make the asset suitable for use as intended by management. In contrast, all expenditures arising from the research phase are expensed as incurred.

Determining whether internally generated intangible assets from development should be recognized as intangible assets requires significant judgment, particularly in determining whether the activities are considered research activities or development activities, whether the product enhancement is substantial, whether completion of the asset is technically feasible considering a company-specific approach, the likelihood of future economic benefits from sale or use, including an assessment of whether FDA approval will be obtained.

The Group has determined that the conditions for recognizing internally generated intangible assets from its own software, guides and other product development activities are not met until shortly before the products are available for sale, unless either (i) the Group has strong evidence that the above criteria are met and a detailed business plan is available showing that the asset will generate future economic benefits on a reasonable basis or (ii) the development is done at the specific request of the customer, the Group intends to market the product to other parties than the customer, the development is subject to an agreement and the substance of the agreement is that the customer will reimburse the Group for a significant portion of the development costs incurred. As such, development expenditures that do not meet the above criteria and expenditures for the research phase of internal projects are recognized in the consolidated income statement as incurred. This assessment is monitored by the Group on a regular basis.

The Group capitalized a total of K€3,422 of development expenses during 2022 of which:

- K€2,438 related to capitalized internal development expenses of our digital transformation program; and
- K€984 related to the transformation of the platform architecture to enable our software products to make the transition from desktop to (hybrid) cloud. Of the K€1,959 accumulated total asset under construction balance, K€1,287 was transferred to software, while K€672 was impaired per December 31, 2022.

Income taxes

Deferred tax assets are recognized only to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilized. Significant management judgment is required to determine the amount of deferred tax assets that may be recognized, based on the probable timing and level of future taxable profits, together with future tax planning strategies.

For any deferred tax assets to be recognized, and at a minimum, the respective Materialise entity should have recorded a taxable profit in the current year and it should be probable that a taxable profit will be achieved in the subsequent year.

As of December 31, 2022, the Group had current and non-current receivables related to tax credits for an amount of K€5,105 (2021: K€4,717; 2020: K€4,647)

As of December 31, 2022, the Group had K€87,558 (2021: K€58,161K€58,161; 2020: K€50,538K€50,538) of unused tax losses carried forward and unused Innovation Income Deductions, of which K€45,245 related to Materialise NV (2021: K€35,578K€35,578; 20202020: K€27,878K€27,878). These losses relate to the parent and subsidiaries that have a history of losses, in countries where these losses do not expire and may not be used to offset taxable income elsewhere in the Group.

With respect to the unused tax losses and Innovation Income Deduction of Materialise NV, the deferred tax asset recognized at December 31, 2022 was limited to € 0.2 million (2021: € 0.0 million, 2020: € 0.0 million). Under the Belgian Innovation Income Deduction system, companies can deduct up to 85%85% of their net innovation income from the taxable basis. According to the Group's policy the Company has assessed that no additional deferred tax asset should be recognized with respect to its unused tax losses and unused Innovation Income Deductions carried forward in Belgium.

With respect to the unused tax losses of the other entities, we recognized at December 31, 2022 a deferred tax asset of € 1.6 million for Materialise USA related to losses carried forward from the acquired entities Link3D and Identify3D. No deferred tax assets were recognized in 2021 and 2020 except for our tax unity in Germany where we recorded a deferred tax asset of € 0.3 million related to 2020 losses and Materialise Motion where we recorded a deferred tax asset of € 1.8 million against a deferred tax liability of € 2.0 million. The Group has not recognized deferred tax assets on unused tax losses and Innovation Income Deduction totaling K€19,101 in 2022 (2021: K€12,033K€12,033; 2020: K€22,661K€22,661) given that it is not probable that sufficient positive taxable base will be available in the foreseeable future against which these tax losses and Innovation Income Deduction can be utilized.

If all deferred tax assets related to tax losses carried forward and unused Innovation Income Deduction would meet the criteria for recognition, the net result would have improved by K€19,101 in 2022 through a deferred tax benefit. This would represent the planned recovery of K€75,361 of carried forward tax losses and Innovation Income Deduction in future periods. Further details on taxes are disclosed in Note 22.10.

Impairment of goodwill, intangible assets and property, plant & equipment and determination of the cash-generating-unit.

The Group has goodwill for a total amount of K€44,155K€44,155 as of December 31, 2022 (2021: K€18,726K€18,726; 2020: K€18,599K€18,599) which has been subject to an impairment test. The goodwill is tested for impairment based on a discounted cash flow model with cash flows for the next five years derived from the budget and a residual value considering a perpetual growth rate. The value in use is sensitive to the discount rate used for the DCF model as well as the expected future cash-inflows and the growth rate used for extrapolation purposes.

Also, as part of the impairment analysis, the Group needs to determine the different CGUs at the lowest non-aggregated level which requires the Group to make judgments about application of the criteria to determine the CGUs based on the facts and circumstances how the entities and business units within the CGU and within the Group operate and are monitored. The level of CGU may also have an impact on certain assumptions to make with regard to transfer pricing.

The key assumptions used to determine the value in use for the different CGUs are disclosed and further explained in Note 5.

The Group capitalized development expenses in 2022 for a total amount K€3,422 (2021: K€2,659; 2020: K€4,541). Those development expenses have been subject to an impairment test based on a discounted cash flow model with cash flows derived from the latest business plan. The value in use is sensitive to the discount rate used for the DCF model as well as the expected commercialization date for the products and the expected future cash inflows after commercialization. We refer to the section on development expenses above for further explanations.

When events or changes in circumstances indicate that the carrying amount of the intangible assets and property, plant and equipment may not be recoverable, we estimate the value in use for the individual assets, or when not possible, at the level of CGUs to which the individual assets belong.

During 2022 impairment charges have been recorded for K€672 (2021: K€177K€177; 2020: K€4,606K€4,606) related to the transformation of the platform architecture to enable our software products to make the transition from desktop to (hybrid) cloud.

Business combinations

We determine and allocate the purchase price of an acquired business to the assets acquired and liabilities assumed as of the business combination date. Business combinations are discussed further in Note 4. The purchase price allocation process requires us to make significant estimates and assumptions, including

- estimated fair value of the acquired intangible assets;
- estimated fair value of property, plant and equipment; and
- estimated fair value of the contingent consideration.

The contingent consideration as included in the financial statements is recorded at fair value at the date of acquisition and is reviewed on a regular basis. The fair value of the contingent consideration is based on risk-adjusted future cash flows of different scenarios discounted using appropriate interest rates. The structure of the possible scenarios and the probability assigned to each one of them is reassessed by management at every reporting period and requires judgement from management about the outcome and probability of the different scenarios as well as the evolution of the variables.

While we are using our best estimates and assumptions as part of the purchase price allocation process to accurately value assets acquired and liabilities assumed at the date of acquisition, our estimates and assumptions are inherently uncertain and subject to refinement. Examples of critical estimates in valuing certain of the intangible assets we have acquired or may acquire in the future include but are not limited to:

- future expected cash flows from customer contracts and relationships, software license sales and maintenance agreements;
- the fair value of the plant and equipment
- the fair value of the deferred revenue; and
- discount rates.

Provision for expected credit losses of trade receivables and contract assets

The Group uses a provision matrix to calculate ECLs for trade receivables and contract assets. The provision rates are based on days past due for groupings of various customer segments that have similar loss patterns (i.e., by legal entity).

The provision matrix is initially based on the Group’s historical observed default rates. The Group will calibrate the matrix to adjust the historical credit loss experience with forward-looking information. For instance, if forecast economic conditions (i.e., gross domestic product) are expected to deteriorate over the next year which can lead to an increased number of defaults, the historical default rates are adjusted. At every reporting date, the historical observed default rates are updated and changes in the forward-looking estimates are analyzed.

The assessment of the correlation between historical observed default rates, forecast economic conditions and ECLs is a significant estimate. The amount of ECLs is sensitive to changes in circumstances and of forecast economic conditions. The Group's historical credit loss experience and forecast of economic conditions may also not be representative of customer's actual default in the future.

Convertible debt instruments

At December 31, 2022 the Group holds a convertible debt instrument issued by Fluidda which is measured at fair value through profit & loss. In determining the fair value of those convertible debt instruments, the Group considers different contractual parameters such as the repayment and conversion scenarios and dates. In addition, the Group needs to make significant estimates such as (i) the discount rate, (ii) the probabilities for each repayment and conversion scenario, (iii) the amount of a qualified capital increase that will determine the conversion factor and (iv) the timing for each repayment and conversion scenario.

The convertible loan granted to Fluidda in January 2019 has a notional amount of K€2,500. The carrying value of the convertible loan as of December 31, 2022 amounted to K€ 3,494. The Group recorded a downward remeasurement of K€316 in financial expenses in 2022. Fluidda is a private start-up company which offers turnkey contract research services for drug development and medical device development. Fluidda is currently loss-making. The convertible loan has a duration of 7 years with a 10% annual interest rate which is capitalized. In the fair value analysis, the Group has applied a discount factor of 12.67% that is based on the estimated WACC of Fluidda reflecting the uncertainty in relation to the success of the company and the applied estimates by the Group.

The Group previously granted a convertible loan to AM Flow in January 2020 with a notional amount of K€300. The loan was converted into shares of AM Flow in September 2020 at a fair value of K€307. AM Flow is currently loss-making.

Equity investment held in Essentium

The Group acquired an equity investment of K$3,300 in Essentium, a non-listed US company during 2018 and 2019. The Group has elected to measure the equity investment at fair value with changes in fair value recognized in OCI. At the end of 2021 Essentium was facing significant liquidity issues and significant uncertainty related to the fund-raising process and started a process of restructuring its organization. As a result of these elements, and considering the Group's subordinate position as shareholder, the Group remeasured the fair value of its investment to zero on December 31, 2021 and recognized a K€3,443 downward fair value adjustment in OCI for the year ended December 31, 2021.Essentium raised funds in 2022 and restructured. However, the company continued making losses and its liquidity position remained critical. The Group determined that the fair value of this equity investment remained zero at December 31, 2022.

Changes in useful life for certain assets

We review the useful life of our definite lived intangible assets and property, plant and equipment on an annual basis considering the current facts and circumstances available. The intangibles with indefinite useful lives are reviewed each annual reporting to determine whether events and circumstances continue to support an indefinite useful life.

Leases – estimating the discount rate and probability of exercising extension options/termination options and purchase options

The Group cannot always determine the interest rate implicit in the lease contract and therefore, the Group has to estimate the incremental borrowing rate to measure certain lease liabilities such as buildings. The Group uses for buildings the property yield as reference to determine the incremental borrowing rate. For other assets, the Group generally uses the interest rate implicit in the lease contract or applies the incremental borrowing rate for a portfolio of similar assets. The incremental borrowing rate reflects what the Group "would have to pay", which requires estimation when no observable rates are available or when they need to be adjusted to reflect the terms and conditions of the lease.

In addition, certain lease contracts may have extension options, termination options in case of property leases and/or purchase options in case of leases. The Group estimates whether it is reasonably certain or not, whether those options will be exercised or not, which impact the lease term in case of extension options and termination options and the period over which the lease assets are depreciated in case of purchase options.

4 Business Combinations

Acquisitions in 2022

Materialise Link3D

On April 9, 2021, the Group acquired an option to buy Link3D Inc. On November 15, 2021, Materialise provided notice to Link3D of its intention to exercise the option. The acquisition was completed on January 4, 2022. This acquisition was realized by the Group's U.S. subsidiary, Materialise USA, LLC by exercising our call option. As a result of this transaction, Materialise USA became the sole shareholder of Link3D. On January 4, 2022, the Group completed the acquisition and obtained control of Link3D Inc. Link3D is an additive workflow and digital manufacturing software company. The Group acquired 100% of voting equity interests in Link3D Inc. for a total cash consideration of K€26,747.

The acquisition of Link3D is expected to strengthen and accelerate the creation of the Materialise software platform, particularly for companies that are scaling up their additive manufacturing operations to volume production. By integrating Link3D's additive MES (Manufacturing Execution System) solution with the Materialise Magics software suite into a unified, cloud-based software platform, manufacturers will be able to run and continuously improve the most efficient, repeatable, automated and controlled processes to mass-produce identical or customized products. This process extends beyond the actual 3D printing operations and creates a closer alignment between 3D printing and conventional manufacturing, signaling the removal of the wall between both production environments.

On October 1, 2022, Link3D was merged into parent entity Materialise USA.

The fair value of the identifiable assets and liabilities at the date of acquisition was assessed at:

in 000€	Carrying value at acquisition date	Fair value adjust-ments	Fair value at acquisi-tion date
Assets			
Brands and trademarks	–	1,066	1,066
Software	–	6,892	6,892
IT, Furniture & Vehicles	21	–	21
Right-of-use assets	155	–	155
Deferred tax assets	2,149	121	2,270
Trade receivables	768	–	768
Other current assets	200	–	200
Cash & cash equivalents	1,135	–	1,135
Total Assets	**4,428**	**8,079**	**12,507**
Liabilities			
Long-term borrowings & Leases	(2,258)	–	(2,258)
Other non-current liabilities	–	–	–
Short-term borrowings & Leases	(1,926)	–	(1,926)
Deferred tax liability	–	(2,270)	(2,270)
Trade payables	(59)	–	(59)
Payroll-related payables	(1,012)	–	(1,012)
Deferred revenue	(1,286)	449	(837)
Other current liabilities	(649)	–	(649)
Total Liabilities	**(7,190)**	**(1,821)**	**(9,011)**
Total identified assets and liabilities	**(2,762)**	**6,258**	**3,496**
Goodwill	–	23,251	23,251
Acquisition price	**–**	**–**	**26,747**

The fair values of the identified assets and liabilities included in our consolidated financial statements at the acquisition date was K€3,496. The Group acquired 100% of voting equity interests in Link3D Inc. for a total consideration of K€26,747. This is the fair value of the identified assets and liabilities increased by a goodwill of K€23,251.

The goodwill recognized is primarily attributable to the trained and knowledgeable workforce and to the expected synergies that will be realized at the level of development, manufacturing and the existing customer base. The goodwill is not deductible for income tax purposes.

The accounting for the business combination resulted in fair values at date of acquisition of K€1,066 for Brands and trademarks (useful life of 1 year) and K€6,892 for software (useful life of 7 years). The valuation technique used to measure the fair value of brands and trademarks, as well as software, was the relief-from-royalty method. The relief-from-royalty method considers the discounted estimated royalty payments that the Group would be prepared to pay to license the respective asset under a contract if it did not own the asset. Key assumptions used in the application of this valuation technique include the forecasted year-on-year growth rate of revenue, the software royalty rate, the brands and trademarks royalty rate and the discount rate. A deferred tax liability was recognized of K€(2,270) on the adjusted fair values. The discount rate used for the valuation was set at 14.00%. The carrying value of the acquired receivables, the trade and other receivables approximate their fair value due to the short term character of these instruments. Trade receivables acquired comprised gross contractual amounts due of K€992, of which K€224 was expected to be uncollectible at the date of acquisition.

The Link3D revenue included in the consolidated financial statement between acquisition date of January 4, 2022 and merger date October 1, 2022 amounted to K€ 2,631. The amount of revenue between the merger date and December 31, 2022 was K€993. As integration within the Materialise Software segments started immediately it is impracticable to disclose information on profit.

There are no contingent considerations payable.

Materialise Identify3D

On September 1, 2022, the Group executed a share purchase agreement and acquired 100% of the shares of Identify3D, Inc. (“Identify3D” or “ID3D”) for a total cash consideration of K€3,853. The acquisition was realized by the Group’s U.S. subsidiary, Materialise USA, LLC.

With the acquisition of Identify3D the Group wants to address growing data security and integrity requirements and market interest, and to make CO-AM the most secure software platform for distributed manufacturing. This acquisition will allow manufacturers to secure the flow of digital parts and maintain a competitive advantage.

On December 31, 2022, Identify3D was merged into parent entity Materialise USA.

The fair value of the identifiable assets and liabilities at the date of acquisition was assessed at:

in 000€	**Carrying value at acquisition date**	**Fair value adjust-ments**	**Fair value at acquisi-tion date**
Assets			
Brands and trademarks	–	174	174
Software	–	1,723	1,723
Deferred tax assets	474	–	474
Cash & cash equivalents	172	–	172
Total Assets	**646**	**1,897**	**2,543**
Liabilities			
Long-term borrowings	(100)	–	(100)
Deferred tax liability	–	(474)	(474)
Trade payables	(44)	–	(44)
Payroll-related payables	(512)	–	(512)
Total Liabilities	**(656)**	**(474)**	**(1,130)**
Total identified assets and liabilities	**(10)**	**1,423**	**1,413**
Goodwill	–	2,439	2,439
Acquisition price	**–**	**–**	**3,853**

The fair values of the identified assets and liabilities included in our consolidated financial statements at the acquisition date was K€1,413. The Group acquired 100% of voting equity interests in ID3D Inc. for a total consideration of K€3,853. This is the fair value of the identified assets and liabilities increased by a goodwill of K€2,439.

The goodwill recognized is primarily attributable to the trained and knowledgeable workforce and to the expected synergies that will be realized at the level of development, manufacturing and the existing customer base. The goodwill is not deductible for income tax purposes.

The accounting for the business combination resulted in fair values at date of acquisition of K€174 for Brands and trademarks (useful life of 7 years) and K€1,723 for software (useful life of 7 years). The valuation technique used to measure the fair value of brands and trademarks, as well as software, was the relief-from-royalty method. The relief-from-royalty method considers the discounted estimated royalty payments that the Group would be prepared to pay to license the respective asset under a contract if it did not own the asset. Key assumptions used in the application of this valuation technique include the forecasted year-on-year growth rate of revenue, the software royalty rate, the brands and trademarks royalty rate and the discount rate. A deferred tax liability was recognized of K€(474) on the adjusted fair values. The discount rate used for the valuation was set at 14.05%. Trade receivables acquired comprised gross contractual amounts due of K€0.

The amount of revenue included in the consolidated financial statement between acquisition date of September 1, 2022 and the merger date of December 31, 2022 was K€ 0. As integration within the Materialise Software segments started immediately it is impracticable to disclose information on profit.

There are no contingent considerations payable.

Acquisitions in 2021

The Group did not effect any business combinations in the course of 2021.

Acquisitions in 2020

Materialise Motion

The Group executed a share purchase agreement dated November 9, 2020 and acquired the remaining 50% of the shares of Materialise Motion NV ("Materialise Motion", formerly RS Print) for a total purchase consideration in cash of K€5,220. The debt of previous owner of K€655 related to the called unpaid capital was transferred to the Group. Before this transaction, the Group already had a 50% interest in Materialise Motion. The fair value of the previously held equity method investment was valued at K€770. The corresponding gain was presented within net other operating income for the year ended December 31, 2020 (Note 22.6).

In determining the fair value of the previously held equity method investment, a strategic discount, a minority discount and a discount for lack of marketability were considered in relation to the consideration paid for this transaction.

Simultaneously with the share purchase agreement, Materialise Motion and RS Scan International NV ("RS Scan"), the former co-shareholder of Materialise Motion, entered into an asset purchase agreement regarding the acquisition by Materialise Motion of certain assets of RS Scan with closing date on 9 November 2020 for a total purchase consideration in cash of K€3,000.

Materialise Motion is a Belgian-based company that specializes in manufacturing of orthopaedic and medical insoles and the development and commercialization of hardware and software for foot pressure measurement.

The fair value of the identifiable assets and liabilities at the date of acquisition was assessed at:

in 000€	Carrying value at acquisition date	Fair value adjust-ments	Fair value at acquisi-tion date
Assets			
Developed technology	–	4,820	4,820
Customer relations	–	248	248
Other intangible assets	86	2,862	2,948
Property, plant & equipment	220	–	220
Right-of-use assets	24	–	24
Deferred tax assets	1,743	(46)	1,698
Other non-current financial assets	64	–	64
Inventory	794	265	1,059
Trade receivables	1,096	–	1,096

Other current assets	1,001	–	1,001
Cash & cash equivalents	189	–	189
Total Assets	**5,217**	**8,149**	**13,366**
Liabilities			
Deferred tax liabilities	–	(2,003)	(2,003)
Loans & borrowings	(1,877)	–	(1,877)
Lease liabilities	(24)	–	(24)
Trade payables	(645)	–	(645)
Payroll related payables	(85)	–	(85)
Other liabilities	(262)	–	(262)
Total Liabilities	**(2,893)**	**(2,003)**	**(4,896)**
Total identified assets and liabilities	**2,324**	**6,146**	**8,470**
Goodwill	–	1,175	1,175
Acquisition price	**–**	**–**	**9,645**

The cash flow from the business combination was as follows:

Cash & cash equivalents acquired	(189)
Acquisition price in cash RS Print shares	5,220
Acquisition price in cash RS Scan assets	3,000
Total cash flow	**8,031**

The fair values of the identifiable assets and liabilities included in our consolidated financial statements as of December 31, 2020 were provisional as the final valuation had not been completed by the date these consolidated financial statements were approved for issue by the board of directors. As of October 2021, we completed the fair value analysis of the Materialise Motion business combination, which resulted in corresponding adjustments to the goodwill, consolidated reserves and deferred tax assets and deferred tax liabilities. The fair value of the identified assets and liabilities was K€1,743 higher than the provisional value at date of acquisition, with a corresponding reduction in goodwill of K€1,743.

The accounting for the business combination resulted in fair values at date of acquisition of K€4,820 for developed technology based on the relief-from-royalty valuation method with royalty rates between 8.00% and 10.00% (useful life of 7 years), K€248 for customer relationships based on the multi-period excess earnings method (useful life of 15 years) and K€2,862 for contracts based on the multi-period excess earnings method (useful life of 7 years). A fair value adjustment was identified of K€265 for the inventory. At the same time, a deferred tax liability was recognized of K€(2,049) on these adjusted fair values. Upon the completion of the accounting for the business combination in 2021, the deferred tax assets were adjusted by K€1,743. The discount rate (post-tax WACC) used for the valuation was set at 15.80%. The carrying value of the acquired receivables, the trade and other receivables approximate their fair value due to the short term character of these instruments.

There are no contingent considerations payable.

The goodwill recognized is primarily attributable to the trained and knowledgeable workforce and to the expected synergies that will be realized at the level of development, manufacturing and the existing customer base. The goodwill is not deductible for income tax purposes.

5 Goodwill

The goodwill has been allocated to the cash generating units ("CGU") as follows:

	As of December 31,		
in 000€	2022	2021	2020
CGU: MAT Software	28,933	3,241	3,241
CGU: e-Prototypy	730	743	749
CGU: ACTech	8,812	8,812	8,812
CGU: OrthoView	4,505	4,755	4,445
CGU: MAT NV Manufacturing (Metal)	–	–	177
CGU: Engimplan	–	–	–
CGU: Materialise Motion	1,175	1,175	1,175
Total	**44,155**	**18,726**	**18,599**

The changes in the carrying value of the goodwill can be presented as follows for the years 20222022, 20212021 and 20202020:

in 000€	Gross	Impairment	Total
At January 1, 2020	**19,711**	**(104)**	**19,607**
Additions	1,175	–	1,175
Impairment	–	(1,367)	(1,367)
Currency translation	(816)	–	(816)
At December 31, 2020	**20,070**	**(1,471)**	**18,599**
Additions	–	–	–
Impairment	–	(177)	(177)
Currency translation	304	–	304
At December 31, 2021	**20,374**	**(1,648)**	**18,726**
Additions	25,691	–	25,691
Impairment	–	–	–
Currency translation	(263)	–	(263)
At December 31, 2022	**45,802**	**(1,648)**	**44,155**

The goodwill of Orthoview (UK) and e-Prototypy (PL) include respectively K€(250) and K€(13) impact of currency translation in 2022.

The Group has performed an impairment test for all CGUs, estimating the Value-in-Use based on a discounted cash flow model with cash flows for the next five years derived from the budget and a residual value considering a perpetual growth rate. The MAT Software CGU is included in the reportable segment "Materialise Software". The CGUs ACTech, e-Prototypy (PL), MAT NV Manufacturing (Metal) and Materialise Motion are included in the reportable segment "Materialise Manufacturing". The CGUs Orthoview (UK) and Engimplan (BR) are included in the reportable segment "Materialise Medical".

CGU: MAT Software

The goodwill allocated to the CGU MAT software relates to the goodwill from the acquisition of Cenat in 2015, the goodwill related to the acquisition of Marcam in 2011 (DE-3D Printing Software), the goodwill from the acquisition of Link3D in 2022 and the goodwill from the acquisition of Identify3D in 2022.

The impairment test is based on the discounted cash flows resulting from the CGU MAT Software, considering a period of five years. The main assumptions for goodwill impairment testing include a discount rate (based on WACC) of 9.67% (11.04% pre-tax) and a perpetual growth rate of 5%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which has been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€43,002. Based on the sensitivity analyses performed by the Group, including analyses whereby the discount rate would increase by 100 basis points or the perpetual growth rate would be zero, there are no reasonably possible changes in assumptions that would reduce the value in use below the carrying value of the cash generating unit.

CGU e-Prototypy

The goodwill relates to the acquisition of the Polish entity e-Prototypy . The impairment test on the CGU e-Prototypy is based on the discounted cash flows considering a period of five years. The main assumptions include a discount rate (based on WACC) of 12.72% (14.52% pre-tax) and a perpetual growth rate of 2%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which has been determined by management based on past experience and continued investments in capex in new 3D printing equipment. It was concluded that the value in use is significantly higher than the carrying value of the cash generating unit of K€3,558. Based on the sensitivity analyses performed by the Group, including analyses whereby the discount rate would increase by 100 basis points or the perpetual growth rate would be zero, there are no reasonably possible changes in assumptions that would reduce the value in use below the carrying value of the cash generating unit.

CGU ACTECH

The impairment test on the CGU ACTech is based on the discounted cash flows, considering a period of five years. The main assumptions include a discount rate (based on WACC) of 8.04% (11.24% pre-tax) and a perpetual growth rate of 1%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€25,507. Based on the sensitivity analyses performed by the Group, including analyses whereby the discount rate would increase by 100 basis points or the perpetual growth rate would be zero, there are no reasonably possible changes in assumptions that would reduce the value in use below the carrying value of the cash generating unit.

CGU Orthoview

The goodwill relates to the acquisition of Orthoview. The impairment test on the CGU Orthoview is based on the discounted cash flows considering a period of 5 years. The main assumptions include a discount rate (based on WACC) of 10.27% (13.14% pre-tax) and a perpetual growth rate of 1%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€12,626. Based on the sensitivity analyses performed by the Group, including analyses whereby the discount rate would increase by 100 basis points or the perpetual growth rate would be zero, there are no reasonably possible changes in assumptions that would reduce the value in use below the carrying value of the cash generating unit.

The Orthoview business is integrated in the existing software business within our Materialise Medical segment. Synergies that are expected from joined product lines are not taken into account in the current impairment review as management believes that Orthoview can be considered a separate cash generating unit.

CGU MAT NV Manufacturing Metal (Aldema)

The goodwill related to the acquisition of the Belgian entity Aldema BV in 2015, classified under the CGU Metal Prodution in Belgium. With the Materialise Metal Competence Center established in Bremen, Germany, the Group determined in 2021 that this goodwill balance was fully impaired, resulting in the recognition of a K€177 impairment loss in 2021.

CGU Engimplan

The impairment test on the CGU Engimplan is based on the discounted cash flows, considering a period of 5 years. The main assumptions include a discount rate (based on WACC) of 19.84% (22.51% pre-tax) and a perpetual growth rate of 8.5%, supported by an expected long term inflation rate of 5%, continued growth opportunities from the increase of the standard of living in Brazil (including access to medical and health care insurances), a growing population in Brazil and export opportunities in Latin America. Other key assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by both local and Group management based on past experience. At December 31, 2020, the Group recorded a full impairment of the goodwill of K€1,367 as well as a partial impairment on customer lists and trade marks for respectively K€942 and K€207. The impairment test at December 31, 2022, did not indicate the need for a further impairment nor for a reversal of the previously recorded impairment charges. Based on the sensitivity analysis performed by the Group whereby the perpetual growth rate would decrease by 100 basis points, the value in use would be K€361 below the carrying value of the cash generating unit. A perpetual growth rate increase of 100 basis points would bring the value in use K€426 above the carrying value. Based on the sensitivity analysis performed by the Group whereby the discount rate would increase by 100 basis points, the value in use would be K€563 below the carrying value of the cash generating unit. A discount rate decrease by 100 basis points would bring the value in use K€671 above the carrying value.

CGU Materialise Motion

The impairment test on the CGU Materialise Motion is based on the discounted cash flows, considering a period of five years. The main assumptions include a discount rate (based on WACC) of 9.67% (10.92% pre-tax) and a perpetual growth rate of 5%. Other assumptions include the year-on-year growth rate of the revenue, gross margin and the operating costs which have been determined by management based on past experience. It was concluded that the value in use is higher than the carrying value of the cash generating unit of K€6,187. Based on the sensitivity analyses performed by the Group, including analyses whereby the discount rate would increase by 100 basis points or the perpetual growth rate would be zero, there are no reasonably possible changes in assumptions that would reduce the value in use below the carrying value of the cash generating unit.

6 Intangible assets

The changes in the carrying value of the intangible assets can be presented as follows for the years 2022, 2021 and 2020:

in 000€	Patents and licenses	Software	Acquired customers, technology and order backlog	Developed technology and software under construction	Total
Acquisition value					
At January 1, 2020	**4,436**	**10,667**	**28,681**	**1,652**	**45,436**
Additions	378	3,072	–	3,168	6,618
Acquisition of a subsidiary	–	–	7,931	86	8,017
Disposals	(226)	(2,227)	–	(68)	(2,521)
Transfer between accounts	75	47	–	(180)	(58)
Currency translation	(1)	(65)	(1,128)	–	(1,194)
Other	–	–	–	–	–
At December 31, 2020	**4,662**	**11,494**	**35,484**	**4,658**	**56,298**
Additions	660	70	–	3,058	3,788
Acquisition of a subsidiary	–	–	–	–	–
Disposals	(153)	(23)	–	(65)	(242)
Transfer between accounts	272	162	2	(496)	(60)
Currency translation	1	6	386	–	393
Other	–	–	–	–	–
At December 31, 2021	**5,442**	**11,709**	**35,872**	**7,155**	**60,177**
Additions	362	184	–	2,619	3,165
Acquisition of a subsidiary	1,241	–	8,613	–	9,855
Disposals	(267)	(1,142)	–	–	(1,409)
Transfer between accounts	137	1,908	–	(1,248)	797
Currency translation	(1)	20	(54)	1	(33)
Other	–	–	–	–	–
At December 31, 2022	**6,915**	**12,679**	**44,431**	**8,527**	**72,552**

in 000€	Patents and licenses	Software	Acquired customers, technology and order backlog	Developed technology and software under construction	Total
Amortization & Impairments					
At January 1, 2020	**(2,798)**	**(7,740)**	**(7,503)**	**–**	**(18,041)**
Amortization charge for the year	(465)	(2,223)	(2,021)	–	(4,709)
Impairments	–	–	(1,149)	(2,090)	(3,239)
Disposals	211	2,119	–	(22)	2,308
Transfer between accounts	–	109	–	–	109
Currency translation	1	14	240	–	255
Other	–	–	–	–	–
At December 31, 2020	**(3,051)**	**(7,721)**	**(10,433)**	**(2,112)**	**(23,317)**
Amortization charge for the year	(392)	(1,831)	(2,523)	–	(4,746)
Impairments	–	(231)	–	–	(231)
Disposals	107	23	–	–	131
Transfer between accounts	(1)	(33)	(0)	22	(12)
Currency translation	(1)	(5)	(287)	–	(293)
Other	–	(41)	–	–	(41)
At December 31, 2021	**(3,337)**	**(9,839)**	**(13,244)**	**(2,090)**	**(28,510)**
Amortization charge for the year	(1,729)	(1,416)	(3,780)	–	(6,926)
Impairments	(29)	(672)	–	–	(702)
Disposals	267	1,142	–	–	1,408
Transfer between accounts	–	–	–	–	–
Currency translation	0	(15)	67	–	52
Other	–	–	–	–	–
At December 31, 2022	**(4,829)**	**(10,799)**	**(16,957)**	**(2,090)**	**(34,676)**
Net carrying value					
At December 31, 2022	2,086	1,879	27,474	6,437	37,875
At December 31, 2021	2,105	1,869	22,628	5,065	31,668
At December 31, 2020	1,611	3,773	25,051	2,546	32,981
At January 1, 2020	1,638	2,927	21,178	1,652	27,395

Patent and licenses include only the directly attributable external costs incurred in registering the patent and obtaining the license. Software relates to purchased software for internal use and in-house developed technology. The remaining amortization period is 1.3 years for the main software purchases and 2.6 years for the main patents and licenses.

The 'Acquired customers, technology and other intangibles' have been recognized as part of the acquisition of Materialise Motion, Engimplan, ACTech, E-Prototypy, OrthoView, Cenat, Link3D and Identify3D (see Note 4). At December 31, 2022, the remaining amortization period for the acquired customers is 12.83 years for Materialise Motion, 6.58 years for Engimplan, 14.75 years for ACTech, 1.75 years for OrthoView, fully amortized for E-Prototypy and 2.25 years for Cenat . At December 31, 2022, the remaining amortization period for the acquired technology and contracts is 4.83 years for Materialise Motion, 6.00 years for Link3D and 6.67 years for Identify3D.

The net book value of developed technology and software under construction at December 31, 2022 relates primarily to the internal digitalization program.

The total amortization charge for 2022 is K€6,926 (2021: K€4,746; 2020: K€4,709). The amortization of intangible assets from business combinations is mainly included in the line net operating income of the consolidated income statement.

7 Property, plant & equipment

The changes in the carrying value of the property, plant & equipment can be presented as follows for the year 2022, 2021 and 2020:

in 000€	Land and buildings	Plant and equipment	Right-of-use assets	Construction in progress	Total
Acquisition value					
At January 1, 2020	**42,893**	**89,078**	**21,646**	**4,414**	**158,031**
Additions	256	2,600	4,567	8,175	15,598
Acquired from business combinations	–	220	24	–	244
Disposals	–	(2,953)	(1,657)	(38)	(4,648)
Transfers	(15)	7,961	(4,010)	(3,886)	50
Currency Translation	(717)	(2,486)	(423)	(26)	(3,652)
At December 31, 2020	**42,417**	**94,420**	**20,147**	**8,639**	**165,623**
Additions	462	5,259	2,397	2,213	10,331
Disposals	–	(3,682)	(1,191)	(779)	(5,652)
Transfers	4,099	6,673	(1,249)	(8,296)	1,227
Currency Translation	183	598	103	4	888
At December 31, 2021	**47,161**	**103,268**	**20,207**	**1,781**	**172,417**
Additions	773	3,555	2,871	17,280	24,479
Acquired from business combinations	–	62	155	–	217
Disposals	(18)	(4,227)	(1,293)	(38)	(5,576)
Transfers	5	3,167	(329)	(3,060)	(217)
Currency Translation	38	52	8	(8)	90
At December 31, 2022	**47,959**	**105,877**	**21,619**	**15,955**	**191,410**
Depreciation					
At January 1, 2020	**(6,839)**	**(38,540)**	**(11,060)**	**–**	**(56,439)**
Depreciation charge for the year	(1,223)	(10,205)	(3,504)	–	(14,932)
Disposals	–	2,632	1,518	–	4,150
Transfers	(11)	(3,961)	3,810	–	(162)
Currency Translation	66	872	85	–	1,023
At December 31, 2020	**(8,007)**	**(49,202)**	**(9,151)**	**–**	**(66,360)**
Depreciation charge for the year	(1,344)	(10,590)	(3,640)	–	(15,574)
Disposals	–	3,594	1,166	–	4,760
Transfers	(143)	(1,595)	515	–	(1,223)
Currency Translation	(92)	(380)	(41)	–	(513)
At December 31, 2021	**(9,586)**	**(58,173)**	**(11,151)**	**–**	**(78,910)**
Depreciation charge for the year	(1,416)	(10,222)	(3,302)	–	(14,940)
Disposals	–	3,898	1,203	–	5,101
Transfers	–	–	–	–	–
Currency Translation	(43)	27	51	–	35
At December 31, 2022	**(11,045)**	**(64,470)**	**(13,199)**	**–**	**(88,714)**
Net book value					
At December 31, 2022	36,914	41,407	8,420	15,955	102,696
At December 31, 2021	37,575	45,095	9,056	1,781	93,507
At December 31, 2020	34,410	45,218	10,996	8,639	99,263
At January 1, 2020	36,054	50,538	10,586	4,414	101,592

The investments in property, plant & equipment and right-of-use assets in 2022 amounted to K€24,479 (2021:K€10,331). They are related to land and buildings (K€13,985), new machines and installations (K€7,903), IT equipment (K€1,275), (leased) vehicles (K€971) and furniture (K€343). The additions to land and buildings, machines and installations in 2022 related mainly to our new metal production facility in the USA and the extension of our production capacity in Germany. The investments in 2021 related to new machines and installations (K€3,635), land and buildings (K€2,224), IT equipment (K€2,126) and leased vehicles (K€769). The investments in 2020 related to new machines and installations (K€5,011), land and buildings (K€7,580), IT equipment (K€1,056) and leased vehicles (K€1,714).

The Group realized a net loss on disposal of property, plant and equipment of K€347 in 2022 (2021: a net loss of K€210; 2020: a net loss of K€10).

No impairment of property, plant and equipment was recorded in 2022, 2021 and 2020.

The transfers in 2022 within property, plant and equipment from construction in progress towards Land & Buildings and Plant & Equipment of K€3,060 are mainly related to the new printers in Belgium.

Assets under construction

Per December 31, 2022 the main assets under construction were related to our new metal production facility in USA for an amount of K€7,332 and the extension of capacity in Germany for K€7,850.

The right of use assets can be presented as follows:

The carrying value of Right-of-Use assets at December 31, 2022 was K€8,420 (2021: K€9,054; 2020: K€10,996). Right-of-Use assets are mainly related to buildings with a carrying value of K€4,822 at December 31, 2022 (2021: K€4,419; 2020: K€4,917) and for which depreciation of K€1,663 was recorded in 2022 (2021: K€1,794; 2020: K€1,620). New leases in 2022 amount to K€2,871 of which K€1,934 related to leased buildings (2021: K€1,624; 2020: K€2,397).

in 000€	Buildings	Vehicles	Equipment	Total
Acquisition value				
At January 1, 2021	**7,574**	**4,555**	**8,018**	**20,147**
Additions	1,624	710	62	2,396
Disposals	(1,022)	(268)	(281)	(1,571)
Currency Translation	96	3	3	102
Transfers	(151)	(112)	(605)	(868)
At December 31, 2021	**8,121**	**4,888**	**7,197**	**20,206**
Additions	1,934	877	60	2,871
Acquired from business combinations	155	–	–	155
Disposals	(546)	(680)	(65)	(1,291)
Currency Translation	11	2	(5)	8
Transfers	(284)	(407)	(782)	(1,473)
At December 31, 2022	**9,391**	**4,680**	**6,405**	**20,476**
Depreciation				
At January 1, 2021	**(2,657)**	**(1,891)**	**(4,603)**	**(9,151)**
Depreciation charge for the year	(1,794)	(1,236)	(610)	(3,640)
Disposals	639	257	270	1,166
Currency Translation	(41)	(2)	2	(41)
Transfers	151	74	289	514
At December 31, 2021	**(3,702)**	**(2,798)**	**(4,652)**	**(11,152)**
Depreciation charge for the year	(1,663)	(1,188)	(455)	(3,306)
Disposals	467	671	65	1,203
Currency Translation	47	(2)	6	51
Transfers	283	407	458	1,148
At December 31, 2022	**(4,569)**	**(2,909)**	**(4,578)**	**(12,055)**
Net book value				
At December 31, 2022	4,822	1,771	1,827	8,420
At January 1, 2022	4,419	2,090	2,545	9,054

The following amounts related to leases are recognized in profit & loss

(in 000€)	2022
Depreciation expense	(3,306)
Interest expense on lease liabilities	304
Expenses related to short-term leases/ low-value assets/ variable lease payments	645

The Group has negotiated several contracts with extension and termination options because of common practice in the country or for the asset. Management has exercised significant judgments in determining whether these extension and termination options are reasonably certain to be exercised. The potential future cash flows beyond the period following the exercise of the extension and termination option that are not included in the lease term are presented in the following table:

(in 000€)	2022
Potential (non-discounted) cash flows for terminations options that are not reasonably certain to be exercised:	1,430
Potential (non-discounted) cash flows for extensions options that are reasonably certain to be exercised	1,571

Pledges

Land and buildings (including buildings under construction) with a carrying amount of K€22,696 (2021: K€24,451; 2020: K€25,364) are subject to pledges to secure several of the Group's bank loans. In addition, pledges have been given on machines with a total carrying amount of K€864 (2021: K€1,131; 2020: K€2,274) (Note 24).

8 Investments in joint ventures

As at December 31, 2022, Materialise has no investments in joint ventures.

The changes in the carrying value of the joint ventures can be presented as follow for the years 2022, 2021 and 2020:

in 000€	
Carrying value as of January 1, 2020	**39**
Additional investment	–
Transfer from receivables	–
Share in loss	(39)
Gain from remeasurement previously held equity method investment at fair value	770
Accounted for as Business Combination	(770)
Carrying value as of December 31, 2020	**–**
Additional investment	–
Carrying value as of December 31, 2021	**–**
Additional investment	–
Carrying value as of December 31, 2022	**–**

9 Inventories and contracts in progress

Inventories and contracts in progress include the following:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Raw materials	7,975	6,246	4,974
Work in progress	4,626	2,383	1,766
Finished goods	2,837	2,171	2,554
Contracts in progress	643	495	749
Total inventories and contracts in progress	**16,081**	**11,295**	**10,043**

Inventory written-off on the balance sheet amounted to K€1,473 for the year ended December 31, 2021 (20212021: K€1,196K€1,196; 20202020: K€567K€567). The expenses are recorded in Cost of Sales.

The Group has contracts in progress and advances from customers. The total costs incurred is K€620 and the profit recognized is K€23 as of December 31, 2022. Advances were received for the amount of K€60 with respect to contracts in progress per end of 2022 (2021: K€11; 2020: K€146).

10 Other assets

Other non-current assets

Other non-current assets include the following:

Investments in convertible loans	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Convertible loan	3,494	3,560	6,203
Total	**3,494**	**3,560**	**6,203**

The Group granted a convertible loan to Fluidda in January 2019, with a notional amount of K€2,500. The convertible loan is accounted for as a financial asset measured at fair value with changes in fair value through the income statement. The carrying value of the convertible loan amounts to K€3,494 at December 31, 2022. The convertible loan has a duration of 7 years with a 10% annual interest rate which is capitalized. We refer to Note 3 and Note 20.

Investments in non-listed equity instruments	**As of December 31,**		
in 000€	**2022**	**2021**	**2020**
Non-listed equity investments	307	399	3,842
Total	**307**	**399**	**3,842**

At December 31, 2022, the Group remeasured the fair value of its investment in African Drive NV to zero, recognizing a K€92 fair value adjustment in other comprehensive income. We refer to Note 3 and Note 20

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At December 31, 2021, the Group remeasured the fair value of its equity investment in Essentium, Inc. to zero, recognizing a K€3,443 fair value adjustment in other comprehensive income. We refer to Note 3 and Note 20.

In addition, Materialise continues to hold an equity investment in AM Danube BV (holding company for AM Flow Holding BV), which had a fair value of K€307 at December 31, 2022. We also refer to Note 3 and Note 20.

Other non-current assets	**As of December 31,**		
in 000€	**2022**	**2021**	**2020**
Tax credits	4,144	4,044	3,381
Guarantees and deposits	404	447	528
Loan to Link3D incl capitalized interest	–	2,249	–
LT deferred charges	–	741	–
Other	588	38	184
Total	**5,136**	**7,519**	**4,093**

The non-current tax credits mainly relate to Belgian R&D tax credits, recoverable between 2024 and 2028.

Other current assets

Other current assets include the following:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Deferred charges	4,158	2,958	2,841
Tax credits	962	673	1,243
Accrued income	17	384	260
Other tax receivables	1,004	1,459	1,125
Grants	944	1,021	1,181
Other non-trade receivables	1,077	675	1,617
Derivatives	261	1,770	23
Total other current assets	**8,424**	**8,940**	**8,290**

The other tax receivables included Value Added Tax (VAT) receivables and corporate tax receivables. The other non-trade receivables as of December 31, 20222022 included a commercial indemnity fee of € 0.5 million.

11 Trade receivables

The trade receivables include the following:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Trade receivables	51,443	42,814	32,346
Allowance for doubtful accounts	(400)	(1,273)	(1,475)
Total	**51,043**	**41,541**	**30,871**

Trade receivables are non-interest bearing and are generally on payment terms of 30 to 90 days.

As of December 31, 2022, trade receivables of an initial value of K€400 (2021: K€1,273; 2020: K€1,475) were considered to be not probable of recovery, based on the expected credit loss analysis. Impairment is accounted for under the other operating expenses. See below for changes in the impairment of receivables.

in 000€	
At January 1, 2020	**(1,532)**
Addition	(852)
Usage	301
Reversal	608
At December 31, 2020	**(1,475)**
Addition	(689)
Usage	259
Reversal	632
At December 31, 2021	**(1,273)**
Addition	(517)
Usage	483
Reversal	906
At December 31, 2022	**(400)**

12 Cash and cash equivalents

Cash and cash equivalents include the following:

	As of December 31,		
in 000€	2022	2021	2020
Cash at bank	26,028	192,895	108,399
Cash equivalents	114,839	3,133	3,139
Total	**140,867**	**196,028**	**111,538**

For the year ended December 31, 2022, cash at banks in euro earned a negative interest (K€285), based on floating interest rates. Cash at banks in other currencies earns interest at floating rates based on daily bank deposit rates. Cash equivalents included deposits of one week (€ 106 million of which € 105 million in Belgium) and overnight deposits (€ 9 million), and earn interest at the respective short-term deposit rates.

There were no cash balances on a restricted bank account per December 31, 2022, 2021 or 2020.

13 Equity

Share capital

The share capital of the parent company Materialise NV consists of 59,067,186 ordinary nominative shares at December 31, 20222022 (20212021: 59,063,521; 20202020: 54,169,257) with no nominal but par value of €0.076 in 20222022 (20212021:€0.076; 20202020: €0.076) for a total amount of K€4,487 at December 31, 20222022 (20212021:K€4,489; 20202020:K€4,096).

in 000€, except share data	Total number of ordinary shares	Total shareholders' capital	Total share premium
Outstanding at January 1, 2020	**53,172,513**	**3,066**	**138,090**
Capital increase through exercise of warrants	487,840	30	3,082
Capital increase through exercise of convertible bonds	508,904	1,000	–
Equity settled share-based payments expense	–	–	103
Merger with Ailanthus NV	13,428,688	1,862	–
Cancellation treasury shares (Ailanthus NV)	(13,428,688)	(1,862)	–
Outstanding on December 31, 2020	**54,169,257**	**4,096**	**141,275**
Capital increase through exercise of warrants	294,264	22	2,322
Capital increase through public offering	4,600,000	371	90,235
Equity settled share-based payments expense	–	–	41
Outstanding on December 31, 2021	**59,063,521**	**4,489**	**233,872**
Capital increase through exercise of warrants	3,665	(2)	22
Equity settled share-based payments expense	–	–	–
Outstanding on December 31, 2022	**59,067,186**	**4,487**	**233,895**

The shareholders' capital increased by K€0 in 2022 as a result of the exercise of warrants outstanding and fully vested. The number of new shares issued was 3,665 at an average price of €5.5 per share, including share premium.

Share premium

In Belgium, the portion of the capital increase in excess of par value is typically allocated to share premium.

The carrying value of the share premium is K€233,895 at December 31, 2022 (2021: K€233,872; 20202020: K€141,275). The change in 2022 is the result of the capital increase via exercise of warrants of K€22.

The change in 2021 is the result of the share-based payment of K€41, the capital increase via exercise of warrants of K€2,322 and the capital increase via public offering of K€90,235. The change in 2020 is the result of the share-based payment expense of K€103 and the capital increase via exercise of warrants of K€3,082.

Other reserves

The nature and purpose of the other reserves is as follows:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Legal reserve	279	279	279
Other reserves	1,987	1,987	2,574
Equity-settled share-based payment expense	72	72	72
Other Comprehensive Income (loss)	(10,606)	(9,087)	(7,796)
Other reserves	**(8,268)**	**(6,749)**	**(4,871)**

Based on the statutory result and after final result allocation approved by the annual shareholders meeting the legal reserve is increased by reserving 5% of the yearly statutory profit until the legal reserve reaches at least 10% of the shareholders' capital. The legal reserve cannot be distributed to the shareholders.

The Group did not pay any dividend during 20222022, 20212021 and 20202020.

Other comprehensive loss

Other comprehensive loss consists of the following:

in '000€	**Currency Translation Differences & Other**	**Fair value adjustment equity investments**	**Total OCI attributable to the shareholder**
At January 1, 2020	**(1,394)**	**–**	**(1,394)**
Currency translation impact	(6,025)	–	(6,025)
Fair value adjustment	–	489	489
Acquisition non-controlling interest - OCI	(866)	–	(866)
At December 31, 2020	**(8,285)**	**489**	**(7,796)**
Currency translation impact	2,152	–	2,152
Fair value adjustment	–	(3,443)	(3,443)
At December 31, 2021	**(6,133)**	**(2,954)**	**(9,087)**
Currency translation impact	(1,427)	–	(1,427)
Fair value adjustment	–	(92)	(92)
At December 31, 2022	**(7,560)**	**(3,046)**	**(10,606)**

Non-controlling interest

As of December 1, 2020, Materialise acquired the remaining 25% non-controlling interest held by a third party in Engimplan in return for the Spine business line. The non-controlling interest with a carrying amount of K2,213 was derecognized.

As of June 22, 2021, the Group, together with Zhenyuan (Tianjin) Medical Appliances Technology Co., Ltd., incorporated a new subsidiary with the name Tianjin Zhenyuan Materialise Medical Technology Limited Company. This entity will be responsible for all regulatory requirements regarding the Materialise Mimics Enlight Lung Software on the Chinese market. Both Materialise and Zhenyuan will work on development and distribution, in a collaborating manner. Materialise holds 51% of the shares, Zhenyuan 49%. In 2021, in respect of this majority-owned subsidiary, a non-controlling interest has been recognized, which had a carrying value of K€1 at December 31, 2021 and K€(28) at December 31, 2022.

14 Share-based payment plans

Share-based payment plans of the parent

The changes of the year for the warrant plans are as follows:

	2022	2021	2020
Outstanding at January 1	**82,950**	**407,722**	**965,052**
Granted	–	–	–
Forfeited / Cancelled	(1,576)	(7,193)	(41,443)
Exercised	(3,665)	(317,579)	(515,887)
Outstanding at December 31	**77,709**	**82,950**	**407,722**
Exercisable at December 31	**77,709**	**78,405**	**123,305**

The Group's share-based payment plans are all equity-settled except for the IPO warrants that have been granted to certain employees in certain countries due to legal requirements which are cash-settled. The outstanding amount includes stock appreciation rights ("SARs") issued under cash-settled share-based payment plans.

The number of outstanding warrants has been adjusted to reflect the 1-to-4 stock split decided in June 2014. The 2013 warrant plan gives a right to four shares for each warrant, whereas under all other warrant plans one warrant gives a right to one share. For presentation purposes the tables reflect the number of shares the warrants give right to across all plans.

Equity-settled share-based payment plans

The Group has several plans in place (2013 warrant plan, IPO warrant plan and 2015 warrant plan) which have similar terms except for the exercise price, except for the 2015 warrant plan.

2013 warrant plan

Each warrant gave the right to the holder to four ordinary shares of the parent Company. The warrants had a contractual term of ten years and vested for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year; and 25% in the seventh year. Warrants were exercisable as from the month after they had vested and in the subsequent exercise periods. There were no cash settlement alternatives and the Group did not have a practice of cash settlement for these warrants. The warrants had a contractual term of ten years.

Under the 2013 warrant plan 301,096 warrants were effectively granted in October 2013 and 166,800 warrants were granted to certain employees and to certain members of our board of directors and senior management on November 28, 2013 with an exercise price ranging from €7.86 to €8.54.

The status of the 2013 warrant plan at December 31 is as follows:

	2022	2021	2020
Outstanding at January 1	**–**	**–**	**118,376**
Granted	–	–	–
Forfeited / Cancelled	–	–	(1,875)
Exercised	–	–	(116,501)
Outstanding at December 31	**–**	**–**	**–**
Exercisable at December 31	**–**	**–**	**–**

No warrants remained outstanding under the 2013 warrant plan at December 31, 2022.

IPO warrant plan

Each warrant gives the right to the holder to one ordinary share of the parent Company. The warrants have a contractual term of 10 years and vest for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year and 25% in the seventh year. Warrants are exercisable as from the month after they have vested and in the subsequent exercise periods. There are no cash settlement alternatives and the Group does not have a practice of cash settlement for these warrants. The warrants have a contractual term of 10 years.

The Group granted 979,898 warrants in July 2014 and 36,151 warrants in November 2014 in the context of the initial public offering to the employees of the Group with an exercise price of €8.81 ("IPO warrant plan"). The Group granted an additional 18,180 warrants to employees in July 2015 under the IPO warrant plan.

The status of the IPO warrant plan at December 31 is as follows:

	2022	2021	2020
Outstanding at January 1	**53,590**	**236,726**	**465,212**
Granted	–	–	–
Forfeited / Cancelled	(944)	(3,372)	(27,247)
Exercised	(865)	(179,764)	(201,239)
Outstanding at December 31	**51,781**	**53,590**	**236,726**
Exercisable at December 31	**51,781**	**49,045**	**95,575**

With respect to the warrants exercised in 2022, a total of 865 warrants representing 865 shares were exercised in the last quarter. The share price at exercise date was $8.57.

Warrant plan 2015

The board of directors decided on December 18, 2015 on a new plan ("2015 warrant plan") by which it can grant up to 1,400,000 warrants to employees. Each warrant gives the right to the holder to one ordinary share of the parent Company. The warrants vest for 10% on the second anniversary of the granting; 20% on the third anniversary of the granting; 30% on the fourth anniversary of the granting; and 40% on the fifth anniversary of the granting, unless otherwise decided by the board of directors or one or more of its representatives granted powers thereto. Warrants are exercisable only after they have vested and only during a period of (i) four weeks following the publication of the results of the parent Company of the second and fourth quarter, or (ii) if no quarterly results are published, during the month March and the month September of every year. There are no cash settlement alternatives and the Group does not have a practice of cash settlement for these warrants. The warrants have a term of ten years.

The Group granted 350,000 warrants in July 2016 to the employees of the Group with an exercise price of €6.45. The Group granted 2,000 warrants to an employee in May 2018 with an exercise price of €10.08.

The status of the 2015 warrant plan at December 31 is as follows:

	2022	2021	2020
Outstanding at January 1	**17,400**	**133,900**	**310,400**
Granted	–	–	–
Forfeited / Cancelled	–	(2,000)	(6,400)
Exercised	(2,800)	(114,500)	(170,100)
Outstanding at December 31	**14,600**	**17,400**	**133,900**
Exercisable at December 31	**14,600**	**17,400**	**15,100**

With respect to the warrants exercised in 2022, a total of 2,800 warrants representing 2,800 shares were exercised. The share price at exercise date was $8.57.

Fair value

The fair value of the warrants is estimated at the grant date using the Black-Scholes option pricing model, taking into account the terms and conditions upon which the warrants were granted.

The following table provides the input to the Black-Scholes model for the 2013 warrant plan, IPO warrant plan and 2015 warrant plan:

	2015 (Sept 16)	2015 (Nov)	IPO 2014 (Nov)	IPO 2014 (June)	2013 (Dec) *	2013 (Oct) *
Return dividend	0%	0%	0%	0%	0%	0%
Expected volatility	47%	47%	50%	46%	50%	53%
Risk-free interest rate	0.24%	1.17%	1.12%	1.70%	2.56%	2.43%
Expected life	4.30	5.50	5.50	5.50	5.50	5.50
Exercise price (in €)	6.45	8.81	8.81	8.81	8.54	7.86
Stock price (in €)	6.42	8.08	8.67	8.81	18.09	18.09
Fair value warrant (in €)	2.41	3.30	3.94	3.83	12.23	12.77

(*) Exercise price, stock price and fair value are not adjusted for the 1 to 4 stock-split completed in June 2014.

The above input for the Black-Scholes model have been determined based on the following:

- The dividend return is estimated by reference to the historical dividend payments of the Group. Currently, this is estimated to be zero as no dividends have been paid since inception;
- Expected volatility is estimated based on the average annualized volatility of the volatility of the Group's stock (until September 2016: of a number of quoted peers in the 3D printing industry and the volatility of the Group's stock);
- Risk-free interest rate is based on the interest rate applicable for the 10Y Belgian government bond at the grant date;
- Estimated life of the warrant is determined to be until the first exercise period which is typically the month after vesting; and
- Fair value of the shares is determined based on the share price of the Group on Nasdaq at the date of valuation. For the grants prior to the initial public offering, the fair value of the shares was estimated based on a discounted cash flow model with 3-year cash flow projections and a multiple of EBITDA determined based on a number of quoted peers in the 3D printing industry.

The expense arising from share-based payment transactions for the warrant plans mentioned above was K€0 in 2022 (2021: K€41; 2020: K€102)

The weighted average remaining estimated life of the warrants outstanding as of December 31, 2022 is 2.09 years (2021: 3.13 years; 2020: 4.31 years). The weighted average fair value for the warrants outstanding at the end of 2022 was €3.41 (2021: €3.39; 2020: €3.29). The weighted average exercise price for the warrants outstanding at the end of 2022 was €8.12 (2021: €8.07; 2020: €7.92).

Cash-settled share-based payment plans

The Group has issued 215,688 SARs in July 2014 towards certain employees in certain countries due to legal requirements with similar terms and conditions as the IPO warrant plan except that the SAR will be settled in cash. The exercise price of the SAR is €8.81.

The status of this plan is as follows:

	2022	2021	2020
Outstanding at January 1	**11,960**	**37,096**	**71,064**
Granted	–	–	–
Forfeited / Cancelled	(632)	(1,821)	(5,921)
Exercised	–	(23,315)	(28,047)
Outstanding at December 31	**11,328**	**11,960**	**37,096**
Exercisable at December 31	**11,328**	**11,960**	**12,630**

The SAR plan grants the bearer the right to a cash payment equal to the difference between the exercise price and the stock price at the exercise date. This plan is considered a cash settled share based payment and is as such recorded as a liability (see Note 16).

The SARs have a contractual term of ten years and vest for 25% in the fourth year; 25% in the fifth year; 25% in the sixth year and 25% in the seventh year. SARs are exercisable as from the month after they have vested and in the subsequent exercise periods.

The fair value of the SAR is estimated at each reporting date using the Black-Scholes option pricing model, taking into account the terms and conditions upon which the warrants were granted.

The following table lists the input used for the Black-Scholes model:

	2022	2021	2020
Return dividend	0%	0%	0%
Expected volatility	60%	80%	84%
Risk-free interest rate	3.20%	0.18%	-0.34%
Expected life	0.25	0.25	0.25
Exercise price (in €)	8.81	8.81	8.81
Stock price (in €)	8.25	21.05	44.20
Fair value SAR (in €)	0.78	12.26	35.38

The expense arising from share-based payment transactions for the SARs plan was K€(140) in 20222022 (2021: K€(874) ;2020: K€1,242). The carrying value of the liability at December 31, 20222022 amounts to K€9 (2021: K€147; 2020: K€1,223). The total intrinsic value of the liability for warrants currently exercisable at December 31, 2022 amounts to K€9 (2021: K€147; 2020: K€447).

Share-based payment plans of RapidFit+

The subsidiary RapidFit+ has issued a warrant plan on August 23, 2013 where a maximum of 300 warrants can be offered to management with an exercise price of €553.90. In January 2014, a total of 199 warrants were granted and accepted.

The changes for the year for the RapidFit+ warrant plan are as follows:

	2022	2021	2020
Outstanding at January 1	186	186	186
Granted	–	–	–
Forfeited / Cancelled	(153)	–	–
Exercised	–	–	–
Outstanding at December 31	**33**	**186**	**186**
Exercisable at December 31	**33**	**186**	**186**

The following table lists the input to the Black-Scholes model for the RapidFit+ warrant plan:

	2014
Return dividend	0%
Expected volatility	50%
Risk-free interest rate	2.29%
Expected life	5.5
Exercise price	553.9
Fair value warrant	262.7

The expense arising from share-based payment transactions for RapidFit+ warrant plan was K€0 in 2022 (2021: K€2; 20202020: K€2)

15 Loans and borrowings

The loans and borrowings include the following:

in 000€	As of December 31 2022	2021	2020
K€50,000 KBC credit facility	–	–	–
K€35,000 EIB bank loan	27,500	33,333	35,000
K€28,000 acquisition bank loan	12,559	15,604	18,621
K€18,000 secured bank loans	16,165	16,592	17,013
K€12,300 bank loans ACTech	5,860	8,160	10,470
K€5,000 other facility loan	1,881	2,248	2,910
Bank investment loans - top 20 outstanding	8,828	12,852	17,280
Bank investment loans - other	606	1,569	2,681
Lease liabilities	7,485	8,621	10,624
Institutional loan	–	–	353
Related party loan	96	128	158
Total loans and borrowings	**80,980**	**99,107**	**115,110**
Current	19,960	21,202	17,523
Non-Current	61,020	77,905	97,588

K€50,000 KBC credit facility

In October 2022 the Group entered into a credit facility agreement with KBC which allows for a € 50 million delayed draw. The credit facility foresees a first draw between October 2022 and April 2025, reimbursable at once in April 2030, with an interest rate of 3.56% A second draw is foreseen between October 2022 and June 2025, reimbursable at once in June 2031, with an interest rate of 3.81%. And a third and final draw can be made between October 2022 and June 2026, reimbursable at once in June 2032, with an interest rate of 3.87%. As per December 31, 2022 the credit line remains unused.

Reservation cost for all 3 tranches amounts to 0.15% per year.

K€35,000 EIB bank loan

On December 20, 2017 the Group entered into a finance contract with the European Investment Bank, or EIB, to finance future research and development programs. As part of a first tranche, an amount of K€10,000 was drawn in the course of 2018. The agreement foresees a first two-year period without loan reimbursements. Loans under the contract are made at a fixed rate, based on the Euribor rate at the time of the borrowing, plus a variable margin. The interest rate for this loan is 2.40%. The contract contains customary security, covenants and undertakings. A second tranche of K€25,000 was drawn in the course of 2019 with an interest rate of 2.72%. Pledges have been given on moveable assets as well as over the shares.

On June 29, 2020, the European Investment Bank temporarily waived the compliance obligation of the covenants “Total gross Debt to Adjusted EBITDA” (until December 31, 2022), and “Adjusted EBITDA to Net financial charges” (until 31 December 2020) under the condition that the covenant “Total net debt to Adjusted EBITDA” will be met for the period. In addition, the European Investment Bank agreed not to recalculate the interest rate until January 3, 2022 for the first tranche and until January 17, 2022 for the second tranche. Finally, the European Investment Bank waived “the subsidiary financial indebtedness” covenant for the calculation period ending on June 30, 2020. For the periods thereafter this covenant has been eased. These covenants were waived in order to allow the Group to continue investing in its growth programs, even under stressed COVID-19 scenarios. At December 31, 2022, The Group was in compliance with all debt covenants.

K€28,000 Acquisition loan

This bank loan has been concluded in October 2017 to finance the acquisition of ACTech. The loan includes a portion of K€18,000 reimbursable monthly during seven years, and a bullet portion of K€10,000, reimbursable at once in October 2024. The interest rate is fixed for the duration of the loan, and amounts to 1.1% on average for both portions. The bank loans are secured with a business pledge mandate, a share pledge on Materialise Germany GMBH, and debt covenants.

K€18,000 secured bank loans

The K€18,000 loan has been concluded in 2016 in two agreements to finance the construction of new facilities in Leuven (Belgium) and in Poland, both maturing in 2032. The agreement for the Belgian facility financing amounts to K€12,000; and for this tranche, reimbursements have started in

December 2022. The agreement for the Polish facility financing amounts to K€6,000, and reimbursements have started in June 2019. The average interest rate of both agreements amounts to 1.2%. The bank loan is secured with a mortgage mandate on the Belgian facility buildings.

K€12,300 bank loans

In March 2018, three bank loans originating from the acquired ACTech Group were refinanced entirely for the amount of K€9,300, with adjusted maturity to May 2025 and first reimbursements in August 2020. The interest rate has been fixed at approximately 1.6%, and pledges have been granted including a K€4,650 mortgage on ACTech's facilities and a guarantee of Materialise NV. In addition, a new investment credit of K€3,000 was obtained in June 2018, repayable as from January 2019 and with a fixed interest rate of 1.5%.

K€5,000 - Other facility loan

This facility loan was contracted in 2012 for the construction of Leuven office and production facilities. The balance of this loan amounts to K€1,881 per December 31, 20222022. The loan has a repayment schedule of 15 years and interest rate is fixed at 4.61%.

Miscellaneous investment loans

The 20 largest of these loans outstanding as of December 31, 20222022 amount to a balance of K€8,828. They have been agreed in 2020 and in the years before to finance various investments in machinery, printers, equipment, and software tools. The vast majority of the loans have a reimbursement period over seven years, and are at fixed interest rates with weighted average below 1%.

K€7,485 Lease liabilities

The Group has several lease obligations mainly with financial institutions and related to the financing of buildings and various other items of plant and equipment such as 3D printers. As of December 31, 20222022 the balance of these lease agreements amounts to K€7,485, and are mostly at fixed interest rates with weighted average below 1%.

The total cash outflow from the lease liabilities amounts to K€3,379 in 2022, K€3,775 in 2021 and K€3,640 in 2020.

K€2,000 institutional loan

This loan was contracted with a governmental institution in Germany to finance the production operations of Materialise Germany for a maximum amount of K€2,000. The loan is repayable over a four year period, starting as of September 2017 with a fixed interest rate of 0.25% payable per quarter. As of December 31, 2022 no balance remains outstanding under this loan.

K€1,000 convertible bond with related party

On October 9, 2020, 1,000 convertible bonds with a related party for a total amount of K€1,000 were converted to 509,904 shares.

Related party loan

Lunebeke NV, a related party of the Group as discussed in Note 26, has granted the Group a loan of K€400 at fixed interest rate of 4.23% that matures in 2025. The purpose of the loan is to finance the purchase of a building in France. The amount outstanding as of December 31, 2022 is K€96 (2021: K€128; 20202020: K€158). The interest expense for the year ended December 31, 2022 is K€5 (2021:K€5; 20202020:K€7).

Changes of liabilities for financing activities:
The following table presents the changes of the liabilities for financing activities:

	For the year ended December 31		
in 000€	**2022**	**2021**	**2020**
At January 1,	**99,107**	**115,110**	**127,938**
Repayment of loans & borrowings	(17,708)	(14,277)	(13,736)
New leases	2,871	2,355	4,626
Repayment of leases	(3,379)	(3,775)	(3,640)
Loans acquired from business combination	100	–	–
Net foreign exchange movements	(11)	(306)	(78)
At December 31,	**80,980**	**99,107**	**115,110**

16 Other non-current liabilities

The other non-current liabilities consist of the following:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Advances received on contracts	–	1,500	–
Provisions	1,611	667	318
Other	–	–	80
Total	**1,611**	**2,167**	**398**

The increase of the provisions related to provisions for retention bonuses for our employees (K€1,322), partially offset by the derecognition of a provision within Engimplan for an amount of K€(441).

The advances received on contracts as of December 31, 2021 related to advances received from a customer in the context of a long term contract for medical devices.

In Belgium, the Group contributes to a Sector Plan for eligible employees and to a "Branch 21" pension plan for a closed group of management. Under both plans, the Group pays contributions expressed as a percentage of a reference salary. These plans are administered by third party insurance companies and are not material to the consolidated financial statements.

17 Tax payables

The tax payables amount to K€1,246 as per December 31, 2022 (2021:K€783; 2020:K€974).

18 Deferred income

Deferred income consists of the following:

	As of December 31		
in 000€	**2022**	**2021**	**2020**
Deferred maintenance and license revenue	42,780	34,287	30,242
Deferred (project) fees	7,285	3,537	4,555
Deferred government grants	933	435	85
Total	**50,998**	**38,259**	**34,882**
current	41,721	33,307	29,554
non-current	9,277	4,952	5,328

The deferred maintenance and license revenue consists of maintenance and license fees paid up-front which are deferred and recognized in earnings over the maintenance period or the duration of the license, respectively. Deferred maintenance and license revenue grew to K€42,780 as per December 31, 2022 from K€34,287 as a result of Materialise Software recurrent sales year-over-year growth of 21% and of Materialise Medical recurrent software sales year-over-year growth of 34%. The deferred (project) fees consist of one-time and advance payments received which are deferred in accordance with the revenue accounting policies. The deferred (project) fees as per December 31, 2022 included € 2.25 million received from a customer in the context of a long term contract for medical devices. The deferred government grants are recognized as income under “other operating income”.

We refer to Note 22.1.2 for more detail on the contract liabilities.

19 Other current liabilities

Other current liabilities include the following:

	As of December 31		
in 000€	**2022**	**2021**	**2020**
Payroll-related liabilities	15,192	11,836	11,152
Non-income tax payables	2,016	2,058	3,018
Accrued charges	1,718	1,170	995
Advances received	795	276	404
RapidFit+ amounts payable to former shareholders	–	–	875
Derivatives	–	118	140
Cash settled share-based payment plan	9	147	1,223
Other current liabilities	227	367	888
Total	**19,957**	**15,972**	**18,695**

The non-income tax payables mainly relate to VAT payables and payroll taxes.

20 Fair value

Financial assets

The carrying value and fair value of the financial assets as of December 31, 20222022, 20212021 and 20202020 are as follows:

	Carrying value			Fair value		
in 000€	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Financial assets						
Financial assets measured at amortized cost						
Trade receivables (current)	51,043	41,541	30,871	51,043	41,541	30,871
Other financial assets (non-current)	404	2,696	712	404	2,696	712
Other current non-trade receivables	2,021	1,696	1,618	2,021	1,696	1,618
Cash & cash equivalents	140,867	196,028	111,538	140,867	196,028	111,538
Total financial assets measured at amortised cost	194,335	241,961	144,739	194,335	241,961	144,739
Financial assets at fair value through profit or loss						
Derivatives	261	1,770	23			
Convertible loan	3,494	3,560	6,203			
Total financial assets measured at fair value through profit and loss	3,755	5,330	6,226			
Financial assets at fair value through OCI						
Non-listed equity investments	307	399	3,842			
Total financial assets at fair value through OCI	307	399	3,842			

The fair value of the financial assets has been determined on the basis of the following methods and assumptions:

- The carrying value of the cash and cash equivalents and the current receivables approximate their fair value due to their short term character;
- The fair value of the derivatives has been determined based on a mark-to-market analysis prepared by the bank based on observable market inputs (level 2 inputs);
- Other current non-trade receivables are being evaluated on the basis of their credit risk and interest rate. Their fair value is not different from their carrying value on December 31, 2022, 2021 and 2020
- Other non-current financial assets are being evaluated on the basis of their credit risk and interest rate which are considered as level 2 inputs. Their fair value is not considered different from their carrying value given the related interest rate is revised on a regular basis.
- The non-listed equity investments, mainly representing the investment AM Flow (via an investment in AM Danube, one of the shareholders of AM Flow) for K€307, are measured at fair value. As of December 31, 2022, management considers that currently the cost is an appropriate estimate of fair value (level 2 input) because the most recent capital increase indicated that the market valuation of AM Flow has not changed and because of the followings reasons:
    - AM Flow is a non-listed entity;
    - The Group only has an insignificant interest in AM Flow BV (approx. 5% of the shares indirectly);
    - The Group has no representatives in the Board of Directors of AM Flow BV; and
    - Insufficient more recent information is available to measure fair value;
- For the non-listed equity investment in Essentium, as of December 31, 2021, Materialise recorded a remeasurement of fair value to zero through OCI (K€3,443).
- The convertible loan granted to Fluidda is measured at fair value. As of December 31, 2022, management determined the fair value based upon level 3 inputs as follows:
    - The Group determined that the fair value of the convertible loan as of December 31, 2022 amounted to K€3,494. Fluidda is a private start-up company which offers turnkey contract research services for drug development and medical device development. Fluidda is currently loss-making. The convertible loan has a duration of 7 years with a 10% annual interest rate which are capitalized. The Group has applied a discount factor of 12.67% that is based on the estimated WACC of Fluidda reflecting the uncertainty in relation to the success of the company and the applied estimates by the Group.

  In assessing the fair value, the Group has made significant estimates with regard to the discount rate, the probability of each repayment and conversion scenario and related timing, the amount of the qualified capital increase. Changes in the significant assumptions may lead to a significant increase/decrease in the fair value of the convertible loan. A increase/decrease in the applied discount rate for Fluidda by 1% would lead to a change in fair value by K€(61) / K€ 63.

Financial liabilities:

The carrying value and fair value of the financial liabilities as of December 31, 2022, 2021 and 2020 can be presented as follows:

	Carrying value			Fair value		
in 000€	2022	2021	2020	2022	2021	2020
Financial liabilities measured at amortized cost						
Loans & Borrowings including lease liabilities	80,980	99,108	115,110	78,848	100,417	116,843
Trade payables	23,230	20,171	17,698	23,230	20,171	17,698
Other liabilities excl. written put option on NCI	330	485	1,276	330	485	1,275
Total financial liabilities measured at amortized cost	**104,540**	**119,764**	**134,084**	**102,408**	**121,073**	**135,816**
Financial liabilities measured at fair value						
Contingent consideration	–	–	–	–	–	–
Cash settled share based payments	9	147	1,223			
Written put option on NCI	–	–	875			
Derivatives	–	118	140			
Total financial liabilities measured at fair value	**9**	**265**	**2,238**			
Total non-current	61,020	79,905	98,543			
Total current	43,529	40,124	37,779			

The fair value of the financial liabilities has been determined on the basis of the following methods and assumptions:

- The carrying value of current liabilities approximates their fair value due to the short term character of these instruments;
- Loans and borrowings are evaluated based on their interest rates and maturity date. Most interest bearing debts have fixed interest rates and their fair value is subject to changes in interest rates and individual creditworthiness;
- The fair value of the derivatives has been determined based on a mark-to-market analysis prepared by the bank based on observable market inputs (level 2 inputs);
- The fair value of the written put option on non-controlling interest has been determined based on the present value of the redemption amount (level 3 inputs);
- The fair value of the cash-settled share based payments has been determined based on a Black-Scholes model using inputs that are level 1 (stock-price and risk-free interest rate) as well as level 2 (e.g. volatility). We refer to Note 14.

Fair value hierarchy 3 evolution

Convertible Loans Ditto & Fluidda	Fair Value Evolution		
in 000€	2022	2021	2020
As of 1 January	**3,560**	**6,203**	**2,750**
Addition	–	–	2,830
Remeasurement	(316)	–	316
Capitalized interests	250	–	307
Reimbursement Ditto convertible loan	–	(2,643)	–
As of 31 December	**3,494**	**3,560**	**6,203**

Fair value hierarchy

Written Put Option on NCI RapdFit+	Fair Value Evolution		
in 000€	2022	2021	2020
As of 1 January	**–**	**875**	**875**
Remeasurement	–	–	–
Payout put-option PMV	–	(875)	–
As of 31 December	**–**	**–**	**875**

The Group uses the following hierarchy for determining and disclosing the fair value of financial instruments by valuation technique:

- Level 1: quoted (unadjusted) prices in active markets for identical assets and liabilities;
- Level 2: other techniques for which all inputs which have a significant effect on the recorded fair value are observable, either directly or indirectly; and
- Level 3: techniques which use inputs that have a significant effect on the recorded fair value that are not based on observable market data.

The Group has the following financial instruments carried at fair value in the statement of financial position on December 31, 20222022, 20212021 and 20202020: the derivatives related to interest rate and foreign currency swaps as included in the above tables, a call option and written put option on non-controlling interest and the non-listed equity investments.

21 Segment information

For management purposes, the Group is organized into segments based on their products, services and industry and has the following three reportable segments:

- The Materialise Medical segment, which develops and delivers medical software solutions, medical devices and other related products and services;
- The Materialise Manufacturing segment, which delivers 3D printed products and related services; and
- The Materialise Software segment, which develops and delivers additive manufacturing software solutions and related services.

The measurement principles used by the Group in preparing this segment reporting are also the basis for segment performance assessment and are in conformity with IFRS. The Chief Executive Officer of the Group acts as the chief operating decision maker. As a performance indicator, the chief operating decision maker controls the performance by the Group's revenue and adjusted EBITDA.

The following table summarizes the segment reporting for each of the reportable periods ending December 31. Corporate research and development, headquarters' function, financing and income taxes are managed on a Group basis and are not allocated to operating segments. As management's controlling instrument is mainly revenue-based, the reporting information does not include assets and liabilities by segment and is as such not available per segment.

in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated	Consolidated
For the year ended December 31, 2022						
Revenues	43,688	84,846	103,489	232,023	–	232,023
Segment Adjusted EBITDA	1,514	18,822	8,229	28,565	(9,551)	19,014
Segment Adjusted EBITDA %	3.5%	22.2%	8.0%	12.3%	–	8.2%
For the year ended December 31, 2021						
Revenues	42,902	73,368	89,180	205,450	–	205,450
Segment Adjusted EBITDA	15,705	20,669	6,275	42,649	(10,159)	32,490
Segment Adjusted EBITDA %	36.6%	28.2%	7.0%	20.8%	–	15.8%
For the year ended December 31, 2020						
Revenues	39,054	61,729	69,635	170,418	31	170,449
Segment Adjusted EBITDA	13,383	13,915	2,548	29,846	(9,468)	20,378
Segment Adjusted EBITDA %	34.3%	22.5%	3.7%	17.5%	–	12.0%

The segment Adjusted EBITDA is reconciled with the consolidated net profit (loss) for the year as follows:

	For the year ended December 31,		
in 000€	**2022**	**2021**	**2020**
Net profit (loss) for the year	**(2,153)**	**13,145**	**(7,193)**
Share in loss of joint venture	–	–	39
Income taxes	975	591	(1,028)
Financial income	(6,114)	(5,620)	(2,452)
Financial expenses	4,420	4,101	5,995
Operating (loss)/ profit	**(2,872)**	**12,217**	**(4,639)**
Impairments	–	177	4,606
Fair value adjustment 50% Materialise Motion	–	–	(770)
Other operating income (expense)	(2,693)	(3,527)	(3,668)
Corporate headquarter costs	9,504	10,317	11,719
Corporate research and development	2,600	2,948	2,824
Depreciation, amortization and impairment	22,026	20,516	19,775
Segment Adjusted EBITDA	**28,565**	**42,649**	**29,847**

The Group has 1 individual customer that represents sales larger than 10% of the total revenue in 2022 (2021: 1; 2020: 0). The total amount of revenues from this customer for the year 2022 was K€ 31,338 (2021: K€ 26,772), and these revenues are reported within the Medical segment.

Entity-wide disclosures

The revenue by geographical area is as follows:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
United States of America	79,380	69,140	47,266
Americas other than USA	7,544	6,297	5,297
Belgium	7,407	6,947	7,048
Germany	30,039	20,442	17,087
France	16,237	12,964	11,586
Switzerland	16,918	13,643	12,587
United Kingdom	11,062	8,836	7,725
Italy	8,124	6,520	5,876
Netherlands	6,621	7,310	6,943
Other Europe	28,731	33,816	31,518
Asia Pacific	19,960	19,535	17,516
Total	**232,023**	**205,450**	**170,449**

The total revenue realized in the country of domicile (Belgium) in 2022 amounts to K€7,407 (2021: K€6,947; 20202020: K€7,048).

The total non-current assets, other than financial instruments, deferred tax assets, by geographical area are as follows:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
United States of America (USA)	12,048	4,237	3,441
Americas other than USA	3,812	3,276	3,454
Belgium	91,690	67,865	62,810
Germany	60,374	55,712	58,305
Poland	11,640	12,756	13,437
Rest of Europe	8,591	10,019	9,087
Asia-Pacific	2,012	1,739	2,052
Total	**190,167**	**155,604**	**152,586**

The totals of the above table include goodwill, intangible assets and property, plant & equipment and Right-of-Use Assets as disclosed in the consolidated statements of financial position.

22 Income and expenses

22.1 Revenue

22.1.1 Disaggregated revenue information

	For the year ended December 31, 2022					
in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated	Consolidated
Geographical markets						
United States of America (USA)	14,946	45,929	18,505	79,380	–	79,380
Americas other than USA	523	5,752	1,269	7,544	–	7,544
Europe (without Belgium) & Africa	17,148	24,468	76,116	117,731	–	117,731
Belgium	247	1,003	6,158	7,408	–	7,408
Asia Pacific	10,825	7,694	1,441	19,960	–	19,960
Total revenue from contracts with customers	43,688	84,846	103,489	232,023	–	232,023
Type of goods or service						
Software revenue (non-medical)	43,688	–	–	43,688	–	43,688
Software revenue (medical)	–	27,074	–	27,074	–	27,074
Medical devices and services	–	57,772	–	57,772	–	57,772
Manufacturing	–	–	103,489	103,489	–	103,489
Other	–	–	–	–	–	–
Total revenue from contracts with customers	43,688	84,846	103,489	232,023	–	232,023
Timing of revenue recognition						
Goods/Services transferred at a point in time	16,067	61,884	98,580	176,531	–	176,531
Goods/Services transferred over time	27,621	22,962	4,909	55,492	–	55,492
Total revenue from contracts with customers	43,688	84,846	103,489	232,023	–	232,023

	For the year ended December 31, 2021					
in 000€	Materialise Software	Materialise Medical	Materialise Manufacturing	Total segments	Unallocated	Consolidated
Geographical markets						
United States of America (USA)	11,981	38,507	18,652	69,140	–	69,140
Americas other than USA	501	4,576	1,220	6,297	–	6,297
Europe (without Belgium) & Africa	18,749	22,098	62,683	103,530	–	103,530
Belgium	235	1,177	5,535	6,947	–	6,947
Asia Pacific	11,436	7,010	1,090	19,536	–	19,536
Total revenue from contracts with customers	42,902	73,368	89,180	205,450	–	205,450
Type of goods or service						
Software revenue (non-medical)	42,902	–	–	42,902	–	42,902
Software revenue (medical)	–	22,856	–	22,856	–	22,856
Medical devices and services	–	50,512	–	50,512	–	50,512
Manufacturing	–	–	89,180	89,180	–	89,180
Other	–	–	–	–	–	–
Total revenue from contracts with customers	42,902	73,368	89,180	205,450	–	205,450
Timing of revenue recognition						
Goods/Services transferred at a point in time	19,832	54,355	85,448	159,635	–	159,635
Goods/Services transferred over time	23,070	19,013	3,732	45,815	–	45,815
Total revenue from contracts with customers	42,902	73,368	89,180	205,450	–	205,450

The revenue per type of good or service including the previous years is as follows:

in 000€	For the year ended December 31 2022	2021	2020
Software revenue (non-medical)	43,688	42,902	39,054
Software revenue (medical)	27,074	22,887	19,808
Medical devices and services	57,772	50,481	41,921
Manufacturing	103,489	89,180	69,635
Other	–	–	31
Total	**232,023**	**205,450**	**170,449**

22.1.2 Contract balances

The following table provides information about receivables, contracts in progress (contract assets) and deferred income (contract liabilities) from contracts with customers.

in 000€	As of December 31, 2022	2021
Trade receivables, included in 'trade and other receivables'	51,443	42,814
Contract assets / contracts in progress	643	495
Contract liabilities / deferred income / advances received on contracts	50,065	39,324

We refer to Note 18 for a detail of the deferred income. Note 18 includes a split of the deferred income in current and non-current. Non-current deferred income, representing mainly maintenance contracts with terms more than one year and certain contracts with up-front fees which are allocated to performance obligations that will be satisfied over more than one year, may be recognized as revenue between one to three years. Total revenue recognized during 2022 that was included in the contract liability at the beginning of the year amounts to K€39,324. There is no revenue recognized during 2022 from performance obligations that were satisfied in the previous years.

The relation between the timing of satisfaction of the performance obligations and the timing of billing resulting in contract assets and liabilities is as follows:

- Maintenance services: maintenance services are typically billed at the beginning of the maintenance period resulting in deferred income that is recognized on a straightline basis over the maintenance period.
- Software licenses: certain software licenses may have been billed prior to the delivery of the software key or time-based software licenses may have been billed up-front resulting in a deferred income balance.
- Certain agreements in the medical segment include up-front fees such as step-in fees or milestone payments which are billed at inception of the contract but which are allocated to performance obligations which are satisfied at a later time in the contract term or which have not been recognized considering the revenue constraint (i.e. may have to be credited when customer achieves certain volume targets). In addition, certain contracts include prepaid fees for volume “Plan Only” purchases for which the purchased services are only delivered during a one year period. Those fees result in deferred income which are recognized as revenue when services/products are delivered and revenue is not constrainted.
- Certain development services are satisfied while the services can only billed at certain pre-defined points in time or when the services are fully satisfied resulting in contracts in progress / contract assets.

22.2 Cost of sales

Cost of sales includes the following selected information:

in 000€	For the year ended December 31 2022	2021	2020
Purchase of goods and services	(51,597)	(38,691)	(31,725)
Amortization and depreciation	(11,174)	(11,296)	(11,788)
Payroll expenses	(42,718)	(38,499)	(32,438)
Work in Progress	2,234	1,208	(495)
Total	**(103,255)**	**(87,278)**	**(76,446)**

22.3 Research and development expenses

Research and development expenses include the following selected information:

in 000€	For the year ended December 31		
	2022	**2021**	**2020**
Purchase of goods and services	(5,930)	(3,770)	(2,788)
Amortization and depreciation	(1,454)	(1,821)	(1,746)
Payroll expenses	(30,184)	(21,300)	(20,368)
Other	–	–	(2,202)
Total	**(37,568)**	**(26,891)**	**(27,104)**

22.4 Sales and marketing expenses

Sales and marketing expenses include the following selected information:

in 000€	For the year ended December 31		
	2022	**2021**	**2020**
Purchase of goods and services	(11,802)	(6,704)	(5,960)
Amortization and depreciation	(2,541)	(1,892)	(1,946)
Payroll expenses	(47,782)	(40,555)	(36,521)
Other	–	–	(209)
Total	**(62,125)**	**(49,151)**	**(44,636)**

22.5 General and administrative expenses

General and administrative expenses include the following selected information:

in 000€	For the year ended December 31		
	2022	**2021**	**2020**
Purchase of goods and services	(6,240)	(11,248)	(8,933)
Amortization and depreciation	(1,710)	(2,987)	(2,437)
Payroll expenses	(27,193)	(19,080)	(18,104)
Other	–	–	137
Total	**(35,143)**	**(33,315)**	**(29,337)**

22.6 Net other operating income

The net other operating income can be detailed as follows:

in 000€	For the year ended December 31 2022	2021	2020
Government grants	4,932	4,466	4,473
Amortization intangibles purchase price allocation	(5,146)	(2,521)	(1,857)
Allowance for doubtful debtors	390	(58)	(244)
Capitalized expenses (asset construction)	–	223	316
Tax Credits	887	746	1,198
Fair value adjustment Materialise Motion	–	–	770
Impairment Engimplan	–	–	(2,516)
Impairment Metal Belgium (Aldema)	–	(177)	–
Indemnity fee from commercial agreement	506	–	–
COVID support Germany	681	–	–
Other	946	723	295
Total	**3,196**	**3,402**	**2,436**

The Company has received government grants from the Belgian federal and regional governments and from the European Community in the forms of grants linked to certain of its research and development programs and reduced payroll taxes.

22.7 Payroll expenses

The following table shows the breakdown of payroll expenses for 2022, 2021 and 20202020:

in 000€	For the year ended December 31 2022	2021	2020
Short-term employee benefits	(115,169)	(93,850)	(82,135)
Social security expenses	(19,002)	(17,076)	(15,691)
Expenses defined contribution plans	(1,463)	(1,250)	(1,150)
Other employee expenses	(12,241)	(7,259)	(8,455)
Total	**(147,875)**	**(119,435)**	**(107,431)**
Total registered employees at the end of the period	2,433	2,332	2,162

22.8 Financial expenses

Financial expenses includes the following selected information:

in 000€	For the year ended December 31 2022	2021	2020
Interest expense	(2,047)	(2,435)	(2,299)
Foreign exchange losses	(1,645)	(1,258)	(2,999)
Other financial expenses	(728)	(408)	(697)
Total	**(4,420)**	**(4,101)**	**(5,995)**

22.9 Financial income

Financial income includes the following selected information:

	For the year ended December 31		
in 000€	**2022**	**2021**	**2020**
interest income	1,332	658	418
Foreign exchange gains	4,778	4,904	1,668
Other finance income	4	58	366
Total	**6,114**	**5,620**	**2,452**

22.10 Income taxes and deferred taxes

Current income tax

The following table shows the breakdown of the tax expense for 2022, 2021 and 2020:

	As of December 31,		
in 000€	**2022**	**2021**	**2020**
Current income tax	(2,000)	(1,252)	4
Deferred income taxes	1,025	661	1,024
Total income taxes for the period	**(975)**	**(591)**	**1,028**

The current tax expense is equal to the amount of income tax owed to the tax authorities for the year, under the applicable tax laws and rates in effect in the various countries.

Deferred tax

Deferred tax is presented in the statement of financial position under non-current assets and non-current liabilities, as applicable. The following table shows the breakdown of the deferred tax assets, deferred tax liabilities and the deferred tax expense for 2022, 2021 and 2020:

	Asset/(liability)			Income/(expense)		
in 000€	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Tax losses, notional interest deduction and other tax credits	3,134	2,162	1,823	–	–	–
Amortization development assets and other intangible assets	328	136	75	–	–	–
Depreciation property, plant & equipment	40	55	125	–	–	–
Leases	72	35	–	–	–	–
Other items	–	274	77	–	–	–
Total deferred tax assets	**3,574**	**2,662**	**2,100**	**4,580**	**687**	**1,033**
Property, plant & equipment	(274)	(850)	(209)	–	–	–
Intangible assets	(5,470)	(5,757)	(6,414)	–	–	–
Deferred income	(778)	–	–	–	–	–
Investment grants	(178)	(199)	(227)	–	–	–
Inventory valuation	–	–	(31)	–	–	–
Total deferred tax liabilities	**(6,700)**	**(6,806)**	**(6,881)**	**(3,554)**	**(26)**	**(9)**
Netting	2,388	2,435	1,899	–	–	–
Total deferred tax assets, net	**1,186**	**227**	**201**	–	–	–
Total deferred tax liabilities, net	**(4,312)**	**(4,371)**	**(4,982)**	–	–	–
Total deferred tax income (expense)	–	–	–	**1,025**	**661**	**1,024**

The Group has unused tax losses and unused Innovation Income Deduction in an amount of K€87,558 for 2022 (2021: K€48,648; 2020: K€43,172) of which K€45,245 for 2022 (2021: K€35,578; 2020: K€27,878) relating to Materialise NV.

With respect to the unused tax losses and Innovation Income Deduction of Materialise NV, we recognized a deferred tax asset of € 0.2 million as at December 31, 2022. No deferred tax assets were recognized in respect of these carry-overs as at December 31, 2021 or December 31, 2020. Under the Belgian Innovation Income Deduction system, companies can deduct up to 85% of their net innovation income from the taxable basis. Based on its analysis, the Group determined that no additional deferred tax assets should be recognized with respect to unused tax losses and Innovation Income Deduction carried forward at the level of Materialise NV, other than as described above, as at December 31, 2022.

With respect to the unused tax losses of the other entities, we carried as at December 31, 2022 a deferred tax asset of € 1.6 million for Materialise USA related to losses carried forward from the acquired entities Link3D and Identify3D. No deferred tax assets were recognized in respect of unused tax losses carried over at the level of other entities as at December 31, 2021 or 2020, except for our tax unity in Germany where we recorded a deferred tax asset of € 0.3 million related to 2020 losses and Materialise Motion where we recorded a deferred tax asset of € 1.8 million against a deferred tax liability of € 2.0 million. The deferred tax liability of K€6,700 as at December 31, 2022 mainly relates to the intangibles that have been recognized in connection with business combinations (ACTech, Materialise Motion, Link3D and Identify3D).

Relationship between Tax Expense and Accounting Profit

	For the year ended December 31		
in 000€	**2022**	**2021**	**2020**
Profit (loss) before taxes	(1,178)	13,736	(8,221)
Income tax at statutory rate of 25%	295	(3,432)	2,045
Effect of different local tax rate	39	12	529
Tax adjustments to the previous period	84	88	(231)
Non-deductible expenses	(431)	(354)	(584)
Research and development tax credits	177	398	375
Innovation income deduction	–	2,847	–
Non recognition of deferred tax asset	(1,706)	(407)	(723)
Recognition of previously unrecognized tax losses	548	–	–
Non-taxable income	406	350	503
Use of previous years' tax losses and tax credits for which no deferred tax assets was recognized	243	163	135
Taxes on other basis	(149)	(71)	(993)
Other	(481)	(185)	(28)
Income tax benefit (expense) as reported in the consolidated income statement	**(975)**	**(591)**	**1,028**

23 Earnings per share

Basic earnings per share amounts are calculated by dividing the net profit (loss) for the year attributable to ordinary equity holders of the parent company by the weighted average number of ordinary shares outstanding during the year.

Diluted earnings per share amounts are calculated by dividing the net profit (loss) attributable to ordinary equity holder of the parent company by the weighted average number of ordinary shares outstanding during the year plus the weighted average number of ordinary shares that would be issued on conversion of all warrants and the weighted average number of ordinary shares that would be issued on conversion of the convertible debt. If there is a net loss after taxes, the number of diluted shares is equal to the basic shares.

The net profit (loss) for the year used for the basic and diluted earnings per share are reconciled as follows:

	For the year ended December 31		
in 000€	**2022**	**2021**	**2020**
Net profit (loss) attributable to ordinary equity holders of the parent for basic earnings	**(2,123)**	**13,154**	**(7,044)**
Net profit (loss) attributable to ordinary equity holders of the parent adjusted for the effect of dilution	**(2,123)**	**13,154**	**(7,044)**

The warrants are antidilutive at December 31, 2022. The warrants were dilutive as per December 31, 2021 and were antidilutive as per December 31, 2020.

The following reflects the share data used in the basic and diluted earnings per share computations:

	For the year ended December 31		
in 000	**2022**	**2021**	**2020**
Weighted average number of ordinary shares for basic earnings per share	**59,064**	**56,685**	**53,364**
Effect of dilution:			
Warrants	–	158	–
Weighted average number of ordinary shares adjusted for effect of dilution	**59,064**	**56,843**	**53,364**

The earnings per share are as follows:

	For the year ended December 31		
	2022	**2021**	**2020**
Earnings per share attributable to the owners of the parent			
Basic	(0.04)	0.23	(0.13)
Diluted	(0.04)	0.23	(0.13)

24 Commitments and contingent liabilities

Mortgages and pledges

The Group has several loans secured by a mortgage on the building. The carrying value of related property, plant & equipment (including buildings under construction) is K€23,560 (2021: K€25,582K€25,582; 20202020: K€27,638K€27,638). The total outstanding mortgages and pledges are K€ 100,978 in 2022 (2021: K€103,685K€103,685; 20202020: K€105,610K€105,610).

Included in the above, the Group also has pledges on the business goodwill ("fonds de commerce") of the Company for a total amount of K€69,300 in 2022 (2021: K€69,300K€69,300; 20202020: K€69,300K€69,300) and pledges on other fixed assets for a total amount of K€442 (20212021: K€1,399; 20202020: K€3,290).

Other commitments

The Group has outstanding non-cancellable contracts with a future commitment of K€25,385 at December 31, 20222022 (2021: K€7,043; 20202020: K€6,384), mainly related to purchase commitment for raw materials and energy and gas. For property, plant & equipment, we have no committed expenditures as per December 31, 20222022 (2021: K€0K€0; 20202020: K€0K€0).

Contingent liabilities

On June 1, 2021, we entered into a settlement agreement with Osteoplastics, LLC in connection with a patent infringement lawsuit filed by Osteoplastics, LLC on March 20, 2020, as described in our Annual Report on Form 20-F for the year ended December 31, 2020. Pursuant to the settlement agreement, we agreed to file documents seeking to withdraw or terminate all petitions for review (the "IPR Procedure") of seven asserted patents owned by Osteoplastics, LLC with the Patent Trial and Appeal Board of the United States Patent and Trademark Office (the "PTAB"). On June 3, 2021, we filed a Motion to Dismiss with the PTAB regarding the IPR Procedure, and in a decision dated June 4, 2020, the PTAB granted our Motion to Dismiss. Other than external counsel fees and PTAB fees, there was no financial impact incurred in relation to this matter or the settlement agreement.

On September 21, 2021, the Brussels Court of Appeal issued a judgment regarding the termination of a supply agreement that we entered into with Dentsply Implants NV in 2010. In its judgment, the Court of Appeal overruled the judgment issued by the court of first instance (which had previously ruled in favor of Dentsply Implants NV), and fixed the amount of the financial compensation to Dentsply Implants NV at an amount, which, increased with legal interests and costs, resulted in a total amount payable by us to Dentsply Implants NV of € 866,909.74. This judgment of the Brussels Court of Appeal is final and payment was made on November 25, 2021.

On November 15, 2021, we received a written notice from counsel for Zimmer Biomet, informing us of Zimmer Biomet's decision to file a request for arbitration with the Belgian Centre for Arbitration and Mediation. Zimmer Biomet believes that we have a contractual obligation pursuant to the terms of our collaboration to indemnify Zimmer Biomet for the expenses it incurred as a result of its settlement with Conformis, Inc. of a patent dispute related to certain joint replacement devices. We believe there are meritorious defenses to Zimmer Biomet's claim and intend to contest it vigorously. However, an adverse resolution of this arbitration could have an adverse effect on our results of operations, financial condition or cash flows in the period in which the arbitration is resolved. No amounts have been accrued for this loss contingency. A final arbitral award is scheduled to be issued at the latest on May 16, 2023.

Apart from the cases set out above, the Group is currently not a party to any other legal or arbitration proceedings, which, in the opinion of the management, is likely to have or could reasonably possibly have a material adverse effect on the business, financial position or results of operations.

25 Risks

The Group is mainly exposed to liquidity risk, interest rate risk and credit risk.

Foreign exchange risk

The Group transacts business globally and is subject to risks associated with fluctuating foreign exchange rates. The geographic areas outside of the Eurozone to which it sells its products and services are generally not considered to be highly inflationary. In the years ended December 31, 2022, 2021 and 2020, 39%, 35% and 35% of our revenue, respectively, were derived from sales in a currency different from the euro. Receivables denominated in a foreign currency are initially recorded at the exchange rate at the transaction date and subsequently re-measured in euro based on period-end exchange rates. Transaction gains and losses that arise from exchange rate fluctuations are charged to income.

The Group has primarily exposure to the USD, GBP, BRL, PLN and JPY as foreign currency. The exposure on MYR and CZK is limited. There is only a limited portion of turnover in local currency.

If the U.S. dollar (rate for €1) would have appreciated by 10%, the net result would have been € 0.9 million higher, excluding the effect of the cash and term accounts held in U.S. dollars. If the U.S. dollar (rate for €1) would have depreciated by 10%, the net result would have been € 0.7 million lower, excluding the effect of the cash and term accounts held in U.S. dollars.

To limit the exposure to foreign currency rate fluctuations on GBP, the Group has entered into currency rate swaps. As of December 31, 2022 the Group had hedge agreements in place for K£800. We refer to note 20 for the related fair value of these derivatives.

Inflation risk

We transact business globally and are subject to risks associated with fluctuating inflation. The risk exists that if inflation rises to levels that our selling prices can't be aligned timely to offset the rise of cost of remuneration, materials, services, energy, and capital expenditure. For the first time since the banking crisis in 2008, inflation in several of our main markets has increased by more than 5% in the year ended December 31, 2022. Although we succeeded to increase our selling prices in various business lines, we experienced negative effects where cost increased could not be offset completely or timely by selling pricing adjustments. If inflation would not stabilize at a lower level than in 2022, this may may adversely affect our results of operations and financial condition.

Liquidity risk

The liquidity risk is that the Group may not have sufficient cash to meet its payment obligations. This risk is countered by day-by-day liquidity management at the corporate level. The Group has historically entered into financing and lease agreements with financial institutions to finance significant projects and certain working capital requirements. At December 31, 2022, we held cash and cash equivalents of € 140.9 million, while €20.0 million of our € 81.0 million gross debt was short term. At December 31, 2022, we had an undrawn credit line of € 50 million as more fully described in Note 15 to the consolidated financial statements.

The range of contracted obligations are as follows (incl. interest) :

in 000€	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2022					
Loans & borrowings	18,156	35,131	15,017	8,627	76,931
Lease liabilities	3,080	2,725	1,289	1,425	8,519
Trade payables	23,230	–	–	–	23,230
Other current liabilities	339	–	–	–	339
Total	**44,805**	**37,856**	**16,306**	**10,052**	**109,019**

	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2021					
Loans & borrowings	19,081	41,590	19,587	14,901	95,159
Lease liabilities	3,496	3,790	946	1,102	9,334
Trade payables	20,171	–	–	–	20,171
Other current liabilities	750	–	–	–	750
Total	**43,498**	**45,380**	**20,533**	**16,003**	**125,414**

	Less than 1 year	2 to 3 years	4-5 years	More than 5 years	Total
At December 31, 2020					
Loans & borrowings	15,335	36,819	34,928	23,565	110,647
Lease liabilities	3,831	4,850	1,570	1,420	11,671
Trade payables	17,698	–	–	–	17,698
Other current liabilities	3,798	–	–	–	3,798
Total	**40,662**	**41,669**	**36,498**	**24,985**	**143,814**

Interest rate risk

Although the Group mainly has loans outstanding with a fixed interest rate, some of the loans have been contracted with variable interest rates. The most significant loans with variable interest rates have been secured by means of a variable to fixed interest rate swap. We therefore believe that the Group is not subject to immediate changes in interest rates.

Credit risk

Credit risk is the risk that third parties may not meet their contractual obligations resulting in a loss for the Group. The Group is exposed to credit risk from its operating activities (primarily trade receivables) and from its financing activities, which are mainly deposits with financial institutions. The Group limits this exposure by contracting with credit-worthy business partners or with financial institutions which meet high credit rating requirements. In addition, the portfolio of receivables is monitored on a continuous basis.

Trade receivables and contracts in progress

Customer credit risk is managed by each business unit subject to the Group's established policy, procedures and controls relating to customer credit risk management.

An impairment analysis is performed at each reporting date per company and using a provision matrix per company to measure expected credit losses. The provision rates are based on days past due for groupings of various customer segments with similar loss patterns (i.e., by legal entity).

The calculation reflects the probability-weighted outcome, the time value of money and reasonable and supportable information that is available at the reporting date about past events, current conditions and forecasts of future economic conditions. Generally, trade receivables are written-off if past due for more than one year and are not subject to enforcement activity. The maximum exposure to credit risk at the reporting date is the carrying value of each class of financial assets at amortized cost or fair value through OCI as disclosed in Note 20. The Group does not hold collateral as security.

The Group evaluates the concentration of risk with respect to trade receivables as low, as its customers are located in several jurisdictions and industries and operate in largely independent markets.

Set out below is the information about the credit risk exposure on the Group's trade receivables using a provision matrix:

in 000€	Total	Non-due	Less than 30 days	31-60 days	61-90 days	91-180 days	More than 181 days
December 31, 2022	51,043	41,764	5,451	2,212	656	458	502
December 31, 2021	41,541	34,002	4,199	1,634	426	611	669
December 31, 2020	30,871	25,707	3,176	858	423	327	380

Capital management

The primary objective of the Group's shareholders' capital management strategy is to ensure it maintains healthy capital ratios to support its business and maximize shareholder value. Capital is defined as the Group shareholder's equity.

The Group consistently reviews its capital structure and makes adjustments in light of changing economic conditions. The Group made no changes to its capital management objectives, policies or processes during the years ended December 31, 2022, 2021 and 20202020.

26 Related party transactions

The compensation of key management personnel of the Group is as follows:

	For the year ended December 31		
in 000€	**2022**	**2021**	**2020**
Short-term employee benefits	2,736	2,832	2,302
Post-employment benefits	75	93	93
Total	**2,811**	**2,925**	**2,395**
Warrants granted	–	–	–
Warrants outstanding	–	4,545	108,905

The amounts disclosed in the table are the amounts recognized as an expense during the reporting period related to key management personnel (senior management and executive committee members). In the year ending December 31, 20222022 there was no compensation to key management by means of share based payments amounts (2021: K€132).

The following table provides the total amount of transactions that have been entered into with related parties for the relevant financial year:

in 000€	Sale of goods to	Purchases from	Depreciation	Interest expense	Right-of-Use Assets	Receivables	Lease liabilities	Other liabilities
Non-executive directors of the Group								
2022	–	163	–	–	–	–	–	86
2021	–	122	–	–	–	–	–	58
2020	–	85	–	28	–	–	–	–
Shareholders of the Group								
2022	–	104	–	5	–	–	–	96
2021	–	37	–	6	–	77	–	60
2020	–	2	–	7	–	29	–	158
Joint ventures								
2022	–	–	–	–	–	–	–	–
2021	–	–	–	–	–	–	–	–
2020	419	–	–	–	–	–	–	–
Non-controlling interests								
2022	–	–	–	–	–	–	–	–
2021	–	–	–	–	–	–	–	–
2020	–	–	–	–	–	–	–	–

Related party – Lunebeke NV / Ailanthus NV

Lunebeke NV is owned by a shareholder and director of the Group and was established on December 29, 2020 following a partial demerger of Ailanthus NV (a former related party of the Group that merged with Materialise NV subsequent to a partial demerger). The activities taken over by Lunebeke NV through the partial demerger of Ailanthus NV were taken over from Ailanthus NV with retro-active effect as of October 1st, 2021. The Group rents apartments on a regular basis from Lunebeke NV in order to host our employees from foreign subsidiaries who are visiting our headquarters in Leuven. The total amount paid to Lunebeke NV for rent in 2022 was K€104 (20212021:K€37; 20202020: K€0K€0).

27 Events subsequent to the statement of financial position date

No events subsequent to the date of the statement of financial position have occurred that would require adjustment to, or disclosure in, the consolidated financial statements.

28 Overview of consolidated entities

Name	Country of incorporation	% equity interest*		
		2022	2021	2020
Materialise NV	Belgium	100%	100%	100%
Materialise SAS	France	100%	100%	100%
Materialise GmbH	Germany	100%	100%	100%
Materialise Japan K.K.	Japan	100%	100%	100%
Materialise s.r.o.	Czech Republic	100%	100%	100%
Materialise USA, LLC	United States	99%	99%	99%
OBL SAS	France	100%	100%	100%
Materialise Austria GmbH	Austria	100%	100%	100%
Materialise Sdn. Bhd.	Malaysia	100%	100%	100%
Materialise Ukraine LLC	Ukraine	100%	100%	100%
RapidFit NV	Belgium	100%	100%	83%
Meridian Technique Ltd	United Kingdom	100%	100%	100%
OrthoView Holdings Ltd	United Kingdom	100%	100%	100%
Materialise SA	Poland	100%	100%	100%
Materialise Colombia SAS	Colombia	100%	100%	100%
Materialise Motion NV	Belgium	100%	100%	100%
Materialise Shanghai Co.Ltd	China	100%	100%	100%
Engimplan Engenharia de Implante Industria & Comércio Ltda	Brazil	100%	100%	100%
Engimplan Holding Ltda	Brazil	100%	100%	100%
Materialise Limited	South-Korea	100%	100%	100%
Materialise Australia PTY Ltd	Australia	100%	100%	100%
Materialise S.R.L.	Italy	100%	100%	100%
ACTech GmbH	Germany	100%	100%	100%
ACTech Holding GmbH	Germany	100%	100%	100%
ACTech, Inc.	United States	100%	100%	100%
Tianjin Zhenyuan Materialise Medical Technology Ltd	China	51%	51%	—

*The overview provides the equity interest held as of 31 December of each respective year.

The entities Materialise GmbH, Gilching, Germany, ACTech Holding GmbH, Freiberg / Saxony, Germany and ACTech GmbH, Freiberg / Saxony, Germany, have taken advantage of the exemption regulations of § 264 (3) HGB (German Commercial Code) for the financial year ending December 31, 2020, 2021 and 2022.

29 Non-GAAP Measures

EBITDA and Adjusted EBITDA is used in the Note 21 Segments as one of the basis of the Segments performance measurement. We calculate EBITDA as net profit plus income taxes, financial expenses (less financial income), depreciation and amortization, and share in loss of joint venture. Adjusted EBITDA is determined by adding back share-based compensation expenses, acquisition-related expenses of business combinations, impairments and fair value remeasurements due to business combinations to EBITDA.