

2 GROUP MANAGEMENT REPORT

2.1 BASIS OF THE VA-Q-TEC GROUP

2.1.1 Business model, market and strategic orientation

2.1.1.1 Business model and market

va-Q-tec is a leading global supplier of highly efficient products and complete solutions in the thermal insulation area. va-Q-tec offers customers from a wide range of industries high-performance insulation solutions that enable them to significantly increase their energy efficiency. The products and services offered by va-Q-tec in the Group's Products, Systems and Services divisions are deployed in thermology, the refrigerator and food industries, in technical applications such as hot-water tanks, the construction industry and in the mobility sector.

In its **"Products" division**, the company develops, produces and markets highly efficient, thin vacuum insulation panels (VIPs) as well as phase change materials (PCMs) for reliable and energy-efficient temperature controlling. VIPs are high-performance insulation panels between 5 mm and 50 mm in diameter that are particularly suited to space-saving and energy-efficient thermal insulation. PCMs are cold and heat storage materials that absorb and store thermal energy. Various temperature ranges can be addressed through utilizing various storage materials such as paraffins and salt solutions.

In its **"Systems" division**, va-Q-tec manufactures passive thermal packaging, containers and boxes through combining VIPs and PCMs, which maintain constant defined temperature ranges for up to 200 hours without recourse to external energy.

In its **"Services" division (Serviced Rental)**, va-Q-tec – within a global partner network – operates a fleet of rental containers and boxes meeting demanding thermal protection standards in order to implement temperature-sensitive logistics chains. Since 2011 the subsidiary in the UK has been operating a fleet of rental containers produced in-house, with which temperature-sensitive shipments can be carried out more cost-efficiently and securely compared to actively refrigerated containers. For this purpose va-Q-tec has built up a comprehensive global partner network consisting of airlines, forwarders and service partners, such as Lufthansa, IAG, Turkish Cargo and SWISS.

Since 2015, va-Q-tec AG has also been operating a business for thermal shipment boxes the company produces itself. Furthermore, va-Q-tec provides accompanying services in the area of preconditioning, preparation and shipment preparation of thermal packaging systems for well-known customers such as Kühne & Nagel and Swiss Post. Such integrated and rental-based shipment solutions ("TempChain as a service") from a single source are increasingly in demand from the healthcare industry.

Moreover, va-Q-tec offers consulting services in the thermal insulation area, for example in order to assign technical devices to higher energy efficiency classes by means of more efficient insulation.

In 2020, the **"Healthcare and Logistics"** target market again accounted for the largest share of revenues, at around 74%. Revenue from this target market is generated in the two divisions **"Systems"** and **"Services"** ("Temperature Controlled Supply Chain"). va-Q-tec thermal packaging is primarily used as a high-performance solution for a secure, reliable and uninterrupted temperature chain for the global healthcare industry. The thermal packaging of va-Q-tec enables the shipment and intermediate storage of investigational medicinal products and clinical samples, drugs, vaccines and other pharmaceutical and biotechnological products of all kinds, food, as well as electronic and optical devices. For example, smaller thermal packages from va-Q-tec have been used to ship urine and blood samples in connection with doping tests at major international sporting events as well as coronavirus test kits. Thermal packaging can also be used outside the healthcare sector, for example for the shipment of valuable and sensitive works of art, and archaeological finds.

In the Products business area, customers from the **following** market segments are addressed under the key concept of Thermal Energy Efficiency:

- Appliances and Food, e.g. insulation of refrigeration/freezing equipment and food containers
- Technics and Industry, e.g. insulating water boilers, pipelines, laboratory equipment and ultra-low temperature refrigeration units
- Building, e.g. building insulation (façades, roofs, floors)
- Mobility, e.g. insulation in refrigeration trucks, cars, trains and aircraft

In the Products business area, va-Q-tec serves various industries, of which the largest share is in the Appliances & Food (refrigeration and air conditioning equipment as well as food).

In the application areas, all va-Q-tec products are subject to high demands on the performance and service life of the thermal insulation, usually with very limited installation space.

Growth potentials in the Healthcare and Logistics target market arise from the increasing globalization of clinical research and pharmaceutical production. At the same time, demand for temperature-sensitive biotech drugs is rising constantly. Demands made of product safety (“good distribution practice of medicinal products for human use” – GDP) are becoming increasingly more stringent. The coronavirus crisis also underscores the importance of temperature-controlled, secure transport chains.

va-Q-tec is well represented in attractive, structurally growing markets. The long-term growth driver is the topic of thermal energy efficiency: global efforts to improve energy efficiency in all areas of life and production against the backdrop of advancing climate change are likely to strengthen demand for energy-efficient products, systems and services from va-Q-tec. In the Management Board’s opinion, this is particularly true in target markets that – from va-Q-tec’s perspective – are still small today, such as construction, mobility, and technology and industry. The European “Green Deal” and the pricing of CO₂ emissions agreed in the course of the climate protection programs will also lead to higher demand for good insulation in various sectors, such as the construction industry. The use of VIPs in such sectors can save valuable space, especially in densely populated areas. As energy efficiency requirements in industry are constantly increasing and the error tolerances are diminishing, an ever greater number of production components are also becoming temperature-sensitive, or need to be better insulated. This opens up further application possibilities for va-Q-tec, especially in the high temperature range. Further current examples include: laboratory equipment, piping systems, hot water tanks and boilers, and electronic equipment.

2.1.1.2 Strategic orientation

va-Q-tec operates in a very dynamic, innovation-driven and global market environment. Given the aforementioned trends in the target markets, va-Q-tec has defined three strategic focus topics in order to exploit potential in the short term and to continue on its growth path in the medium and long term. The aim is to expand the company’s position as one of the world’s leading suppliers of highly efficient products and solutions in the thermal insulation area, and to help shape temperature-controlled logistics in the long term. These three strategic focus topics are: technology leadership, growth and profitability.

I. Technology leadership

va-Q-tec focuses on consolidating and further expanding its innovation and technology leadership in the thermal insulation area. va-Q-tec is continuously working on innovative technologies, process innovations and new business models that can change not only temperature chain logistics, but also thermal insulation in many industries, such as mobility and technology. va-Q-tec aims to continuously increase its own innovative strength. Advanced VIP types suitable for higher temperatures, for example, as well as new thermal packaging and novel materials form the focus of this approach. In addition, va-Q-tec is striving to further improve thermal logistics under the key concept of “TempChain 4.0” by means of “intelligent” boxes and containers in connection with corresponding software and simulation tools. In accordance with this objective, the Group invests in highly qualified personnel, product development and basic research. The strategy also includes selected investments, such as the investment in the materials start-up SUMTEQ GmbH and the high-tech start-up ING3D GmbH, which is developing a novel technology for the production of pure mineral lightweight materials, including 3D-printed insulation materials. The partnership will combine the two companies’ innovative manufacturing processes and products. For example, the first 3D-printed ceramic insulation material is to be developed. va-Q-tec also pursues cooperation with technology partners in externally funded research and development projects. The medium-term target remains to both defend and further expand the leading technology position.

II. Growth

va-Q-tec’s end markets offer great growth opportunities thanks to the wide range of applications of the technology platform consisting of products, systems and services. va-Q-tec is strongly focused on growth: the company’s processes, organizational structure and business model are aligned to scalability and to the consistent leveraging of growth opportunities. The company is on a clearly defined expansion path with its increasingly international presence, maintaining its solid financing base and focus on business relationships with major customers.

va-Q-tec is oriented to high-growth markets which offer the company attractive target margins, albeit also incurring high upfront costs for the company. Pharmaceutical and biotech customers are of great significance for va-Q-tec: the company generated 74% of its revenues in 2020 (2019: 69%) in its target market of Healthcare and Logistics, its most important pillar. In the temperature-managed logistics area, the global healthcare industry relies increasingly on va-Q-tec's high-quality passive solutions.

At present, potential healthcare customers still frequently use packaging solutions based on conventional insulation materials, and basic water and ice combinations. With the rising quality requirements made of TempChains – in line with “good distribution practice” – customers are substituting these types of basic solutions with high-performance thermal packaging. At the same time, va-Q-tec's rental models (“Serviced Rental”) are aimed at customers for which a purchase of such packaging solutions is not economically viable. With precisely customized rental solutions for high-performance thermal packaging, va-Q-tec also offers them a product with an attractive price/performance relationship. For this reason, va-Q-tec expects to grow further globally in the Healthcare and Logistics target market over the coming years, while outperforming the growth rates of the underlying markets for (healthcare) cold-chain logistics. The aim is to become the globally leading provider of services and packaging solutions in this target market.

In the other target markets, too, the company is aiming to benefit disproportionately from the growth opportunities arising from the trend towards energy efficiency, for example. The company's technology platform, which has grown over the past years, is to be established in defined target markets.

- In the area of refrigerators and foodstuffs, va-Q-tec expects further growth in the medium term, as higher regulatory requirements for the energy efficiency classes of refrigerators mean that VIPs will increasingly have to be utilized. VIPs from va-Q-tec, with their insulating performance that can be verified in the manufacturing process of the original equipment manufacturer (OEM), will particularly benefit from this trend, according to the Management Board's assessment. At the same time, the coronavirus pandemic also underscores the importance of secure, production-based supply chains: with production in Germany and/or Europe, the likelihood of a reliable, improved, continuous supply of VIPs to OEMs can be increased – with at the same shorter and overall lower shipment distances compared to competitors.

- In the e-commerce area, start-ups and large international providers are currently developing, at an accelerated pace, new business models for the delivery of food ordered online directly to the end consumer, including due to the coronavirus-related lockdown measures. The shipment of frozen and easily perishable food to the end-customer is expected to be regulated even more stringently in the future. Overall, the Management Board believes that the coronavirus crisis is boosting the importance of secure TempChains. The high-performance thermal packaging of va-Q-tec are particularly suited to such shipments.
- In addition, growth in VIP product sales is anticipated in the target market of Technics and Industry through introducing energy efficiency classes for water boilers and piping insulation, for example. Here, too, manufacturers equip their premium products with va-Q-tec VIPs in order to achieve classification in the best energy efficiency class.

The last three years reflect the medium-term growth spurts typical of va-Q-tec's dynamic growth markets: revenues in the “Products” segment have almost doubled since 2016 and are currently at a high level.

The end markets of mobility and construction offer additional growth areas in the medium and long term.

Overall, the Management Board expects continuous medium to strong year-on-year revenue growth on average over the next three years, assuming that economic conditions normalize. These growth expectations are driven mainly by the Services and Systems businesses. Opportunities for even stronger growth arise from the anticipated coronavirus-related increase in regulation and demand for secure TempChain shipments.

III. Profitability

Profitability is indispensable in order to secure the company's long-term success and performance, as well as its competitiveness. Operating EBITDA profitability forms the third pillar of the corporate strategy and represents a significant corporate steering metric. In view of very high development, set-up and other start-up costs, this objective is of particular importance.

Various measures in the operational excellence area are being continuously advanced to deliver profitable growth. The Management Board's cost-cutting initiatives primarily concern measures to continuously optimize and harmonize quality, sales processes, organization, resource consumption and purchasing, and IT systems throughout the Group. Economies of scale accompany the expansion of the Group's business activities and corresponding sales revenue growth: the terms on which the Group can purchase intermediate products and third-party services improve significantly with the growing scope of business, and the rising purchasing volumes that accompany such growth. The cost increases for Group support functions such as personnel, marketing, financial accounting and controlling do not match the top-line growth rate. However, the stock exchange listing requires the highest quality level, entailing corresponding expenditure. Various aspects of vertical integration into downstream stages of the value chain contribute to improving profitability. This includes services and business models such as the rental of boxes and containers ("Serviced Rental"). This forward integration and control of upstream value steps to improve profitability forms a central element of the corporate strategy. In the phase of the company's development to date, the dominant focus continued to be on sales revenue growth. As a result of the aforementioned operative and strategic measures, the company is aiming – on the basis of normalized economic circumstances – for a medium to long-term improvement in the EBITDA margin to in excess of 20%.

Group structure, employees, investments and steering

No new subsidiaries were established during the reporting period. A total of eight companies thereby formed the va-Q-tec Group as of the end of the reporting period, comprising the German parent company and seven foreign subsidiaries. The Group's three reporting segments are derived from these eight companies - the German segment (va-Q-tec AG), the UK segment (va-Q-tec Ltd., United Kingdom) and the Other segment, consisting of va-Q-tec Ltd. (South Korea), va-Q-tec Inc. (USA), va-Q-tec Switzerland AG (Switzerland), va-Q-tec Japan G.K. (Japan), va-Q-tec Uruguay S.A. (Uruguay) and va-Q-tec SG Pte. Ltd. (Singapore).

The parent company va-Q-tec AG wholly owned all seven foreign subsidiaries as of 31 December 2020.

In the German segment, va-Q-tec AG covers all three segments (Products, Systems and Services). Since 2015, the business with rental boxes has been reported within the "Services" segment. va-Q-tec Ltd (UK) primarily comprises the "Services" segment with its focus on the rental business of (returnable) containers and boxes.

The "Other" segment comprises the business activities of the other subsidiaries, which are mainly allocated to the Systems and Services divisions. The South Korean subsidiary is responsible both for the procurement of raw materials and input materials for the Group and for the sale of va-Q-tec products in its domestic market. In addition to sales activities, the subsidiary in the USA is primarily engaged in business development in North America. The company continued to realize significant investments in hiring and business development at the US subsidiary. va-Q-tec Switzerland AG renders services (conditioning and cleaning of rental boxes, "fulfillment services") for Swiss Post and other customers in the cold-chain logistics area. Through its fleet of thermal boxes, Swiss Post makes recourse to the technology and process experience of va-Q-tec in Germany. As a sales company, the subsidiary in Japan pursues the objective of enhancing the perception of va-Q-tec as a locally rooted provider in the world's third-largest economy, and of distributing va-Q-tec products and services there. With the subsidiaries in Uruguay and Singapore/Southeast Asia, the aim is to further intensify sales presence in Latin America and Singapore/Southeast Asia. Significant progress was made in this regard in the past 2020 financial year.

To manage the three reporting segments, the management monitors these areas individually and across the Group based on detailed and regular reports. The management steers the allocation of resources based on this information and institutes countermeasures where performance falls short of target. A streamlined Group structure ensures the Group management can effectively control and coordinate the subsidiaries important business decisions.

Key performance indicators used by management for the management of the va-Q-tec Group are revenues, earnings before interest, taxes, depreciation and amortization (EBITDA), as well as the equity ratio. Compared with the previous year, the steering system at va-Q-tec AG has not changed. The Group's specific steering metrics are presented in greater detail below.

Revenue growth represents the basic indicator of business growth and the attractiveness of the Group's products, systems and services. Viewed at the level of the reporting segments and geographic distribution, revenue also serves as an indicator of the success and performance of the Group's business models.

EBITDA serves as the metric for profitability. To this is then added as a subsidiary measure the EBITDA margin measured in relation to total income as a benchmark for the Group's operative performance and profitability. As a fast-growing technology company, va-Q-tec invests significant proportions of its financial resources in machinery, plant and its fleet of containers and boxes for rental services. A high level of depreciation during the current phase of establishing infrastructure and fleet distorts the actual picture of financial performance. For this reason, EBITDA, as an earnings figure before depreciation presents a more meaningful metric of the company's performance.

The equity ratio provides information about the strength of the va-Q-tec Group's balance sheet, its capacity to withstand crises, its creditworthiness and its credit risk. In the medium term, the company regards an equity ratio with a target range between 35% and 40% as representing a balanced relationship between debt and equity, and consequently of the risk distributed among equity investors and creditors.

In the area of non-financial performance indicators, the number of employees serves as an indicator and central steering metric of the growth in the Group's operating activities.

The following overview shows the growth in the relevant steering metrics.

A detailed analysis of the key figures can be found in the section "Financial position and performance".

kEUR unless stated otherwise	2020	2019	Δ 20 / 19
Revenues	72,106	64,667	12 %
EBITDA (IFRS)	11,399	9,673	18 %
EBITDA margin (IFRS)	14 %	13 %	+1 pp
Equity ratio	35 %	40 %	-5 pp
Year-average number of employees	519	464	+12 %

2.1.2 Research and development

va-Q-tec is one of the leading technology innovators in the development and production of energy efficient and space-saving VIPs, high-performance PCMs and thermal packaging systems. The research and development area is of strategic importance to secure and further extend the company's technology leadership in the thermal insulation areas. Group research at va-Q-tec operates across the whole company, developing technologies for future-viable products and solutions for the Group companies.

va-Q-tec conducts internal and external research and development (R&D) projects with partner companies and institutes. Not only do such projects serve basic research on VIPs, they also address the five target sectors defined by va-Q-tec, which require excellent thermal insulation and thermal energy storage.

As a spin-off from a university – the Bavarian Centre for Applied Energy Research (ZAE Bayern) – va-Q-tec maintains partnerships with international associations, research institutions, universities and colleges, such as Würzburg University. Internally, the company has established its own R&D organization with extensive capacities for basic research and, in particular, application-oriented research.

The past years' successful R&D activities have created a portfolio of patents which is reflected in our leading technology platform.

The worldwide unique va-Q-check® quality control system enables the insulation of VIPs to be controlled before use, or boxes and containers to be approved for reuse through measuring internal gas pressure. va-Q-tec VIPs are thereby the only heat insulation whose performance and efficacy can be measured and controlled at the place of use. This creates confidence in VIP technology and enables va-Q-tec to meet the high quality requirements of our demanding clientele. For example, the thermal protection requirements required for cold chain shipments can be securely and verifiably complied with.

The patented va-Q-pro is a largely freely formable, powder-filled VIP, from which holes and sections can be cut on the production side and which can be manufactured in three-dimensional geometry. Thanks to these properties and flexible design latitudes, va-Q-pro can be used in a wide variety of applications, for example in the insulation of batteries in electric vehicles or in the insulation of aircraft areas, e.g. the galley.

In 2020, va-Q-tec continued to conduct basic research, for example in the application of VIPs in completely new temperature ranges. While conventional VIPs are typically used in the temperature range from -80 to 80 °C, va-Q-tec is working on extending this temperature range by optimally combining different covering materials and core materials, so that, for example, temperature classes from 80 to 180 °C or even in excess of 400 °C are possible. The partnership with Cologne-based start-up SUMTEQ, in which va-Q-tec also holds an interest, is of strategic importance in the area of basic research in relation to VIP core materials. The joint target of va-Q-tec and SUMTEQ remains the pilot testing and market launch of SUMTEQ's submicroporous foams as a further high-performance insulation material. This strategic partnership offers both companies the opportunity to contribute their respective specialist and technical research and development expertise, and thereby generate added value for customers. Accompanied by va-Q-tec's expertise, SUMTEQ commenced small series production during the reporting period, thereby reaching an important milestone towards large-scale production and marketing.

Furthermore, the interest in ING3D GmbH is of strategic importance in the application-oriented research area. With the 3D printing technology developed by ING3D, it is possible to manufacture extremely light, non-combustible and freely shapable lightweight materials. The Mineral Direct Laser Sintering (MDLS) process, for which ING3D has filed a patent application and which is the first purely mineral/ceramic printing process worldwide, opens up completely new possibilities in material production: the ceramic raw material used can be processed into ecologically compatible and at the same time cost-effective molded parts. This is achieved without the previously necessary plastic content in the starting material, and results in pure and ecologically compatible, lightweight objects. The end products can be deployed multifunctionally, thereby offering advantages in terms of acoustic and thermal insulation as well as fire protection, especially in small spaces. These properties and the combination with va-Q-tec's VIP insulation technology consequently also enable completely new approaches in the construction and automotive industries.

In the year under review, va-Q-tec worked mainly on expanding and improving its existing product portfolio:

In the Products division (vacuum insulation panels, abbreviated as "VIPs"), work was carried out on the further development of the existing portfolio and the new development of a panel class for medium and high temperatures. Such panels can be used wherever temperatures in excess of 400 °C prevail on the one hand, and where very good insulation is required on the other, e.g. ovens for industry and food.

With the "va-Q-shell pipe" insulation system developed in 2020, pipelines can be thermally insulated in a cost-efficient, secure and environmentally compatible manner. This increases energy efficiency, for example, in industrial plants, building installations as well as in local and district heating networks. va-Q-shell pipe is suitable for insulating pipes that are not insulated in the factory, as well as for retrofitting. Thanks to its material properties, it thereby improves energy efficiency while reducing insulation thickness by up to 50%. With va-Q-shell pipe, va-Q-tec has successfully expanded its product portfolio for increasing the energy efficiency of industrial plants, building installations as well as local and district heating networks.

In order to be able to supply regions of the world with medicines and especially with coronavirus test kits as well as vital vaccines, va-Q-tec 2020 has further developed its va-Q-pal SI pallet container. The va-Q-pal SI is made of environmentally compatible materials and can be reused several times. At the same time, it has insulation properties comparable to the va-Q-tainer in the rental network, and is consequently ideally suited for temperature-controlled shipments to countries from which it is difficult to return empty rental containers.

With the stackable "va-Q-tray" thermal packaging system, food can be transported in such a way that it remains warm, cold or frozen for several days. The temperature holding time can optionally be extended by PCM rechargeable batteries. With the va-Q-tray, for example, bakery branches can be supplied efficiently with fresh produce: in contrast to existing systems made of styrofoam, va-Q-tray meets the highest requirements in terms of hygiene and temperature chain, the system can be used universally, e.g. also as a portable refrigerator, and can be combined with non-insulated standard containers. In addition to the hygienic advantages, this also leads to cost savings as additional refrigerated vehicles can be dispensed with.

With external logistics partners, the “va-Q-med” transport system was significantly further developed in 2020. va-Q-med guarantees secure shipment without temperature deviations on the last mile, directly to the recipient. Unlike conventional, inefficient one-way packaging, or CO₂-intensive extra shipments with refrigerated vehicles in congested inner cities, the va-Q-med boxes enable environmentally compatible, traffic-reducing and at the same time secure shipment logistics. The transport system consists to a large extent of VIPs. Phase change materials (PCMs) from va-Q-tec complement the VIPs’ strong insulating performance. The PCMs ensure reliable and energy-efficient temperature control within the required range.

In order to control logistic processes, va-Q-tec is increasingly developing state-of-the-art software and simulation solutions under the key concept “TempChain 4.0”. va-Q-tec is thereby making the TempChain smart, as it can be intelligently controlled in combination with va-Q-tec thermal packaging. Resources in the IT area were further strengthened to this end in 2020. For example, the newly developed va-Q-nection service solution supports customers in the secure and regulatory-compliant monitoring of the TempChain during shipment. This innovation enables the temperature inside the thermal boxes to be traced in an uncomplicated and secure manner. The va-Q-nection app and TempChain service software enable the recipient to read the temperature report with a mobile device, regardless of location, without having to access the shipment and interrupt the TempChain by opening the shipment packaging.

The technology platform is secured through more than 180 industrial property rights and filings for industrial property rights. These relate mainly to efficient manufacturing methods for powder-filled VIPs as well as the va-Q-check® quality control system, a sensor technology to measure vacuums in VIPs. A total of eleven industrial property rights were filed, including five patents and six registered designs.

The company made further investments in its research and development area in the year under review. Expenditure for this area amounted to kEUR 2,694, above the previous year’s level (kEUR 2,417). Research and development costs of kEUR 359 in total (previous year: kEUR 300) were capitalized in the reporting period.

2.2 BUSINESS REPORT

2.2.1 Macroeconomic environment and Group-specific conditions

The outbreak of the SARS-CoV-2 coronavirus combined with restrictive measures to contain the pandemic led to an unprecedented economic downturn worldwide in 2020. After economic forecasts around the world had to be sharply revised downwards in March and April 2020, the economy recovered rapidly from May to October 2020, between the two major waves of the pandemic. The Eurozone, which was hit particularly hard by the virus, even managed to make up almost all of the second quarter’s loss in the third quarter of 2020. This suggests that the economy will regain momentum in spring 2021 after the currently severe second wave has subsided. Risks arise from the low vaccination rate in Europe as well as possible virus mutations for which previous vaccines may prove less effective. Since the start of the pandemic, central banks have implemented numerous measures to prevent the recession from triggering an additional financial crisis. Moreover, extensive economic stimulus packages were adopted worldwide. The new US president’s consensus-based trade and economic policy is also likely to have a positive impact on global trade – and thereby on strongly export-oriented economies in Europe, especially the domestic economy. For further information on coronavirus in connection with va-Q-tec, please see the report on opportunities and risks.

The International Monetary Fund (IMF) forecast that the global economy will have contracted by 3.5% in 2020 due to coronavirus. Provided the coronavirus-related risks subside in 2021 and monetary and fiscal policies remain supportive, the economic recovery from the coronavirus crisis could accelerate in 2021. Accordingly, the IMF expects growth to resume at a level of 5.5% in 2021. Developing and emerging economies will make an above-average contribution to global growth, according to the forecast. As a globally active Group, va-Q-tec consequently sees itself exposed to both opportunities and risks in macroeconomic terms.

Key revenue drivers for the va-Q-tec Group include the two target markets of Healthcare and Logistics as well as Appliances and Food, which together account for 88% of consolidated revenue.

The market for temperature-controlled packaging systems in the pharmaceutical sector is influenced worldwide by sustainable trends, which will hardly be affected by the Covid-19 pandemic, or will tend to accelerate further. More and more drugs are temperature-sensitive, regulation of transport chains is increasing and drugs are developed and produced in a relatively decentralized manner globally. Market research agency ResearchAndMarkets takes an optimistic view of market growth over the coming years: over the 2018 to 2023 period, ResearchAndMarkets expects an average annual growth rate of 9.1 %, whereby va-Q-tec assumes the relevant market subsegments (high-performance packaging systems) will grow faster. More stringent regulatory requirements made of TempChain logistics (according to "Good Distribution Practice") are making ever more efficient packaging systems necessary for pharmaceutical industry customers. Of the top 100 drugs in the world, around 70% are temperature sensitive.

More than half of the temperature-sensitive drugs are biopharmaceuticals – drugs that the manufacturer produces from biological sources. Industry specialist Pharmaceutical Commerce expects temperature-sensitive biopharmaceuticals to register an above-average annual growth rate of around 8% between 2017 and 2023. The growth potential of va-Q-tec is also supported by the fact that the pharmaceutical markets in emerging markets are growing more strongly, resulting in more shipments through different and more extreme climatic zones. This makes good temperature control during shipments increasingly important.

The functioning of SARS-CoV-2 vaccines and vaccines in general, such as vector-based and mRNA vaccines, as well as the challenges relating to their temperature-controlled shipment, have come into public focus in the wake of the coronavirus crisis. Reliable, secure shipment of the raw materials required for vaccine production is already necessary during the manufacturing process. In many cases, these have to be transported at a constant temperature, e.g. as low as -70 °C – often for several days.

va-Q-tec is convinced that it can outpace the rate of market growth both with its high-quality system solutions in sales as well as with its rental solutions ("Serviced Rental" of thermal packaging systems). Especially with groundbreaking rental solutions, va-Q-tec aims to enter markets that only conventional thermal packaging systems have served to date.

After the healthcare industry, manufacturers of refrigeration and freezing equipment are the second most important customer. According to an estimate by ResearchAndMarkets, the market for vacuum insulation panels will grow by 20% annually between 2019 and 2026.

Overall, va-Q-tec addresses growing markets with its products business and its VIPs. In Germany, approximately 60% of primary energy is harnessed for thermal purposes – refrigeration or heating in other words – according to the Working Group on Energy Balances (AGEB). Since the foundation of va-Q-tec, an important goal has been to deploy the company's products in order to make the worldwide consumption of energy for thermal purposes as efficient as possible, and to reduce greenhouse gas emissions. For example, the vacuum insulation panels produced annually for the refrigerator industry already save the energy generated by many wind turbines. With rising consumer prices for primary energy worldwide, growing customer awareness of energy savings ("Fridays for Future") and more stringent statutory regulations, the economic and political incentive to invest in energy efficiency is increasing. This is leading to very interesting business opportunities for va-Q-tec products in the thermal energy efficiency area.

2.2.2 Business trends

In the first quarter of 2020, the global spread of the SARS-CoV-2 virus and the necessary countermeasures had already significantly restricted economic activity worldwide. This trend continued in the second quarter. In the third and fourth quarters – before the renewed lockdown – the economy made a noticeable recovery. As a specialist for high-tech insulation boxes and containers, va-Q-tec 2020 tended, however, to be only marginally affected by the global economic effects, taking into account the positive and negative consequences overall. Rather, it is clear that va-Q-tec's shipment solutions have provided a key support in global efforts to combat the Covid-19 virus, including the shipment of temperature-sensitive Covid-19 test kits and drugs. With va-Q-tec's help, several hundred million coronavirus test kits were transported worldwide by air freight. However, va-Q-tec's high-tech boxes and containers are also used worldwide for other urgently needed medicines: varying from international long-distance deliveries to short-distance shipments on the last mile to the patient. Demand for such shipment solutions for the temperature-controlled shipment of pharmaceutical and biotech products continued to grow even during the coronavirus

crisis, so that in 2020 the share of revenue generated by solutions for the healthcare industry expanded to 74% (2019: 69%). Nevertheless, the vacuum insulation panel business suffered setbacks, especially as production facilities, for example those of refrigerator customers, had to close temporarily due to the pandemic. Likewise, va-Q-tec is very involved internationally in the business with clinical trials. Here, too, a decrease occurred in 2020, as considerably fewer new trials were launched due to coronavirus.

The global distribution of coronavirus vaccines poses a further challenge that is becoming increasingly important. These must be transported at constant temperatures in order to be able to ensure their effectiveness at the destination. In particular, mRNA vaccines require a controlled and constant cold chain in this extremely low temperature range in order to ensure efficacy. In the worst case, temperature deviations in a vaccine can lead to spoilage of the valuable product. To date, this temperature range has only rarely been required within thermologistics, and above all not in the shipment volumes that are now required. For this reason, va-Q-tec had already been preparing intensively for this task since the summer of 2020.



The sharp reduction in air freight capacities that has been caused by the coronavirus restrictions poses an additional challenge, especially for pharmaceutical logistics. "Made in Germany" passive high-performance containers and boxes are ideal for shipments of this kind. Thanks to their product properties, they are able to maintain a constant internal temperature for up to 200 hours, including in extreme or fluctuating outside temperatures – without the need for expensive and cumbersome external energy supply during shipment.

As early as the fourth quarter of 2020, va-Q-tec consequently started to further increase the existing thermal container fleet in order to ensure the containers' availability and high quality standards, including in the event of a very short-term ramp-up of global vaccine production and distribution. For the same reason, additional investments were made in the technical infrastructure of the worldwide TempChain network and the establishment of further stations worldwide.

Overall, business in 2020 performed well, including thanks to a portfolio that is in demand in times of crisis. Dynamic revenue growth continued with an 12% growth rate. Earnings before interest, tax, depreciation and amortization (EBITDA) increased by 18% year-on-year from kEUR 9,673 to kEUR 11,399. The margin thereby rose from 13% to 14% in terms of total income and from 15% to 16% in relation to revenues.

Systems division (sale of thermal packaging systems)

In the Systems division, revenues grew by 30% year-on-year, from kEUR 15,054 in 2019 to kEUR 19,520. Large orders from Scandinavia for several thousand thermal boxes based on va-Q-med® technology were especially important for va-Q-tec in 2020. The boxes have been additionally adapted to customer requirements for the special application: in order to integrate the thermal packaging into local operating procedures and to be able to utilize it in severe Scandinavian winters without problems, modifications were made to the boxes' design in response to customer wishes.

These orders are in line with further last-mile projects in Germany (kohlpharma), Switzerland (Swiss Post), Singapore and further countries, thereby underscoring the growing international importance of "last mile" solutions from va-Q-tec. This "last mile" – the last mile from the wholesaler to the pharmacy, or from the (online) pharmacy directly to the patient – presents suppliers worldwide with major challenges. The TempChain required for drug logistics must be stringently adhered to, and documented, in order to ensure that temperature-sensitive medications are effective.

In order to be able to supply difficult-to-reach regions with the temperature-sensitive drugs, Covid-19 diagnostic kits and coronavirus vaccines, va-Q-tec has developed a shipment solution especially for coronavirus test kits and vaccines within a very short time for the Systems division: the va-Q-pal SI (SI for SuperInsulation). This solution is fully adapted to the size of usual pallets, and has a very good temperature holding time. For example, this solution can maintain the frequently required temperature range of -20 °C required for coronavirus diagnostic kits for 120 hours, including in extreme external temperatures, without being dependent on external energy input or even constant refilling with dry ice.

Services division (Serviced Rental of thermal packaging systems)

va-Q-tec's Services business comprise the container and box rental business for the shipment of temperature-sensitive goods, predominantly products from the pharmaceuticals and biotech areas. In the 2020 financial year, this division recorded an increase of 10% to kEUR 32,657 compared to the same period of the previous year (2019: kEUR 29,811). Overall, the customer base continued to broaden and more supply lines were put into operation. While the rental of thermal boxes for clinical studies in 2020 decreased due to coronavirus, the division benefited from a large number of international shipments of Covid-19 diagnostic kits and initial vaccine shipments. The expansion of the Services division will continue in the future and is considered a key growth factor for va-Q-tec.

Products division (sale of vacuum insulation panels and phase change materials)

va-Q-tec's solutions in its Products division help companies to realize more energy efficiency and sustainability in numerous application areas and products. In addition to refrigerator manufacturers, customers of va-Q-tec that are already benefiting from this are to be found, for example, in the construction industry (building insulation) and in the commercial vehicle industry (refrigerated trucks).

In 2020, revenue was stable compared to the prior-year base at kEUR 18,303 (2019: kEUR 18,440). On the one hand, pandemic-related closures of customers' production plants in the refrigerator sector had a negative impact on va-Q-tec's business in the first half of the year. In part, this situation persisted until the end of May. At the same time, since the start of the previous year (2019), va-Q-tec's European customers have been experiencing increasing competitive pressure from Asia and Eastern Europe in consumer markets for refrigerators and freezers. At the end of the second quarter of 2020, the sale of VIPs reported initial catch-up effects, which continued during the third and fourth quarters of 2020.

In September 2020, va-Q-tec invested together with a co-investor in 3D printing start-up company ING3D (from Fürth, Germany) as part of strategic first-round financing. ING3D has succeeded in creating the first purely mineral 3D print worldwide, with the patent for the process pending at present. The aim of the partnership with ING3D is to develop in the medium term a novel type of 3D-printed insulation material that enables complex construction forms, including for high-temperature applications. Although the project is still at an early stage, it joins other already commercially significant projects, e.g. in the areas of Technics and Industry as well as Mobility. In the third quarter of 2020, va-Q-tec presented its latest product development, the “va-Q-shell pipe”. With this insulation solution, pipelines – through which a significant amount of thermal energy continues to be lost today – can be thermally insulated in a cost-effective, secure and environmentally compatible manner. va-Q-tec is thereby advancing the topic of “energy efficiency in technical applications”, and with the help of high-margin high-tech solutions is developing its Products division further in order to differentiate itself to an even greater extent from its competitors.

National and international business trends

In November 2020, va-Q-tec announced the successful conclusion of an extensive heads of terms agreement with a global pharmaceutical manufacturer for the provision of thermal containers for the international distribution of a coronavirus vaccine. It has been agreed with the partner that the global, large-volume distribution of its vaccines will start with the help of va-Q-tec’s shipment solutions. The potential order volume extends to several thousand of the high-performance thermal containers and thereby lies in the high single-digit million euro range in terms of revenue. The approval of the active substance, which it is currently assumed will be granted, is an essential prerequisite in this context.

In view of the expected large number of vaccine shipments worldwide, va-Q-tec already further expanded the technical infrastructure of the Group’s own global TempChain network in 2020. Two new TempChain Service Centers were opened in Kansas (USA) and Glasgow (UK) in the second half of the year. Four further stations on three continents will follow in the first quarter of 2021. Through its 40 international stations, va-Q-tec gives pharmaceutical companies access to a fleet of several thousand passively temperature-controlled high-tech rental containers. In total, va-Q-tec, according to its own estimates, has the world’s largest fleet of passively temperature-controlled, high-performance thermal containers at its disposal.

In November 2020, va-Q-tec issued a CHF 25 million bond. The bond was offered for public purchase exclusively in Switzerland and is intended to serve further investments in the container and box fleets, the scheduled refinancing of existing financial debt, and general financing purposes.

2.2.3 Non-financial performance indicators

Employees at va-Q-tec

As a technology company with extensive coverage of the value chain, va-Q-tec ascribes particular significance to its staff and their qualifications. The employees’ knowledge, skills, further development and commitment are essential for va-Q-tec’s further success and performance. Staff received both in-house and external training measures during the year under review. Along with corresponding functional training sessions for employees, the focus was on the cross-functional topic of project management. va-Q-tec employs a high number of students, especially in research and development. A total of 20 working students were employed at va-Q-tec (previous year: 14). The average of employees (including Management Board members and trainees) grew in the previous by 55, from 464 in the previous year to 519 in the 2020 financial year.

2.2.4 Business results and analysis of the financial position and performance

Results of operations

kEUR unless stated otherwise	2020	2019	Δ 20/19
Revenues	72,106	64,667	+12%
Total income	84,132	72,817	+16%
Cost of materials and services	-32,751	-28,993	+13%
Gross profit	51,381	43,824	+17%
Personnel expenses	-26,111	-22,389	+17%
Other operating expenses	-13,871	-11,762	+18%
EBITDA	11,399	9,673	+18%
<i>EBITDA margin on total income</i>	14%	13%	+1 pp
<i>EBITDA margin on revenue</i>	16%	15%	+1 pp
Depreciation, amortization and impairment losses	-12,299	-12,232	+1%
EBIT	-900	-2,559	+65%
Result from equity accounted investments	-	-68	-
Fair value measurement of SUMTEQ	647	1,771	-63%
Net financial result	-1,259	-1,063	-18%
EBT	-1,512	-1,919	+21%

Overall new order intake in the 2020 financial year was significantly above the previous year's level. As of 31 December 2020, the order book position was also further increased compared to the previous year, supporting the company's positive outlook. Given this, va-Q-tec increased its revenues by 12% to kEUR 72,106 in the 2020 financial year. The revenue growth was driven by the Systems division (sale of thermal packaging systems) and the Services division ("serviced rental" of thermal packaging systems), whereas the Products division decreased slightly due to coronavirus.

With the publication of the half-year figures, the Management Board had specified the revenue and EBITDA forecast for the 2020 financial year. As part of this specification, the company assumed strong revenue growth of 10–15% year-on-year. In addition, va-Q-tec continued to expect a year-on-year improvement in the EBITDA margin in the 2020 financial year. This specific forecast was achieved with the final results.

The German segment (va-Q-tec AG) contributed kEUR 34,847 to consolidated revenue (previous year: kEUR 34,442), the UK segment (va-Q-tec UK) kEUR 28,776 (previous year: kEUR 24,917), and the Other segment kEUR 8,483 (previous year: kEUR 5,308).

In the 2020 financial year, revenues generated with Products (sale of vacuum insulation panels) were down by 137 from kEUR 18,440 to kEUR 18,303 (-1%). In the Systems division (sale of thermal packaging), revenue increased year-on-year by kEUR 4,466, from kEUR 15,054 to kEUR 19,520 (+30%). The Group generated revenues of kEUR 32,657 with Services ("Serviced Rental" of thermal packaging), compared with kEUR 29,811 in the previous financial year (kEUR +2,846; +10%).

Total income reported stronger growth than the rate of revenue growth in the reporting period, rising by 16% to kEUR 84,132 (previous year: kEUR 72,817). Work performed by the company and capitalized in the amount of kEUR 6,379 (kEUR 3,947), which is included in this item, arose in the reporting period primarily from the continued expansion of the container and box fleets produced in-house. Other operating income of kEUR 4,669 (EUR 4,498) resulted mainly from the reversal of the special item from container sale-and-leaseback transactions. Until the end of 2018, this special item on the liabilities side arose from the sale of self-manufactured containers by the parent company va-Q-tec AG or va-Q-tec UK Ltd. to leasing companies and subsequent finance leaseback by the UK subsidiary, and is reversed over a period of five years (for further explanations, please refer to the section "Sale-and-finance-leaseback transactions" in the notes to the consolidated financial statements).

The cost of materials and purchased services rose by 13% from kEUR 28,993 in the previous year to kEUR 32,751. The increase is primarily attributable to higher revenues in the Systems business and logistics costs in the "Serviced Rental" segment. Despite the sharp decrease in air freight capacities due to Covid-19, material costs and purchased services in relation to total income reduced by one percentage point from 40% in 2019 to 39% in the reporting period. In parallel, the gross profit ratio improved to 61% in 2020 (previous year: 60%).

Personnel expenses in 2020 were up by kEUR 3,722 compared with the prior year, rising from kEUR 22,389 to kEUR 26,111 (+17%). Measured in terms of total income, this corresponds to a stable ratio of 31% (previous year: 31%). In addition to usual wage and salary increases, the rise in absolute terms mainly reflects the year-on-year increase in the average number of employees by 55 individuals.

Other operating expenses increased by EUR 2,109, from kEUR 11,762 in the prior-year period to kEUR 13,871 in 2020 (+18%). Measured against total income, this results in a stable other operating expense ratio of 16% (previous year: 16%), unchanged from the previous year. In particular, higher freight costs and the weak US dollar exerted a particularly negative impact on other operating expenses in the third and fourth quarters.

Overall, earnings before interest, tax, depreciation and amortization (EBITDA) rose by kEUR 1,726, from kEUR 9,673 to kEUR 11,399 (+18%). This corresponds to a slightly improved EBITDA margin of 14% in 2020, compared with 13% in 2019, in relation to total income. In terms of revenues, it represents an improvement from 15% in 2019 to 16% in 2020. Adjusted for the higher net balance of foreign currency income and expenses, EBITDA would have increased by kEUR 2,622, from kEUR 9,598 in the previous year to kEUR 12,220 (+27%). This would correspond to an EBITDA margin of 15% in 2020, after adjusting for the higher net balance of foreign currency income and expenses, compared with 13% in 2019, in relation to total income. In terms of revenues, it would represent an improvement from 15% in 2019 to 17% in 2020.

Given the moderate level of investment activity, depreciation, amortization and impairment losses reported only a slight increase to kEUR 12,299 (previous year: kEUR 12,232).

The operating result (EBIT) in 2020 amounted to kEUR -900. Compared to the previous financial year, this represents a significant EBIT improvement of kEUR 1,659 (previous year: kEUR -2,559). Adjusted for the higher net balance of foreign currency income and losses, EBIT would even have increased by kEUR 2,554, from kEUR -2,633 in the previous year to kEUR -79.

The net financial result amounted to kEUR -1,259 after kEUR -1,063 in the previous year and reflects the increased use of borrowed capital.

For the 2020 financial year, earnings before taxes (EBT) improved slightly compared to the previous financial year to kEUR -1,512 (previous year: kEUR -1,919). The gain included here, recognized in profit or loss, due to the change in the fair value of the investment in SUMTEQ GmbH as a result of a further capital increase of the company amounts to kEUR 647 (previous year: kEUR 1,771).

German reporting segment (va-Q-tec AG)

kEUR unless stated otherwise	2020 (IFRS)	2019 (IFRS)	Δ 20 / 19
Revenues	49,363	44,028	+12 %
EBITDA	1,718	1,009	+70 %
Equity ratio	46 %	56 %	-10 pp
Average number of employees	440	398	+42

In the German reporting segment (va-Q-tec AG), revenues grew from kEUR 44,028 in the previous year to kEUR 49,363 in 2020 (+12 %). EBITDA increased by 70 % to kEUR 1,718 in 2020 (previous year: kEUR 1,009). The revenue and earnings growth occurred primarily thanks to higher sales to the UK subsidiary of containers produced in-house, and the growing business with systems (integrated thermal packaging). The number of employees rose by 42 year-on-year to 440 (previous year: 398).

UK reporting segment (va-Q-tec UK Ltd.)

kEUR unless stated otherwise	2020 (IFRS)	2019 (IFRS)	Δ 20 / 19
Revenues	30,038	26,255	+14 %
EBITDA	11,348	8,665	+31 %
Equity ratio	26 %	16 %	+10 pp
Average number of employees	49	41	+8

The UK reporting segment comprises mainly the rental of temperature-managed containers for the global pharmaceuticals industry. Revenues in this segment rose significantly in 2020, by kEUR 3,783 (+14%), from kEUR 26,255 in the previous year to kEUR 30,038. The UK reporting segment also benefited from deliveries of test kits, drugs and initial vaccines due to coronavirus, but also experienced coronavirus-related delays in the development of new projects. Among other things, a record number of shipments in the global container rental business were handled by the logistics team of va-Q-tec Ltd. with a high degree of cost discipline despite significantly reduced air freight capacities. EBITDA in this segment rose by 31 % year-on-year from kEUR 8,665 in 2019 to kEUR 11,348 in 2020 thanks to the significant revenue growth as well as lower-than-average cost increases reflecting optimized logistics processes for the container fleet. The number of employees rose by 8 to 49 (previous year: 41).



Other reporting segment

kEUR unless stated otherwise	2020 (IFRS)	2019 (IFRS)	Δ 20 / 19
Revenues	9,768	6,511	+50 %
EBITDA	-289	-186	-55 %
Equity ratio	-17 %	-7 %	-11 pp
Average number of employees	30	25	+5

The subsidiaries in Singapore, Korea, Switzerland, Japan, Uruguay and the USA, which together form the Other reporting segment, also made a disproportionately high contribution to the Group's revenue growth. This segment's revenue share expanded by 12% in 2020 (2019: 8%). This was mainly due to significant growth in internal revenues in the regions. The subsidiaries in Korea and Uruguay performed especially well in terms of revenue growth. The Korean subsidiary even achieved a slightly positive EBT. All subsidiaries in the Other reporting segment are particularly important for local presence, the expansion of regional operating activities, and the perception of va-Q-tec as a reliable global and regional partner. Revenue increased by kEUR 3,257 (+50%), from kEUR 6,511 in the previous year to kEUR 9,768 in 2020. EBITDA amounted to kEUR -289 (previous year: kEUR -186, -55%). The number of employees rose to 30 as of 31 December 2020 (previous year: 25).

Financial position

Principles and goals of financial management

va-Q-tec's financing strategy is oriented to providing the financial resources required for strong growth. Recourse is made in this context to various financing instruments such as loans, leasing, factoring, overdrafts and government subsidies. Existing financing instruments were optimized continuously in terms of their structures and interest rates. In total, va-Q-tec has adequate financial resources for the needs of a rapidly growing company as of 31 December 2020 with bank balances plus open credit lines of more than EUR 28 million.

In November 2020, the company placed its first transaction on the debt capital market, a CHF bond led by Helvetische Bank AG. The coupon of the 5-year bond was set at 3¾% p.a., and the issue amount at CHF 25 million. The Multibank Framework Credit Agreement was extended by 3 years (until 31 December 2023). Under the terms of the multi-bank agreement, va-Q-tec has made its inventories available to the syndicate banks as collateral for the credit lines, and has undertaken to maintain a minimum equity ratio of 30% as well as minimum EBITDA metrics. In addition, the company has undertaken not to fall below a liquidity level of kEUR 5,000 for the term of the bond. In addition, the Management Board is continuously in talks with banks and financial institutions with regard to short- and medium-term debt financing instruments.

Liquidity

kEUR	2020	2019
Net cash flow from operating activities	7,405	7,188
Net cash flow from investing activities	-11,819	-8,942
Net cash flow from financing activities	14,124	-2,972
Net change in cash and cash equivalents	9,644	-4,664

Net cash flow from operating activities including working capital changes amounted to kEUR 7,405 in 2020, kEUR 217 above the adjusted level of kEUR 7,188 in the prior year. Before working capital changes, va-Q-tec generated a positive cash flow from operating activities of kEUR 6,745 as of the balance sheet date, not least due to the improvement in EBITDA, compared with kEUR 5,808 in 2019.

Overall, the changes in working capital had a positive effect on cash flow from operating activities. The effect from the increase in inventories of kEUR 981 (previous year: kEUR 333), which was used to increase reserve stocks of materials required for production and the equipping of the subsidiaries abroad, was offset by effects from the increase in trade payables of kEUR 1,617 (previous year: kEUR 127). Trade receivables remained almost unchanged year-on-year at kEUR 24 compared to kEUR 920 in the previous year due to opposing effects (expansion of the business volume on the one hand, and expansion of factoring at the subsidiary in the UK on the other). In total, the effect from working capital changes of kEUR 660 on operating cash flow was thereby significantly lower than in the previous year (kEUR 1,380).

Cash flow from investing activities changed from kEUR -8,942 in the prior-year period to kEUR -11,819 in 2020. The purchase of property, plant and equipment resulted in kEUR -11,351 of cash flow, compared with kEUR -8,746 in the previous-year period. Due to the expected increase in demand in the wake of the coronavirus pandemic, a selectively increased need for investment has been identified. In principle, however, the most important investments and initiatives for further growth towards EUR 100 million in revenues have already been completed for the most part in 2018, faster than originally planned.

The cash flow from financing activities of kEUR 14,124 (previous year: kEUR -2,972) results primarily from the issuance of the CHF bond to finance long-term investments and corporate growth, including working capital requirements, with a simultaneous reduction in bank borrowings and liabilities from leasing agreements.

Net assets and capital structure

Assets

kEUR	31/12/2020	31/12/2019
Non-current assets		
Intangible assets	2,955	2,233
Property, plant and equipment	69,636	68,879
Investment property	1,614	1,614
Capitalized contract costs	73	158
Financial assets	3,503	2,474
Other non-financial assets	1,056	1,100
Deferred tax assets	2,471	2,319
Total non-current assets	81,308	78,777
Current assets		
Inventories	11,615	10,676
Trade receivables	6,532	6,666
Other financial assets	927	586
Tax assets	3	230
Other non-financial assets	1,549	1,364
Cash and cash equivalents	17,134	7,490
Total current assets	37,760	27,012
Total assets	119,068	105,789

Compared with 31 December 2019, property, plant and equipment increased slightly kEUR 68,879 from by a total of kEUR 757 to a level of kEUR 69,636 as of 31 December 2020. Total non-current assets rose by kEUR 2,531 from kEUR 78,777 to kEUR 81,308 as of 31 December 2020. In addition to the fair value measurement of the SUMTEQ investment, this slight increase is mainly due to investments in production capacity and intangible assets.

Inventories increased by kEUR 939 to kEUR 11,615 (previous year: kEUR 10,676) in line with revenue growth, which is also attributable to a higher level of reserve stocks, pre-production due to Covid-19 and equipment for the foreign companies. Despite the growth in revenue, trade receivables decreased slightly by kEUR 134 to kEUR 6,532 as of 31 December 2020 compared with 31 December 2019 (previous year: kEUR 6,666). This is due, among other things, to an expansion of factoring in relation to receivables of the UK subsidiary in the 2020 financial year. Current other financial assets increased by kEUR 341 from kEUR 586 to kEUR 927 as of 31 December 2020, due to receivables from the factoring company, e.g. for deposits. Total current assets rose from kEUR 27,012 as of 31 December 2019 to kEUR 37,760 as of 31 December 2020. This is primarily due to the significant increase in cash and cash equivalents, the total of which rose by kEUR 9,644, from kEUR 7,490 to kEUR 17,134. In the same period, for the aforementioned reasons, total assets reported a considerable rise from kEUR 105,789 to kEUR 119,068 as of 31 December 2020.

Investments

The focus of investment activity in 2020 was on continued investment in production capacity in Würzburg and Kölleda, the expansion of the container fleet for the global container rental business and the expansion of the thermal box fleet. A total of kEUR 12,433 (previous year: kEUR 11,310) gross was invested in property, plant and equipment, of which kEUR 4,034 was invested in the container fleet (previous year: kEUR 2,404) and kEUR 1,853 in intangible assets (previous year: kEUR 710).

Property, plant and equipment, net of depreciation and other movements, rose slightly from kEUR 68,879 to kEUR 69,636. After a large part of the basic investments for a revenue volume of EUR 100 million had already been made in 2017 and 2018, selective investments in new capacities are unavoidable in the context of the significantly higher demand expected in 2021 (coronavirus vaccine shipments).

Equity and liabilities

kEUR	31/12/2020	31/12/2019
Equity		
Issued share capital	13,090	13,090
Treasury shares	-54	-54
Additional paid-in capital	46,158	46,158
Cumulative other comprehensive income	-42	-26
Retained earnings	-17,896	-16,461
Total equity	41,256	42,707
Non-current liabilities and provisions		
Provisions	96	73
Bond	22,064	-
Bank borrowings	25,170	22,840
Other financial liabilities	3,857	5,333
Other non-financial liabilities	5,425	6,547
Deferred tax liabilities	-	-
Total non-current liabilities and provisions	56,612	34,793
Current liabilities and provisions		
Provisions	190	130
Bank borrowings	3,919	11,404
Other financial liabilities	6,434	6,867
Contractual liabilities	40	308
Trade payables	5,978	4,485
Tax liabilities	44	42
Other non-financial liabilities	4,595	5,053
Total current liabilities and provisions	21,200	28,289
Total assets	119,068	105,789

As a result of the overall consolidated loss, the Group's equity decreased by kEUR -1,451 to kEUR 41,256, which corresponds to a reduction in the equity ratio to 35% as of 31 December 2020 (31 December 2019: 40%) due to the simultaneous significant increase in total assets. The ratio thereby stands at the lower end of the target range of 35–40%.

Long-term bank borrowings consist primarily of real estate loans with terms of 15 to 20 years, and fixed interest rates at the current low level. Non-current bank borrowings and from bonds issued increased from kEUR 22,840 to kEUR 47,234, primarily as a result of the first-time issuance of a Swiss franc bond in Switzerland in the context of additional requirements, including due to coronavirus. At the same time, current bank borrowings decreased by kEUR 7,485 from kEUR 11,404 to kEUR 3,919 due to the repayment of current account lines.

Non-current other financial liabilities reduced from kEUR 5,333 to kEUR 3,857. Within this item, the sale-and-finance-leaseback financing for the container fleet, in particular, declined as scheduled from kEUR 3,956 to kEUR 2,241. Non-current other non-financial liabilities decreased significantly by kEUR 1,122 from kEUR 6,547 to kEUR 5,425, primarily due to the scheduled discontinuation of special items for container profits. Development banks disbursed to va-Q-tec a total of kEUR 265 of funding for investments in the reporting period (previous year: kEUR 0), mainly for the Kölleda site. Other current financial liabilities decreased by a total of kEUR 433, from kEUR 6,867 to kEUR 6,434. Other current non-financial liabilities reduced on a net basis by kEUR 458 to kEUR 4,595 (previous year: kEUR 5,053). Within this item, again primarily the special item for deferred container profits reduced by kEUR 746, as scheduled, while, among other items, liabilities for employee bonuses and profit-sharing increased by kEUR 169 as a result of the significantly improved results.

Bank borrowings plus equipment leasing thereby accounted for 28% of total assets at kEUR 33,051 (previous year: kEUR 40,195, 38%). At the level of the UK reporting segment, further financing transactions were concluded as part of the expansion of the container fleet. These are allocated to bank borrowings. For this reason, the total volume of finance leases decreased by kEUR -1,987, from kEUR 5,943 in the 2019 year to kEUR 3,955 in the 2020 financial year. Current liabilities and provisions stood at kEUR 21,200 in the financial year under review, representing 18% of total equity and liabilities (previous year: kEUR 28,289, 27%). The Group's non-current liabilities and provisions amounted to kEUR 56,612 as of 31 December 2020, corresponding to 48% of total assets (previous year: kEUR 34,793; 33%). Trade payables rose to kEUR 5,978, compared with kEUR 4,485 in the previous year.

Overall statement on business progress

Taking into account both the positive and negative consequences of Covid-19, va-Q-tec looks back on the most successful financial year in the company's history. At the beginning of the pandemic, the company decided on and implemented various measures to protect its employees and partners, such as hygiene concepts and the possibility of working from home. Short-time working was not implemented within the operations of the globally operating Group, and hardly any restrictions were imposed. The Group also succeeded in servicing all customer orders with stringent cost control, despite restrictions on air freight capacity. The growth in revenue and earnings was maintained overall, and profitability improved further. Consolidated revenues continued to show double-digit

growth of 12% to kEUR 72,106. The strongest revenue growth by far was again achieved in thermal packaging, especially for healthcare applications. In total, the revenue share of the "Healthcare" target market amounts to 74%, and once again increased significantly compared to the same period of the previous year (69% revenue share). The Covid-19 crisis demonstrates the importance of stable and secure supply chains, especially in the pharmaceutical industry. va-Q-tec contributes to the fight against Covid-19 with thermal shipments, for example for drugs and test kits. This has also significantly increased the public perception of va-Q-tec as a reliable partner for the life science industry. Customer demand continues to be high in a market that is growing by almost 10% annually. As a technology and innovation leader, va-Q-tec benefits disproportionately from this. va-Q-tec is setting the trend towards passive, energy-efficient and CO₂-saving thermal transport solutions. The coronavirus crisis had made itself felt most clearly in the Products business (sale of VIPs and PCMs) in the first half of the year. However, this effect was almost offset in the second half of the year by accelerated demand for VIPs. Overall, the very solid financing structure and liquidity situation were further improved on a sustained basis.

EBITDA increased by 18% to kEUR 11,399. Measured in terms of total income, this results in a slightly improved margin of 14%. Measured in terms of revenues, this corresponds to a slightly improved margin of 16%.

EBITDA adjusted for currency effects reported a disproportionate increase of 27% to kEUR 12,220. The currency-adjusted EBITDA margin as a percentage of revenues improved significantly by 2 percentage points to 17%. Measured in terms of total income, this corresponds to an adjusted margin of 15%. Adjusted EBIT was almost at breakeven at kEUR -79. As a consequence, profitability adjusted for currency effects improved overall despite Covid-19. Net cash flow from operating activities reported a further improvement to kEUR 7,405.

2.3 FORECAST

2.3.1 Outlook

The following forecasts for the trend in management metrics were made under the assumption of the macroeconomic conditions for 2021 described above. They are also based on the expected positive growth rates in the market for VIPs and insulation materials overall. A fast growth dynamic is expected in the market for thermal packaging and services, particularly in the high-performance thermal packaging segment. These assumptions are underpinned by estimates produced by market research institutes IMARC and ResearchAndMarkets, which already expect growth in the low double-digit percentage range (see 2.2.1 Macroeconomic environment and Group-specific conditions). va-Q-tec expects to benefit to an above-average extent from the megatrends of energy efficiency, regulation of cold chains (product safety), and the globalization of value chains. Also taking into consideration the opportunities and risks entailed in operating activities as outlined in section 2.4.2, the company identifies growth levers in tapping new markets and application areas in terms of both products (e.g. last mile to the pharmacy, the utilization of rental containers for temperature-sensitive goods outside the pharmaceuticals industry, TempChain 4.0 applications, requirements relating to personalized drugs) and geography (new and further developed country markets such as Latin America and India).

Overall statement

For the 2021 financial year, va-Q-tec expects particularly strong revenue growth to a level of between EUR 90 million and EUR 100 million, depending on when and to what extent production levels for Covid-19 vaccines are ramped up and how widespread global distribution is realized.

As far as earnings before interest, tax, depreciation and amortization (EBITDA) are concerned, the company expects that for the 2021 financial year they will grow at a faster year-on-year rate than the rate of revenue growth, thanks to operating economies of scale and a changed product mix reflecting a growing proportion of higher-margin product groups. Accordingly, the company also expects a year-on-year stronger margin improvement compared to 2020.

The equity ratio is expected to remain constant in the 2021 financial year.

The number of employees will increase slightly in 2021 as a result of the international business expansion and the coronavirus-related increase in demand.

As a consequence, the Management Board of va-Q-tec AG expects above-average revenue growth compared with the target markets, accompanied by a further significant improvement in EBITDA profitability compared with 2020.

2.3.2 Forward-looking statements

This report includes forward-looking statements based on current assumptions and forecasts of the management of va-Q-tec AG. Such statements are subject to risks and uncertainties. These and other factors can lead the company's actual results, financial position, development or performance to differ significantly from the estimates provided here. The company assumes no obligation of any kind to update such forward-looking statements and adjust them to future events or developments.

This document is an English translation of an original German document; in the event of discrepancies, the original German version shall prevail and take precedence over the English translation of the document. For technical reasons, formatting differences may arise between the accounting documents contained in this document and those published due to legal requirements.

For reasons of better readability, the masculine form is predominantly used in this annual report. Nevertheless, the information refers to persons of any gender.

2.4 REPORT ON OPPORTUNITIES AND RISKS

2.4.1 Risk management and internal control system

Risk management va-Q-tec is based on three main aspects:

- a risk-aware corporate culture
- a formalized risk management system
- the internal control system

Anchoring risk awareness within the corporate culture

All successful business activity is connected with the conscious assumption of risks. It is crucial to the corporate governance of va-Q-tec that existing and newly added risks be handled in such a way to enable them to be managed actively, and incur as few losses as possible. Opportunities in a business sense should also be leveraged to enhance the company's value for all stakeholders. va-Q-tec enjoys a high degree of "risk awareness", which is communicated openly and transparently. From the Management Board's perspective, risk awareness that is translated into practice forms one of the most efficient instruments for handling risks. If employees are aware of risks and manage them professionally, the risk of losses being incurred because of risks materializing is diminished. Risks are disclosed and managed both proactively and transparently in such an environment. The establishment and company-wide communication of compliance guidelines also fosters greater awareness of compliant behavior. A compliance management system is in place that defines a code of conduct for both internal and external business activity. The compliance officer appointed in this context records, processes and reports to the Supervisory Board and its Audit Committee on all relevant compliance cases.

Risk management system

Risk management at va-Q-tec refers to the systematic engaging with risks, understood as negative events whose occurrence can incur losses and/or unforeseen costs within the company. To meet this requirement, internal and external risks for all segments and subsidiaries are systematically surveyed, measured, steered, managed and reported to the Management and Supervisory boards with the risk management system.

To supplement the existing internal and external control system, the Group management of va-Q-tec already implemented a further developed and formalized risk management system (RMS) in the 2016 financial year for this purpose. The RMS is based on the experience gained in recent years in identifying risks, e.g. the findings of the risk inventory compiled during the preparation of the risk inventories since 2017. At the meetings of the Management Board, the Audit Committee and the Supervisory Board, the developments and changes in existing risks and the emergence of new risks regularly form the subject of consultations. As in the previous year, the risk situation in the 2020 financial year was evaluated on the basis of two risk inventories as of the reporting date. In the interim, a regular exchange of information on the risk situation also occurred between those responsible for risk officers, risk managers, the Management Board and the Supervisory Board. Furthermore, the RMS was continuously further developed during the course of the 2020 financial year.

The aims of the risk management system at va-Q-tec are, as a matter of principle, to avoid, reduce and transfer risks, including through corresponding insurance cover, for example. Along with compliance with regulatory requirements, systematic risk management secures long-term and sustainable competitiveness. Such risk management also aims to identify potential going concern risks at an early stage. Risk management at va-Q-tec is not only a security instrument but also a management instrument. Moreover, risks that are identified offer new business opportunities and competitive advantages.

The RMS is based on a reporting process, a defined risk inventory and risk assessment during the course of the year. As part of the risk inventory, the respective decision-makers and experts within the specialist areas appraise all significant risks. Risks identified within the va-Q-tec Group are measured according to their potential loss and taking event probabilities into account. The risks identified as part of the risk analysis are categorized into risk classes according to their event probability and impact, by multiplying their respective effect by their respective event probability. The bandwidth of event probabilities and effects starts with "very low" and ends with "very high". Risks can thereby be differentiated and prioritized according to the resultant expected risk value. The specialist areas are required to identify and report new risks as part of risk appraisal during the course of the year. The information that is aggregated in this manner is summarized in risk files that are addressed and reported to the Management Board of the va-Q-tec Group. All risks – newly added as well as existing – are also to be monitored and reported continuously. Requisite countermeasures are launched quickly, and subsequently monitored.

New risks and significantly changed risks also form fixed agenda items at all regular management meetings, at all Management and Supervisory board meetings. They are discussed as part of results briefings between the Management Board of the va-Q-tec Group and the managers of the specialist areas. A review is also conducted as to whether risk minimizing measures that have already been taken are sufficient or whether further steps are to be initiated (such as in terms of ad hoc capital market communications). The Group's risk management system enables management to identify significant risks at an early stage. Initiate countermeasures and monitor their implementation. The auditor also examines the risk early warning system to ensure it is suited to the early identification of going concern risks.

Accounting-related internal control system

va-Q-tec operates a clear organizational, corporate, as well as control and supervision structure. Planning, reporting, controlling and early warning systems and processes exist across the company for the comprehensive analysis and management of earnings-relevant risk factors and going concern risks. The functions in all areas of the (Group) financial accounting process (e.g. financial accounting, financial bookkeeping and controlling) are clearly allocated. To date, va-Q-tec AG has refrained from operating a separate internal audit function due to the company's somewhat small dimensions and limited complexity. The internal audit tasks specified by the Audit Committee are implemented by qualified employees.

Use is mainly made of standard software (Navision) as far as installed financial systems are concerned. Standard consolidation software is used to prepare separate and consolidated financial statements. Here, existing structures have to be adjusted constantly to reflect the company's growth and changing conditions, such as capital market requirements.

The IFRS consolidated financial statements are prepared based on a standard reporting format for submission by all Group companies to the central administration in Würzburg. The validation processes applied there and additional plausibility checks ensure that the separate financial statements of the subsidiaries and of va-Q-tec AG are complete and correct.

The internal control and risk management system relating to the financial accounting process ensures that business transactions are recorded, processed and appraised correctly from a financial accounting standpoint, before being transferred to external financial reporting.

Payment transactions are performed electronically with embedded control mechanisms (two sets of eyes principle with a selected group of individuals). External service providers implement payroll transactions.

The organizational, corporate as well as controlling and supervisory structure determines the framework of the ICS. Clear statutory and in-house regulations and guidelines ensure a standard and proper financial accounting process. Check mechanisms within the areas directly involved in the financial accounting process, review by the internal control function, backup from the independent auditors and early risk identification by the risk management function are designed to ensure that (Group) financial accounting is free of error.

2.4.2 Operating risks

va-Q-tec measures risks based on their estimated event probabilities and potential effects on the company's financial position and performance, as well as reputation. Measurement of risk loss levels and event probabilities leads to the following examples of key risk indicators.

Event probability	Loss level in EUR	Risk indicator
very low	0 - 50,000	1
low	50,000 - 500,000	4
medium	500,000 - 1,000,000	9
high	1,000,000 - 5,000,000	16
very high	> 5,000,000	25

The Management Board applies the following scheme to measure the characteristic of a risk based on its risk indicator:

Risk indicators	Risk characteristic
0 - 5	Low
5 - 15	Medium
> 15	High

Overall, the following section presents risks after instituting countermeasures.

Risks in the value chain

As a manufacturing company, va-Q-tec has to make recourse to suppliers for intermediate products. va-Q-tec procures the main raw materials, consumables and intermediate products from a limited number of key suppliers. For some materials, only a few purchasing sources are available due to the specific characteristics. It is consequently the objective in the purchasing strategy of va-Q-tec to reduce dependency on individual or a few suppliers by qualifying and selecting new suppliers ("dual" or "multiple" sourcing). As in previous years, in 2020 the company continued to newly qualify and select second and third tier suppliers for intermediate products and materials. The company also consciously includes international suppliers in its selection in order to avoid regional dependency. A medium risk exists for va-Q-tec AG overall due to its limited number of suppliers.

Production stoppages and operational interruptions represent a further risk. The company depends on the continuous operation of its production systems in order to ensure that it can meet delivery requirements, especially to major industrial customers whose value chains are closely intermeshed with that of va-Q-tec. va-Q-tec manufactures at two geographically separate sites in Würzburg and Kölleda. Stoppage at one site has no significant effects on the other site, where production can continue. Where possible and economically feasible, the individual production systems are also decoupled from each other through technical measures, so the stoppage of an individual system does not restrict the operation of other plants.

Besides the outage of existing systems, a risk can also arise in the insufficient overall capacity of the production systems. Along with productivity and efficiency improvements to the existing systems, the company's strong growth can also require early and forward-looking investment in capacity expansions, as the requisite plants sometimes require long delivery times. The company could nevertheless be surprised by sudden market developments, potentially being unable to satisfy all customer orders on the customers' requested dates. Through regular ad hoc reporting on new order trends between the sales areas and the Management Board, the company endeavors to identify such developments at an early stage and counteract them with appropriate measures. For example, such measures can temporarily consist of higher levels of reserve stocks, additional working shifts or the utilization of less appropriate plant for production, in order to bridge the time gap until additional capacities are commissioned. The Management Board also gauges the risk of long-lasting production outage from the aforementioned reasons as low, and also appraises the risk of insufficient capacity as low following the almost completed growth investments.

Rental services ("Serviced Rental") are particularly dependent on external logistics providers, which are not only responsible for operative processes at the network stations – for cleaning, warehousing and cooling processes, in other words – but also for transporting the preconditioned containers and boxes to the end-customers. This can lead to interruptions to operations, loss compensation claims and damage to reputation. Auditing and close-meshed controlling by the company's own logistics specialists serve to assure the quality of "Serviced Rental" for the pharmaceuticals industry globally. For this reason, the Management Board gauges this risk as medium.

Personnel risks

The company's operating activities and success depend on qualified managerial and key personnel. The company's very well trained personnel has acquired specific knowledge, skills and commercial contacts, in part through working for the company for many years. va-Q-tec counters the risk of losing such staff not only through measures aimed at employee loyalty, but also through diversifying the knowledge base through the workforce: key staff departures at va-Q-tec are avoided through employee development, diversification of the knowledge base within the company, and compensation in line with the market. Employee motivation and satisfaction is also boosted through performance-based compensation components, regular further training and the good corporate culture with the possibility to help shape disruptive business models. The risks to which va-Q-tec is exposed due to a change of key staff are appraised as medium level risks

Market and competition risks

The Group in its business activities has a strong focus on major industrial customers. This initially leads to a higher level of customer concentration. The company is constantly reducing the resultant risk through its growing number of customers, and diversification. Further protection exists thanks to a high level of customer loyalty, especially in the healthcare industry. The Group generally endeavors to establish and maintain a close, trusting and sustainable business relationship with all partners, employees and customers, and consequently gauges such risk as medium, and as a risk that can be reduced further.

The growth expectation in 2021 is based to a not insignificant extent on the thermal logistics for Covid-19 vaccines. Should their production ramp-up and global distribution not take place to the expected extent, or should va-Q-tec not be able to participate to the planned extent, this could have material effects on the company's expectations for revenue and earnings.

As a fast-growing company, va-Q-tec might potentially be unable to effectively advance and shape its growth. The Group has almost completed a period of heavy investment in personnel, sales activities, rental fleets, infrastructure and research and development, and is also adapting agilely to short-term opportunities in the wake of the coronavirus pandemic. To this extent, were actual growth to prove lower than planned, the risk exists of a negative effect on operating profits. As a matter of principle, the Management Board decides on such future investments with due objectivity and sense of proportion, and always based on specific expectations about market trends, as well as taking into consideration the ability to finance such investments. Insufficiently researched and/or excessively early investments are avoided as a consequence.

At the same time, significantly higher actual growth than planned generates the risk of a negative effect on the customer relationship due to non-compliance with delivery deadlines, delivery bottlenecks etc., and thereby also on the operating results. Here, too, sound judgement and the early identification of market developments through regular coordination with the sales areas constitute an important instrument to reduce risk, thereby identifying in good time the requirement for capacity expansions, with early decisions being made by the Management and Supervisory boards concerning the necessary investments in production plants and buildings. The Management Board assesses the residual risk as medium.

An intensification of the competitive environment also represents a significant risk. This can generate more pressure on prices and margins.

The company guards itself against such risk through two strategic levers, namely cost optimization measures and innovative products and services. Cost optimization includes, for example, increasingly automated production and the particularly efficient purchasing of intermediate products, with selective backwards integration to upstream value chain steps. The innovation topic includes research and development activities, which have already led to commercially successful, high-quality and particularly differentiated products since the company was formed. The company's range of products and services is distinguished from that of its competitors in many aspects: examples include the possibility to test the quality of the insulation in situ, or the production of VIPs with sections extracted and in three-dimensional form. Overall, the Group gauges the risk due to newly emerging competitors or a more aggressive competitive situation as medium.

Brexit

In order to prepare va-Q-tec continuously for the UK's withdrawal from the EU, which has meanwhile occurred, a cross-divisional and cross-border Brexit team was formed. Together with operating of the UK subsidiary va-Q-tec Ltd., the other Group companies, customers and logistics partners, Brexit risks have been and are being identified, and measures to avoid disruptions in the supply chain have been and are being developed. These include, for example, technical enhancements in Groupwide ERP systems in order to be able to respond to extended customs requirements on the system side. Brexit generates risks for our business, for example due to a possible weakening of the economy. Supply chains may also shift, and medicines or their preliminary products may no longer be transported to the UK but rather to France, Germany and the Netherlands. If the drugs or preliminary products originate in the USA, they still have to be transported across the Atlantic. va-Q-tec's TempChain service centers on the European mainland provide opportunities to deal with such changed logistics chains. Generally, less revenue is calculated in pounds sterling than costs are incurred in pounds sterling. If the pound depreciates against the euro, opportunities for va-Q-tec will arise as a consequence. Possible tax benefits could also create opportunities for va-Q-tec. Overall, va-Q-tec consequently considers Brexit-related risk to be low.

Coronavirus (Covid-19)

In contrast to other industries, va-Q-tec's supply chain is less designed for just-in-time processes. Short-term disruptions in the supply chain can be partially offset as a consequence. Current developments in the world in response to the spread of the novel coronavirus virus, such as factory closures and restrictions on public life continue to pose a specific risk as they have led, and are continuing to lead, to significant reductions in global economic growth and private consumption worldwide. In addition, the pandemic could result in the closure of Group factories and network stations if its own employees or partner companies in the supply chain are affected by quarantine measures. Events and trade fairs where va-Q-tec takes part are also impacted by these effects. Based on an assessment of the consequences, the Management Board views this risk in a differentiated manner and assesses it as a medium risk overall, taking into consideration the risks identified to date and experience with the pandemic in 2020. Increasing drug and vaccine deliveries due to the coronavirus outbreak may provide va-Q-tec with an opportunity to enjoy greater demand in the healthcare and logistics area. As a consequence, a medium risk due to coronavirus (Covid-19) remains in the overall picture. Current developments and restrictions are being closely monitored on an ongoing basis together with our employees, customers, suppliers and partners.

Cyclical target markets

Especially the target markets of Appliances and Food, Technics and Industry, and Building are dependent on the economic situation. The Management Board gauges this risk as low, as the underlying drivers of va-Q-tec's business (increasing regulation and energy efficiency) are less susceptible to economic cycles.

Financial risks

va-Q-tec's central finance department utilizes revolving liquidity plans in order to monitor liquidity risk. The Group was, and is, solvent at all times. Interest risks deriving from existing long-term lending facilities are partly hedged through interest-rate swaps. The Group is exposed to interest-rate risk on its short-term overdrafts, although such risk is currently unlikely to materialize.

va-Q-tec is an internationally active company whose assets, liabilities, revenues, costs and profits are denominated in various currencies, with the US dollar (USD), the British pound (GBP), the Swiss franc (CHF) and the South Korean won (KRW) currently representing the most important foreign currencies. Currency risks are limited due to the fact that most invoicing occurs in euros (the company's functional currency) as well as by way of the company's internationalization. Significant changes in exchange rates could nevertheless have material effects on va-Q-tec's financial position, net assets position and results of operations, which are reported in euros.

The currency risks arising from the issue of the CHF bond were hedged by derivative hedging transactions (cross-currency swaps/CCS) for the portion of CHF 24 million over the term of the bond. The CCS thereby eliminate the EUR-CHF currency risk resulting from the interest and redemption payments for the entire term of the bond for the secured portion.

Overall, the Group gauges risks in its financial area as medium.

Liquidity was secured at all times in the 2020 financial year and was adequate for the needs of a rapidly growing company. A comfortable level of unutilized overdraft lines existed as of the reporting date. For this reason, the Management Board gauges liquidity risk as low at present.

In an overall view of risks, va-Q-tec is predominantly exposed to general business risks (performance risks) and financial risks. The Management Board does not identify any individual or aggregated risks as going concern risks. The company is positioned both strategically and financially to leverage the business opportunities on offer to it.

2.4.3 Future development opportunities

va-Q-tec possesses extensive knowledge relating to compliance with rules and regulations in relevant countries and regions. Laborious and expensive qualification measures at healthcare industry customers – along with corresponding quality assurance and process documentation – deliver the requisite expertise for the successful implementation of packaging solutions for customers. Only a few companies are currently capable of successfully combining the necessary characteristics of thermal packaging within a complex, reliable and at the same time user-friendly offering. With its technology platform, va-Q-tec is one of the few companies worldwide to meet the high requirements. Increasingly complex regulation makes it necessary for a company to constantly further develop itself and research new technologies. In such an environment, high barriers to entering the market for thermal packaging are beneficial for va-Q-tec.

The coronavirus crisis impressively demonstrates the importance of stable and secure supply chains. This is particularly true for the pharmaceutical industry, as the shipment of numerous medicines requires reliable shipment solutions with stable temperatures. In view of the growing appreciation for our temperature-controlled logistics solutions, we consequently expect additional demand impulses in the medium term – especially from the pharmaceutical industry – even after the coronavirus crisis has been overcome.

Demand for VIPs is also increasing in the other target markets as a result of regulations: customers in the “Technology and Industry” target market are currently facing a change in the regulatory environment in important core markets. Like many household appliances, hot water tanks for heating systems are now subject to the “Ecodesign Directive”, i.e. their energy efficiency is made transparent to the end consumer via a labelling system in energy efficiency classes. Moreover, equipment with high energy consumption and a low energy efficiency class is excluded from the European domestic market. Customers of va-Q-tec currently use VIPs mainly to position premium boilers in the highest efficiency classes. In future, and with more stringent regulation, we believe VIP-insulated boilers from the premium segment will also encounter demand in the mass market.

New markets

Since it was founded, va-Q-tec has worked on developing new products and services that open up additional markets and application possibilities for vacuum insulation. Along with basic research and product predevelopment – such as VIPs for entirely new temperature ranges – examples here include food logistics and the mobility area.

With va-Q-med thermal boxes, va-Q-tec can ensure secure logistics without temperature deviations directly to pharmacies. In Germany alone, almost 20,000 pharmacies need to be supplied with shipment and temperature logistics in accordance with “Good Distribution Practices”. With the va-Q-med box, va-Q-tec has the opportunity to play a crucial role in shaping the future of pharmacy and last-mile logistics. This also offers opportunities in the area of logistics for online pharmacies.

In personalized medicine, each patient should be treated with extensive consideration of individual circumstances, beyond the functional diagnosis of disease. This also includes the ongoing adaptation of therapy to reflect the progress of recovery and gene-based medications. Such forms of therapy will become increasingly important in the future. At the same time, they are often very sensitive to temperature. va-Q-tec’s particularly temperature-stable and high-performance thermal boxes and containers are especially suitable for such medications.

To date, both va-Q-tec’s existing thermal packaging and thermal packaging in development, as well as its “Service Rental”, are designed for deployment almost exclusively in the healthcare industry. However, a trend to increasingly temperature-sensitive goods and manufacturing processes is now identifiable in many industries. As a consequence, growth opportunities arise from the development of new application areas with va-Q-tec technologies, such as food transport and the opto-electronics industry.

In the e-commerce area, start-ups and large international providers are currently developing, at an accelerated pace, new business models for the delivery of food ordered online directly to the end consumer, including due to the coronavirus-related lockdown measures. Shipments of easily perishable food to the end-customer are expected to be regulated even more stringently in the future. va-Q-tec’s high-performance thermal packaging are very well suited to such shipments.

The target market of mobility also offers strong growth opportunities for va-Q-tec: in the future, thermal management in vehicles with both conventional and electric engines will become increasingly significant. CO₂ can be saved in conventional vehicles through insulation measures in vehicle cabins and through storing heat energy from the cooling cycle. In vehicles with electric engines, range depends on the optimal working temperature of the vehicle battery as well as the electricity consumed by peripheral functions, such as heating and interior air conditioning. In va-Q-tec's opinion, vehicle manufacturers and their suppliers could extend the range of their vehicles by using vacuum insulation. In the building sector, the opportunity arises to benefit from the situation in the construction cycle, which remains good, along with ever more stringent energy efficiency standards for new buildings and renovations. With the va-Q-med box, va-Q-tec has the opportunity to play a crucial role in shaping the future of pharmacy and last-mile logistics.

Along with the aforementioned market opportunities in terms of products and services, the Management Board also identifies considerable future growth opportunities in geographic expansion. The internationalization of business activities and the company's entry into new global markets open up major sales opportunities for the Group. Equally, its international presence can be exploited to tap new sources of raw materials, consumables and intermediate products, and for efficient purchasing.

Innovative services and offerings

In the Products division (vacuum insulation panels), work was carried out on the further development of the existing portfolio and the new development of a panel class for medium and high temperatures. Novel high-temperature panels can be used wherever temperatures of up to approximately 400°C prevail on the one hand, and where very good insulation is required on the other, e.g. ovens for industry and food. With such VIPs, va-Q-tec can revolutionize the market for high-temperature insulation.

With the stackable "va-Q-tray", a thermal packaging system, food can be transported in such a way that it remains warm, cold or frozen for hours, or in some cases days. The temperature holding time can optionally be extended by PCM rechargeable batteries. With the va-Q-tray, for example, bakery branches can be supplied efficiently with fresh produce: in contrast to existing styrofoam systems, the va-Q-tray meets the highest hygiene and temperature chain requirements, can be used universally (e.g. as a portable refrigerator), and as a combinable system with non-insulated standard containers. In addition to hygiene benefits, this also results in cost savings as additional refrigerated vehicles can be dispensed with.

In the future, the innovative combination of hardware and IT solutions – referred to as "TempChain 4.0" – will become ever more important. Such new services and offerings, consisting of intelligent boxes, fleet data management, live tracking of temperature data, and predictive analysis in the area of temperature-controlled shipments can be offered to customers with a premium.

By way of summary, the Management Board is of the opinion that the opportunities pertaining to the development and growth of the business outweigh the aforementioned risks.

2.4.4 Risk reporting on the deployment of financial instruments

The Group is exposed to various financial risks due to its operating activities. The Group's risk management aims to minimize the potential negative effects on the Group's financial position. Financial instruments are only deployed to a limited extent at va-Q-tec.

In the German reporting segment, almost 85% of sales and approximately 95% of purchases were processed in euros. In the UK reporting segment, some revenues were generated in US dollars. The costs attributable to such revenues are largely also incurred in US dollars. Risk-reducing natural hedging consequently exists for the US dollar. Significant foreign currency losses could nevertheless occur in the event of stronger exchange rate fluctuations. For this reason, the Management Board gauges the remaining currency risk relating to the US dollar as medium.

Interest rate hedging instruments continue to be in place in order to hedge interest payments on long-term loans at a standard market interest rate level. The cross-currency swap concluded to hedge the currency risks resulting from the CHF bond is shown as hedge accounting in accordance with IFRS. The real estate loans taken out in 2018 were largely financed on a long-term basis with fixed interest rates over the term on the basis of the current, low interest level. No interest-rate hedge was arranged for existing variable interest overdrafts.

No separate financial instruments are held to hedge against default on receivables. The risk of defaults on receivables is relatively low due to the high credit standing of the customer base. To further improve liquidity, the factoring implemented in va-Q-tec AG in 2019 was continued in 2020, and additionally introduced at the UK subsidiary va-Q-tec Ltd. Reverse factoring is currently only implemented for a small number of customers with long receivables terms (e.g. in Italy) as is customary in the market.

Above and beyond the financial instruments described here, the Group holds no further financial instruments that are important for appraising the Group's position or prospective development. Please refer to the sections on "Financial instruments" and "Risk management" in sections 4.4 and 4.6 of the notes to the consolidated financial statements for more details.

2.5 COMPENSATION REPORT

va-Q-tec reports on compensation in accordance with the German Commercial Code and international accounting standards. Compensation comprises both basic and variable components. With the reform of the German Corporate Governance Code ("DCGK 2020"), the recommendations on the compensation of the Management Board were modified significantly, with the result that the current compensation scheme does not comply with the new recommendations in some cases. The Supervisory Board is currently revising the compensation scheme with regard to the new requirements under stock corporation law for the compensation scheme for the Management Board, and is also examining whether and to what extent the new recommendations of the Code on Management Board compensation should be taken into account. No new contracts or extensions of current service contracts with members of the Management Board have been agreed since the DCGK 2020 came into force; furthermore, current service contracts with members of the Management Board are subject to grandfathering.



Management Board

In accordance with the requirements of the German Stock Corporation Act (AktG), the compensation of the Management Board members consists of both basic and variable elements. Variable compensation comprises a cash component paid as an annual bonus. All compensation elements are appropriate both individually and in their entirety. The Supervisory Board concerns itself intensively with the appropriateness and standard nature of Management Board compensation, taking into account all criteria set out in Section 87 of the German Stock Corporation Act (AktG), such as the individual Management Board members' tasks, personal performance as well as the financial situation, performance and future prospects of va-Q-tec AG.

In March 2017 and again in December 2019, external compensation experts confirmed to the Supervisory Board the fundamental appropriateness of the Management Board compensation. The basic compensation corresponds to the annual basic salary; in addition, both Management Board members made use of a company car. D&O insurance is in place for all va-Q-tec Group boards. The Management Board members themselves bear the cost of the 10% deductible.

In the 2018 financial year, a compensation scheme was defined for the members of the Management Board, in which the long-term component of bonuses is to be anchored. This compensation scheme is valid for all financial years from 1 January 2018. The current Management Board contracts were adjusted accordingly as of the 2018 financial year. The new compensation scheme was also examined by external experts, and consequently complies with the requirements of the German Corporate Governance Code in the version date 7 February 2017. In developing the system, the Supervisory Board took as its starting point the basic features of the previous compensation scheme, which was still considered to be reasonable, and aligned it to even greater extent to sustainable corporate development and growth. Consequently, the annual variable compensation is now divided into a short-term and a long-term variable compensation component. For both, a bonus target amount is defined for 100% target achievement. Both components are either limited on the upside or can reduce to zero. The short-term variable compensation is based on three key figures, each of which is given a one-third weighting: revenue, Group EBITDA and return on capital employed (ROCE). The Supervisory Board sets targets for each of these parameters, with the entry hurdle for receiving any short-term variable compensation at all being 80% of the respective target values. In the target

achievement range between 80% and 115%, certain factors are determined for the calculation of the bonus, whereby the maximum factor is always 1.3 and the respective compensation component is thereby capped. The exception is the EBITDA component of short-term variable compensation, where the factor can increase to 1.5 under certain circumstances. The long-term variable compensation is based on the performance of the company's share price between two comparison periods. Here, too, an entry hurdle applies in such a way that a positive price performance of at least 5% must have occurred. In addition, a cap applies if the share price performance exceeds 15%. Of any gross compensation received as long-term variable compensation, the Management Board member must invest at least 50% in the company's shares (as evidenced in a custody account), which are subject to a four-year lock-up period. Compensation amounts above the cap are not paid out but credited – again up to a certain maximum amount – to a virtual sustainability bonus account of the Management Board member and can be used within certain limits to offset stock market price increases in relevant comparison periods which are below 10% but above 5%. Portions of the long-term variable compensation resulting from such compensation are to be invested exclusively in shares of the company that are subject to the aforementioned vesting period.

The Supervisory Board approves the annual Group targets to measure the variable cash component. It also sets the targets.

The Management Board members' contracts include no separate payments for the instance of a termination of their contracts due to a change of control.

The total compensation of the Management Board amounted to kEUR 736 in the 2020 reporting year (previous year: kEUR 659). The basic compensation amounted to kEUR 470 (previous year: kEUR 416); this also includes payments for benefits in kind such as a company car. Variable cash compensation stood at a total of kEUR 250 (previous year: kEUR 228). Defined contribution pension commitments have existed for the Management Board members since 2014. To this end, kEUR 16 (previous year: kEUR 15) was paid into an external, congruently reinsured pension fund in the year under review. For this reason, no provisions for pensions have been formed on the balance sheet. Accordingly, fixed compensation for the Management Board including benefits in kind and pension fund contributions accounts for 66% of total compensation (previous year: 65%).

No loans or advances were granted to members of the Management Board.

kEUR	Management Board compensation 2020	Management Board compensation 2019
Fixed compensation	442	382
Ancillary payments	28	34
One-year variable compensation	41	47
Multi-year variable compensation	209	181
Defined contribution plans	16	15
Compensation, total	736	659

In accordance with the AGM resolution dated 31 May 2016, va-Q-tec discloses the total compensation of the Management Board, but not the individual shares for the individual members. This practice complies with section 314 (1) No. 6, 286 (5) of the German Commercial Code (HGB).

Supervisory Board

The AGM sets Supervisory Board compensation. The compensation of the Supervisory Board of va-Q-tec AG is regulated in Section 14 of the bylaws of va-Q-tec AG.

With effect from 1 September 2020, the compensation of the members of the Supervisory Board was revised as follows by resolution of the Annual General Meeting on 14 August 2020: Each member of the Supervisory Board who is not the Supervisory Board Chair or Deputy Supervisory Board Chair receives monthly fixed compensation of EUR 2,200 ("fixed compensation"). The Supervisory Board Chair continues on an unchanged basis to receive twice the fixed compensation and the Deputy Supervisory Board Chair, also on an unchanged basis, continues to receive 1.5 times this amount. To the extent that he or she is not also the Supervisory Board Chair or Deputy Supervisory Board Chair, the Audit Committee Chair continues on an unchanged basis to receive 1.5 times the fixed compensation. To the extent that he or she is not also the Supervisory Board Chair or Deputy Supervisory Board Chair, the chair of a Supervisory Board committee that is not the Audit Committee continues on an unchanged basis to receive 1.25 times the fixed compensation. If a member of the Supervisory Board is the chair of several Supervisory Board committees, he or she receives only the compensation for one committee, and specifically for the committee where the highest compensation is paid to the Supervisory Board member.

The revised version of the Supervisory Board compensation includes an increase for each Supervisory Board member in the fixed monthly compensation for Supervisory Board activities from the previous EUR 1,200 to EUR 2,200. In return, all attendance fees for participation in Supervisory Board meetings are waived. These changes to the Supervisory Board compensation scheme are intended to ensure that the greater demands made of the Supervisory Board members are taken into account, as well as their increased scope of activities and constantly growing responsibilities. At the same time, the adjustment of the fixed compensation scheme is intended to compensate for the loss of attendance fees.

The Supervisory Board received compensation of kEUR 161 for the 2020 reporting year (previous year: kEUR 155). This sum includes the reimbursement of expenses incurred by each member of the Supervisory Board. The company bore the cost of the premium for the D&O insurance also concluded for the Supervisory Board members in the 2020 financial year. By AGM resolution of 19 June 2017, a deductible for the Supervisory Board members to be borne personally in relation to the D&O insurance was implemented in an amount of kEUR 100 for each member. The Supervisory Board members themselves bear the cost of the deductible. Consultancy and other services in an amount of kEUR 44 (previous year: kEUR 40) were also compensated. These were commissioned and provided to accompany the Power20+ program and the financing.

Financial year 2020

in EUR	Compensation	Expenses	Consulting
Dr. Gerald Hommel	41	2	-
Winfried Klar	32	5	25
Uwe Andreas Krämer	18	-	-
Dr. Eberhard Kroth	23	1	19
Uwe Lamann	13	1	-
Dr. Barbara Ooms-Gnauck	23	2	-
Total	150	11	44

Financial year 2019

in EUR	Compensation	Expenses	Consulting
Dr. Gerald Hommel	36	2	-
Winfried Klar	29	5	15
Uwe Andreas Krämer	15	-	-
Dr. Eberhard Kroth	17	1	25
Uwe Lamann	26	3	-
Dr. Barbara Ooms-Gnauck	19	2	-
Total	142	13	40

2.6 TAKEOVER LAW DISCLOSURES AND NOTES PURSUANT TO SECTION 315A HGB

The following section presents the disclosures as of 31 December 2020 pursuant to Article 9 (1) lit. c) (ii) of the Council Regulation (EC) No. 2157/2001 on the Statute for a European company (SE) (SE-VO), Section 22 (6) of the Act to Implement Council Regulation (EC) No. 2157/2001 on the Statute for a European company (SE) (SEAG) in combination with Section 289a, Section 315a (1) of the German Commercial Code (HGB). Matters relating to Section 289a (1), Section 315a (1) HGB, which are not fulfilled at va-Q-tec AG, are not related. The following subsection provides an insight into the takeover law relationships as of the 31 December 2020 balance sheet date, and explains them in greater detail.

2.6.1 Composition of the subscribed share capital

The share capital of va-Q-tec AG amounts to EUR 13,089,502.00, and is divided into 13,089,502 ordinary registered shares. The share capital is fully paid in. The shares carry the same rights and obligations. Each share grants one vote at the General Meeting of the shareholders. Exceptions to this include shares the company itself holds (treasury shares), from which no rights accrue to va-Q-tec AG, such as the right to vote at the Shareholders' General Meeting. As of the balance sheet date, va-Q-tec AG held 13,566 treasury shares (previous year: 13,566). For information about changes in the treasury share position, please refer to the notes to the consolidated financial statements in this annual report.

2.6.2 Restrictions affecting voting rights or the transfer of shares

The shareholders in the share pool have undertaken to exercise their voting rights uniformly. The Management Board is not aware of any further currently valid restrictions affecting voting rights or the transfer of shares.

2.6.3 Interests in the share capital exceeding 10 % of the voting rights

Pursuant to the German Securities Trading Act (WpHG), all investors reaching, exceeding or falling short of voting rights thresholds pursuant to Section 21 WpHG through purchase, sale, or in another manner, are required to report such transactions to the respective company and to the German Federal Financial Supervisory Authority (BaFin). To this extent, the Management Board of va-Q-tec AG is aware of the following individuals and companies whose interests exceed 10 % of the voting rights:

Name	Country	Number of shares	Interest in the share capital
Share pool of the families of Dr. Joachim Kuhn and Dr. Roland Caps	GER	3,275,000	25.02%
TOTAL		3,275,000	25.02%

Rules concerning the appointment and recall from office of Management Board members

Pursuant to Section 84 of the German Stock Corporation Act (AktG), and the bylaws of va-Q-tec AG, the Supervisory Board appoints the members of the Management Board. Pursuant to the company's bylaws, the Management Board consists of one or several individuals. The Supervisory Board determines the number of Management Board members. If the Management Board consists of several members, Management Board resolutions are passed with a simple voting majority. If the Supervisory Board has appointed a Management Board Chair and if the Management Board consists of at least three members the vote of the Management Board Chair is decisive given an equal number of votes on a resolution.

Rules concerning bylaw amendments

Amendments to the bylaws require a resolution of the general meeting of shareholders. Resolutions by the general meeting of shareholders require a simple voting majority unless a greater majority is imperative by law.

Management Board authorizations relating to the issuing and repurchase of shares

va-Q-tec AG has both approved share capital and contingent share capital as follows:

Approved share capital

By resolution of the Annual General Meeting of 14 August 2020, the Management Board is authorized, with the approval of the Supervisory Board, to increase the company's share capital by up to a total of EUR 6,544,751.00 up to and including 13 August 2025 (Approved Capital 2020/1), whereby shareholders' subscription rights may be excluded.

Contingent capital

Pursuant to Section 6.5 of the company's bylaws, the share capital is conditionally increased by EUR 6,500,000 through issuing up to 6,500,000 new ordinary registered shares (Contingent Capital 2020/1). Contingent Capital 2020/1 serves exclusively to grant shares upon the exercise of conversion or warrant rights, or upon fulfilment of conversion obligations, to the holders or creditors of convertible bonds, bonds with warrants and/or participating bonds (or combinations of such instruments) (collectively "bonds") issued on the basis of the authorization resolution of the Annual General Meeting of 14 August 2020 under agenda item 7 letter b).

Significant agreements in the case of a change of control due to a takeover offer and compensation agreements in the case of a takeover offer

No significant agreements on the part of the company exist that are subject to a change of control following a takeover offer.

2.7 CORPORATE GOVERNANCE STATEMENT

Besides relevant disclosures concerning corporate governance practice as well as a description of the working methodologies of the Management and Supervisory boards, the corporate governance section, as a part of the annual report, also includes the statement of conformity pursuant to Section 161 of the German Stock Corporation Act (AktG). The corporate governance section together with the statement of conformity pursuant to Section 161 AktG is also available on the Internet at www.va-Q-tec.com in the Investor Relations section.