

Scaling Precision: Shaping CORTEX's Next Phase of Growth



"Spiroergometry must evolve beyond its traditional niches in medicine and elite sports to become accessible to the mass market – everyone can benefit from precise metabolic insights," remarked Noshad Irshad, CEO of CORTEX Biophysik GmbH.

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Introduction: A growing market that has not yet translated into growth

The remark opened a strategy review at the company's Leipzig headquarters, where management was assessing where the next phase of growth should come from. For more than three decades, CORTEX has been a medical technology specialist company and a global market leader in cardiopulmonary exercise testing (CPET) systems for respiratory gas analysis and performance diagnostics. Its products enable precise measurement of health, physical performance, and metabolic processes and are used worldwide across healthcare, research, corporate health, preventive medicine, rehabilitation, longevity, fitness, and competitive elite sports. CORTEX systems are installed and products used in medical practices, high-performance centres and other segments. Since early 2025 the company has belonged to HTP, a family-owned industrial holding that invests for the long term. Yet turnover has barely moved in five years.

The contrast was difficult to ignore. The global market for cardiopulmonary exercise testing is expected to grow by around six percent a year until 2035, driven amongst others by ageing populations, chronic disease, rising interest in data-driven sports and life optimisation, as well as the wider use of exercise testing in rehabilitation, prevention and longevity. Over the same period, CORTEX has developed a new product generation. That generation, CORTEX C2in1, is now reaching the market and expands two long-standing product lines with a single modular platform. At the same time, specialists such as COSMED serve clinical and performance customers alike, and the United States, the largest potential market, contributes only a fraction of CORTEX's revenue.

As management prepared the discussion with its only shareholder, it became clear that the question was not just about which product to build next. CORTEX C2in1 already provides the technological basis, and its licence logic opens commercial models the company has never used at scale. The harder question is where to point an organization of 45 people: at new geographies, at new customer groups, at the recurring business that already accounts for half of turnover, or at something else. Each path demands sales capacity, service coverage and regulatory work that a specialist of this size cannot build everywhere at once.

Company Background: CORTEX's position, product portfolio and commercial model

Historical Context & Company Development

Founded in Leipzig in 1991, in the year after German reunification, CORTEX Biophysik GmbH has developed into the global market leader in mobile spiroergometry. Spiroergometry, internationally referred to as *cardiopulmonary exercise testing* (CPET), measures respiratory gases and heart rate while a person is under rest and/or under physical load, and is the most precise method available to assess how lungs, heart and metabolism interact. It allows an objective evaluation of endurance capacity and metabolism and is used to define e.g., energy expenditure (incl. basal metabolic rate (BMR) and resting metabolic rate (RMR)),

training zones, fuel utilization (e.g., carbs vs. fat), recovery rates, respiratory responses, determine performance limits (e.g., VO₂ max) and identify health restrictions.

The technological direction of the company was set early. In 1993, CORTEX launched the X1, the world's first telemetric portable CPET system, and established mobility as its defining characteristic. The METALYZER® 3B for stationary laboratory use and the METAMAX® 3B for mobile field testing followed as the two product lines that carry the business to this day. CORTEX systems accompanied the Xtreme Everest expedition in 2007, supplied the exercise data for NASA's HERA missions in 2016 and 2020, and travelled to the International Space Station twice, with ESA astronauts Alexander Gerst in 2018 and Matthias Maurer in 2021. In a market in which customers cannot easily verify measurement accuracy themselves, this reference base is an important argument in the sales process.

The shareholder structure has changed twice in recent years. In 2018, the *Mittelständische Beteiligungsgesellschaft Sachsen* (MBG), a regional development investor, acquired a stake and provided the financial basis for the multi-year development of a new product generation. In early 2025, one of the founders withdrew from the shareholder circle for reasons of age, and all remaining shareholders sold their stakes to HTP, a family-owned industrial holding based in Düsseldorf. HTP takes majority stakes in small and medium-sized companies, holds them for the long term and does generally not pursue exits; its operating businesses generate combined revenues of around €80 million. The Leipzig site and the existing management structure were retained, and CORTEX is led by CEO Noshad Irshad.

Today CORTEX employs 45 people at its Leipzig headquarters, of whom roughly 30% work in research and development. A significant proportion of employees have been with the company for more than 15 years, reflecting a highly experienced and loyal workforce. Employee backgrounds and mindsets are largely rooted in traditional German SMEs (Mittelstand), resulting in a corporate culture currently characterized by stability, continuity, and established ways of working rather than the agility, entrepreneurial mindset, and pace typically associated with high-growth companies. The organization is structured along five functions - Research and Development, Sales and Marketing, Production, Service and Support, and Administration and Finance - reporting to a two-person management team. With revenues of €6.3 million in FY 2024/25 and a financial year ending on 31 March, CORTEX combines a worldwide installed base with a deliberately small organization.

Business Model

CORTEX operates as a manufacturer of complete measurement systems rather than of individual instruments, combining hardware, software, consumables, and service into a single offering. A complete setup consists of a device for respiratory gas analysis, the MetaSoft® Studio software covering preparation, execution and evaluation of a test, and the accessories required to run it. Customers operate the system together with an ergometer or treadmill, an ECG and further diagnostic equipment, which CORTEX either integrates or supplies as trade goods.

The revenue model rests on several streams that differ in size, frequency and predictability:

- **Devices:** Spiroergometry systems are sold as capital equipment at end-customer prices between €20,000 and €40,000. They account for roughly half of revenues and build the installed base from which all other streams are derived.

- **Software:** MetaSoft® Studio and MetaSoft® Performance are the software platforms of all CORTEX systems and are included with every system. Separate from this, a usage licence unlocks mobile operation of the new generation, permanently, for a fixed period or for a defined number of tests.
- **Consumables:** Masks, calibration gas, oxygen sensors, sample lines and disposable turbines are used up with every test and must be replaced regularly. They generate recurring revenues over the entire life of a device and account for the other half of total turnover.
- **Service and warranty:** Installation and instruction are included in every purchase, and warranty extensions can be bought at any time and repeatedly. This keeps CORTEX in contact with the end customer long after the sale.
- **Training and education:** Theory and practice courses, seminars, webinars and workshops qualify users in spiroergometry as a method. They support correct application of the systems and strengthen the customer relationship.
- **Trade goods and add-ons:** Carts, ECG devices and application-specific options such as the swim module complete an installation and are supplied alongside the core system.

Product economics in this industry are defined by long cycles. A new generation requires approx. five years of development before it reaches the market, remains in the portfolio for around ten years, and is used by some customers for up to 15 years. Replacement demand from the installed base is therefore slow and difficult to plan, and the consumables business carries the recurring half of the model. Devices and consumables each account for roughly 50% of total revenue (Appendix 4). The installed base, i.e. the number of CPET systems currently in use, is therefore a key figure for CORTEX: every installed device creates recurring demand for consumables, service and software throughout its lifetime, while new device sales depend largely on when customers replace their systems (Appendix 9).

Product Portfolio - from METAMAX 3B to CORTEX C2in1

The established portfolio rests on two product lines that have been in the market for years. The METALYZER® 3B is the stationary laboratory system used in clinical routine and research settings, priced at around €20,000 for end customers. The METAMAX® 3B is the fully mobile, breath-by-breath system used in field testing, priced at around €40,000. Both can be extended with application-specific options such as heart rate, ECG and blood pressure modules or the swim option for testing in water.

Since 2025, the new generation has been on the market as the **C2in1 performance**, positioned in the performance segment. In the medical portfolio, the METALYZER® 3B and METAMAX® 3B currently remain the products on offer; the C2in1 medical version with MDR certification is expected to launch by the end of 2027. The C2in1 system is sold as a stationary base configuration and can be extended to mobile indoor and outdoor use through a software license and an accessory set - permanently, temporarily, or for a defined number of tests. Four variants are available, positioned between €20,000 and €40,000 depending on configuration. The platform requires no warm-up time, allows battery hot-swapping during a test, monitors ambient air continuously and integrates GPS for measurements outside the

laboratory. Its design was recognised with a Red Dot Award in the category Medical Devices and Technology Design.

Sales Model - “distributor-first”

One of CORTEX’s defining characteristics, and at the same time the central constraint of its commercial setup, is a distributor-first sales model. Outside Germany, products reach end customers through a three-tier structure: CORTEX sells to a worldwide network of local sales and service partners, all of which are quality-audited by the company, and those partners sell on to the end user. Direct sales to end users take place only in Germany. This structure allows a company with a six-person sales and marketing function to be present in more than 70 countries. It also means that the relationship with the end customer, the final price and local service quality lie largely with the partners.

Revenues are distributed almost evenly across three blocks: around 30% in Germany, 30% in the rest of the European Union and 40% in the rest of the world (Appendix 2).

The commercial model is beginning to change with the new platform. Alongside the classic outright purchase, CORTEX offers monthly rental and pay-per-use arrangements, and the licence logic of CORTEX C2in1 makes it possible to unlock mobile functionality temporarily or for a limited number of tests rather than selling a second device. *Number of active distributors: approx. 70, share of revenue via distributors versus direct sales: approx. 85% vs. 15% (Appendix 1) and adoption of rental / pay-per-use models to date: approx. 5%.*

Financial Situation and Regulatory Requirements

Turnover rose from €4.6 million in FY 2020/21 to around €6 million in the following years and stood at €6.3 million in FY 2024/25. The gross margin remained constant at 65%, while the EBITDA margin increased from around 10% to around 18% over the same period.

On the balance sheet, equity increased from €2.0 million to €3.1 million between FY 2020/21 and FY 2024/25, while cash and bank balances declined to €0.3 million at the end of FY 2024/25. The detailed income statement and balance sheet are provided in Appendices 5 and 6.

As a medical device manufacturer, CORTEX is subject to strict regulatory requirements that apply to every product and every market. CORTEX systems are CE-certified and comply with European medical device regulation; entering additional markets or launching new variants requires further approvals, documentation and ongoing compliance work. FDA clearance is not yet available. Alongside regulation, organizational capacity is the second limiting factor: with 45 employees every function is thinly staffed, and service, support and administration in particular offer little headroom to absorb additional volume or complexity.

Selected Customers and Applications

CORTEX systems are installed and used in medical, performance and other sectors (Appendix 3).

Medical:

- Hospitals
- Doctors’ Practice: cardiology and other

- Rehab & Prep-Op

Performance:

- Elite Sport: Olympic training centres, German Bundesliga clubs, FC Barcelona, Real Madrid, the Deutscher Fußball-Bund (DFB)
- Research and University: universities, Charité, NASA/ESA, Fraunhofer Institute
- Fitness, Longevity & Wellness: Lanserhof

Other:

- Companies: adidas for the development of running shoes, On, Red Bull, Volkswagen, BMW, Mercedes-Benz
- Occupational Health: workplace health management,
- Military Bases: the Bundeswehr, the US Army and other on every continent

Market, Customer & Competitive Context

Market Definition

Cardiopulmonary exercise testing (CPET), known in German-speaking countries as spiroergometry, measures oxygen uptake, carbon dioxide output and ventilation breath by breath while a person exercises on a treadmill or cycle ergometer, usually alongside heart rate and ECG. From these values, users derive parameters such as VO_2 max, ventilatory thresholds and ventilatory efficiency, which describe how well heart, lungs and muscles work together under load. Unlike a resting lung-function test or a stress ECG, CPET captures the entire chain of oxygen transport from the lungs to the muscles, which makes it the reference method for assessing exercise capacity in both patients and athletes.

CPET systems differ mainly in where and how a test can be carried out. Three configurations can be distinguished:

Stationary. Laboratory systems, often called metabolic carts, are permanently installed and connected to an ergometer or treadmill, an ECG and, in hospitals, to clinical IT systems. They are designed for high test volumes under standardised conditions and are the standard configuration in hospitals, practices and research laboratories.

Portable. Portable systems are compact enough to be carried or wheeled to different locations, such as a practice, a rehabilitation centre or a team's training camp, but the test itself is still performed on an ergometer or treadmill next to the device. They suit users who share one system across several sites or do not have a dedicated laboratory.

Mobile. Mobile systems are battery-powered and worn on the body, transmitting data wirelessly or storing it for later analysis. They allow measurements during real activities, such as running on a track, cycling outdoors, team sports or physically demanding work tasks, rather than in a laboratory. Typical users are elite sport, sports science and occupational health.

The boundaries between these configurations are becoming less clear. Modular platforms such as CORTEX C2in1 are sold as a stationary base configuration and can be extended to mobile use through a software licence and an accessory set, so customers no longer have to commit to one configuration at the time of purchase.

Market Size and Growth

The global market for CPET systems is growing strongly and considerably faster than the wider market for cardiopulmonary stress testing, of which it forms a part. Worldwide, annual device revenue is expected to rise from around €434 million in 2025 to around €775 million by 2035, with annual unit sales growing from around 17,000 to 31,000 devices and the installed base from around 130,000 to 270,000 systems (Appendix 9). CPET benefits from several developments at once rather than relying mainly on the replacement of existing laboratory equipment: more patients with complex cardiopulmonary conditions, a growing number of clinical applications, technology that makes testing easier, and new mobile and performance-oriented use cases. Six drivers stand behind this growth.

Chronic disease and ageing. Heart failure, COPD, pulmonary hypertension and other cardiopulmonary diseases are becoming more common as populations age and risk factors such as obesity, hypertension and diabetes spread. Many of these patients report shortness of breath or reduced exercise capacity. Where a resting ECG or spirometry cannot explain the cause, CPET can show whether the limitation lies in the heart, the lungs, the circulation or the muscles, and it also supports prognosis and the evaluation of treatment effects. More patients with complex conditions therefore mean more situations in which CPET is needed.

Broader clinical use. CPET is moving from specialised cardiology and pulmonology centres towards a broader clinical tool. Beyond the evaluation of heart failure and pulmonary hypertension, it is used for unexplained shortness of breath, transplant evaluation and risk assessment before major surgery, and increasingly in fields such as oncology. Because CPET delivers quantitative physiological data rather than a simple yes-or-no result, each department can use it for its own questions, from diagnosis and prognosis to individual exercise prescription. Every new indication adds test volume and justifies additional systems in hospitals and practices.

Rehabilitation. Cardiac and pulmonary rehabilitation follow a cycle of measuring, prescribing, training, retesting and monitoring progress, and CPET provides objective values such as peak oxygen uptake at each step. A system used in rehabilitation is therefore used repeatedly for the same patient and can generate considerably more tests over its lifetime than one used for one-off diagnostics. Decentralised and, in future, home-based rehabilitation programmes could extend this demand beyond the clinic.

Technology and automation. CPET has traditionally been technically demanding systems must be calibrated, gas analysis, ECG and blood pressure have to be recorded in parallel, and the large number of breath-by-breath parameters requires trained personnel to interpret. Newer systems integrate these functions into one workflow and add automated threshold detection and, increasingly, AI-supported analysis. Shorter test and interpretation times and less need for specialist expertise allow more sites to offer CPET, which enlarges the addressable market.

Mobile CPET. A stationary system requires the patient to come to the laboratory; a mobile system brings the measurement to the patient, the athlete or the workplace. This opens applications that were difficult with laboratory equipment, such as field testing in sport, military and occupational testing, outdoor exercise tests, mobile medical services and decentralised rehabilitation. Smaller wireless and wearable systems are therefore regarded as one of the main growth areas of the market.

Performance. Outside medicine, CPET is turning from a diagnostic device into a tool for performance optimisation. Professional sport, sports science, fitness and performance studios, coaching and the emerging longevity sector increasingly base training decisions on measured values such as VO₂ max, ventilatory thresholds and training zones rather than estimates. These applications create new customer groups and use cases and make performance one of the most dynamic areas of the market, even though the medical segment remains by far the largest (Appendix 10).

Several factors hold growth back. A complete system is a significant investment for smaller practices, tests require trained staff to run and interpret, and reimbursement in many health systems is modest compared with the time a test takes. Long device lifecycles also mean that the installed base is replaced only slowly.

Focus: The United States. The United States is the largest single market for CPET and combines most of these drivers in one place. Around 6.7 million American adults live with heart failure, a number expected to rise to 8.7 million by 2030. High healthcare spending and a dense network of hospitals, academic medical centres, cardiac and pulmonary rehabilitation programmes and specialist practices create a broad clinical customer base. Medicare and private insurers reimburse CPET under a dedicated billing code when it is medically necessary, which gives providers a predictable revenue per test. Because the payment per test is modest relative to the cost of equipment and staff time, however, US buyers pay particular attention to throughput, automation and integration with electronic health records.

The US performance market is also unusually large. College athletics, professional leagues, the military and first responders, as well as a strong private fitness and longevity sector, all use physiological testing. As insurers do not reimburse performance and wellness tests, these customers pay for them directly.

Access to this market is demanding. CPET systems for clinical use require FDA clearance before they can be sold, buyers expect local service and short response times, and hospital purchasing often runs through group purchasing organizations and integrated delivery networks. Established competitors such as MGC Diagnostics and Jaeger Medical are headquartered in the United States and have long-standing relationships with US hospitals. For a European specialist, the United States therefore offers the largest growth opportunity in the market, but also the highest entry requirements in terms of regulatory approval, sales presence and service coverage.

Customer Segments

CPET customers fall into three segments that differ less in the technology they buy than in why they test and how they purchase. Medical users diagnose and manage disease in patients, performance users test the physical capacity of healthy or trained people, and a

smaller group of other users applies CPET outside both fields. Measured by market value, the medical segment accounts for around 68% of the global CPET market in 2025, the performance segment for around 24% and other applications for around 8% (Appendix 10).

Medical. The medical segment covers the clinical use of CPET to diagnose and manage heart, lung and metabolic disease, including heart failure, pulmonary hypertension, unexplained shortness of breath and COPD. It comprises three customer groups. Cardiopulmonary function laboratories in hospitals and university clinics run stationary systems with high patient throughput and expect integration with ECG and hospital information systems. Office-based cardiologists, pulmonologists and sports physicians need compact systems that are easy to operate and require little service. Rehabilitation centres and pre-operative assessment units test patients repeatedly to track their progress and determine surgical fitness. Across the segment, purchases are capital investments tied to budget cycles, and the decisive criteria are diagnostic reliability, medical-device approval and integration into existing clinical workflows. Competition is most intense in hospitals, where almost all specialised CPET providers hold a core position (Appendix 8).

Performance. The performance segment covers testing the physical capacity of healthy or trained people rather than diagnosing patients. Sports clubs, Olympic and high-performance training centres and coaches use mobile field tests to determine VO₂ max, ventilatory thresholds and training zones under realistic conditions. Sport-science and physiology institutes and universities run studies that require high measurement accuracy, validated methods and open access to measurement data. Fitness studios, health clubs and wellness providers use metabolic tests, such as resting metabolic rate, as the basis for training and nutrition advice. Longevity clinics and preventive-health providers, such as Lanserhof, form a newer and growing customer group. They use VO₂ max and metabolic profiles as markers of biological fitness and long-term health risk, typically within premium check-ups for self-paying clients. Because no diagnosis is made, buyers weigh mobility, accuracy and ease of use more heavily than clinical integration. Fewer providers treat this segment as core business: in elite sport, only CORTEX and COSMED hold a core position, and COSMED also treats research as a core market (Appendix 8).

Other. The smallest segment covers customers outside the medical and performance groups, in particular occupational health. Occupational physicians use CPET for fitness-for-duty testing of employees in physically demanding jobs, such as firefighters and breathing-apparatus crews. Among the specialised providers, CORTEX and COSMED are currently the only ones active in this segment (Appendix 8).

Competitive Landscape

The CPET market brings together two types of companies. Large, diversified med-tech groups such as GE HealthCare, Philips, Nihon Kohden and Schiller offer CPET as part of broad cardiology and patient-monitoring portfolios and mainly supply the equipment around a test, such as stress ECG, ergometers and monitoring. Respiratory gas analysis itself is largely provided by a small group of specialists: COSMED from Italy, Jaeger Medical, Ganshorn and Geratherm Respiratory from Germany, MGC Diagnostics from the United States, and CORTEX. Jaeger Medical is the former respiratory diagnostics business of Vyair Medical, which Trudell Medical acquired in November 2024 and returned to its original

brand name. Measurement accuracy, portability, software integration, price and local sales and service support play a central role in customers' purchasing decisions (Appendix 7).

All six specialists offer a stationary laboratory system, including COSMED's Quark CPET, Jaeger's Vyntus CPX, MGC's Ultima and Ergocard CPX, Ganshorn's PowerCube Ergo and Geratherm's Ergostik, and most of them integrate their systems closely with clinical software. Portable case systems are less common: besides CORTEX with a portable version of the METALYZER® 3B, only Geratherm offers a compact unit that can be used at different sites. Mobile systems worn by the test subject are available from CORTEX with the METAMAX® 3B, COSMED with the K5 and Jaeger with the Oxycon Mobile, while MGC Diagnostics and Ganshorn offer stationary systems only (Appendix 7).

The providers also differ in the customer groups they focus on. Hospitals and cardiopulmonary function laboratories are a core market for almost all specialists. Doctors' practices are a core market for CORTEX, COSMED and Ganshorn, while Geratherm concentrates on rehabilitation and pre-operative assessment, where Jaeger and Ganshorn are not active. In the performance segment, CORTEX and COSMED hold a core position in elite sport, and COSMED also treats research institutes as core customers. In occupational health, only CORTEX and COSMED are present so far (Appendix 8).

In fitness, wellness and the emerging longevity sector, newer companies such as PNO² and VO2 Master have entered the market with compact, wireless metabolic analysers priced well below a full CPET system, in some cases combined with subscription-based software. These devices are generally marketed as wellness or performance tools rather than as medical devices.

Wearables such as the Apple Watch, Garmin and WHOOP do not measure metabolic and performance metrics directly. They estimate them with algorithms and are therefore generally less precise than CPET. Even so, they are becoming a growing competitive threat to CORTEX. They already serve some needs of CORTEX's traditional customers. They also reach customer groups CORTEX hopes to win as it expands beyond its traditional markets.

Jaeger, Ganshorn and Geratherm are based in Germany, CORTEX's home market. COSMED operates internationally and serves both clinical and performance customers. In the United States, MGC Diagnostics has its headquarters, and Jaeger and COSMED are also present. CORTEX, by contrast, generates only a small share of its revenue there (Appendix 2).

Market Trends

Several developments are changing how CPET systems are built, sold and used. The most visible is digitalisation. Software has become the centre of a CPET system: it plans the test, controls the ergometer, records breath-by-breath data alongside ECG and blood pressure, and produces reports that can be compared over time. Hospitals increasingly expect systems to exchange data with hospital information systems and electronic health records through standard interfaces, while sports and research users ask for open data access and cloud-based platforms that allow results to be shared across teams and sites.

Artificial intelligence is beginning to build on this digital basis. First applications support the detection of ventilatory thresholds, check data quality during the test and suggest an interpretation of the results. Such tools are expected to shorten evaluation times and make results less dependent on the experience of the individual examiner. AI functions in

clinical systems must, however, be validated and approved like any other medical software, so their introduction is gradual.

A further trend concerns the business model. Alongside the classic outright purchase, providers increasingly offer rental, leasing, pay-per-use and subscription arrangements, and additional functions can be unlocked through software licences rather than separate hardware. Together with consumables such as masks, sensors and calibration gas, as well as service contracts and training, these models shift part of the revenue from one-off device sales to recurring income over the lifetime of a system.

Finally, testing is moving out of the laboratory. Smaller, lighter and wireless devices make it possible to measure in the field, at the workplace or in decentralised rehabilitation, and modular platforms allow the same system to be used in stationary and mobile settings. As a result, the line between laboratory systems and mobile devices is becoming less distinct.

Regulatory Environment

CPET systems used for diagnosis are medical devices and must be approved separately in each major market before they can be sold. In the European Union, the Medical Device Regulation (MDR, Regulation (EU) 2017/745) has applied since May 2021 and replaced the previous Medical Device Directive. Most CPET systems and their analysis software fall into risk class IIa, which means that a notified body must assess the technical documentation and the manufacturer's quality management system before the CE mark can be applied. Compared with the previous directive, the MDR requires more extensive clinical evaluation, post-market surveillance and documentation, and devices certified under the old rules must be recertified. To avoid supply shortages, the EU extended the transition period for many existing devices until the end of 2027 or 2028, depending on their risk class. The limited capacity of notified bodies has lengthened certification times and increased costs, particularly for smaller manufacturers.

In the United States, CPET systems are regulated by the Food and Drug Administration (FDA). They are generally class II devices that require a premarket notification (510(k)), in which the manufacturer demonstrates that its device is substantially equivalent to a product already on the market. Since February 2026, the FDA's quality system requirements have been aligned with the international standard ISO 13485, which also forms the basis for quality management under the MDR. Other markets, such as the United Kingdom, China and Japan, have their own registration procedures.

Products used solely for performance or wellness purposes are treated differently. Devices that do not claim to diagnose or treat disease are generally not regulated as medical devices, which lowers the requirements for providers in sport and fitness. As software and AI take on a larger role, further requirements are emerging: medical software is regulated as a device in its own right, the EU AI Act will add obligations for AI-based medical devices from 2027, and data protection rules such as the GDPR and, in the United States, HIPAA govern how health data are handled.

The Way Ahead - Potential Growth Paths for CORTEX

With the foundations laid, Irshad and the management team now faced a different challenge: turning the range of opportunities surrounding CORTEX into a clear direction for its next phase of growth. The company had several potential levers at its disposal, but neither its size nor its resources allowed it to pursue every avenue with equal intensity. The first question was therefore one of prioritisation. Management needed to understand where the most compelling opportunities could be found across CORTEX's products and services, customer segments, geographic markets, and commercial models. Equally important is defining what CORTEX's future workforce should look like, how to attract, develop, and retain the talent needed to drive the company's growth, and how to evolve its corporate culture to foster greater agility, innovation, and entrepreneurial thinking. Potential alone, however, would not be sufficient. Each opportunity had to be considered in light of the underlying market attractiveness, CORTEX's competitive position, and its fit with the company's existing strengths and strategic direction. The objective was to distinguish between opportunities that merely appeared promising and those capable of becoming meaningful sources of future revenue.

Yet identifying attractive opportunities would only provide the starting point. Irshad needed these findings translated into a coherent growth strategy for the next three to five years. This meant making deliberate choices about where CORTEX should concentrate its attention and, equally importantly, where it should not. Individual initiatives could reinforce one another, but they could also compete for the same organizational and financial resources. Management therefore expected a clear rationale for how the selected opportunities fit together and why they represented a stronger strategic direction than the alternatives. To move the discussion beyond qualitative ambition, their economic relevance also had to become tangible. All initiatives should be as concrete and actionable as possible. For example, they should address which existing or new products and/or product lines (hardware and/or software) should be developed or enhanced, with which features, for which market segments, and why; how to effectively compete against established players as well as the disruptive competitors (PNOE, uVida etc.) and wearables (Apple Watch, Garmin etc.), how to drive customer demand and accelerate growth in existing and new markets; which strategic partnerships should be pursued, with whom, and for what purpose; how to expand into new geographic markets, into which ones and why; how to attract, develop, and retain the right talent; how to evolve the company culture to support future growth and transformation, etc. Wherever the available information allowed, the expected revenue potential as well as required investment should be quantified, providing management with a sense of both the magnitude and timing of the growth that the proposed strategy could generate.

For Irshad, however, a strategy that looked convincing on paper but could not be executed within CORTEX's organizational reality would have little value. The final consideration was therefore how the chosen direction could actually be implemented and brought to market. The recommended initiatives would need to be translated into a credible sequence of actions, reflecting the commercial approach, capabilities, investments and organizational resources required to make them work. Some initiatives may be achievable largely through CORTEX's existing setup, while others could require new expertise, changes to distribution, additional investment or external partnerships. Regulatory and operational constraints

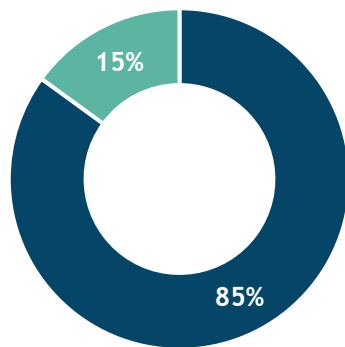
could similarly influence both the attractiveness and timing of individual initiatives. Rather than treating these considerations as an afterthought, management viewed execution feasibility as an integral part of determining which opportunities deserved priority in the first place.

As the meeting drew to a close, Irshad made clear that HTP was not looking for an exhaustive catalogue of possible growth initiatives. What mattered was the logic connecting opportunity, choice and execution. The final recommendation should show which growth opportunities CORTEX should pursue, what they could realistically contribute to the company's revenues, and how the organization could capture that potential over the coming years. The individual analyses were therefore not intended to stand alone: the assessment of the market should inform the strategic priorities, those priorities should support a credible growth ambition, and that ambition should ultimately be grounded in reasonable data and an actionable path forward. For CORTEX, the question was no longer whether opportunities for growth existed, but which ones were worth pursuing and how the company could turn them into sustainable, profitable growth.

Appendix

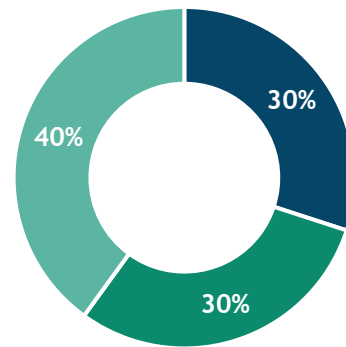
Appendix 1 & 2: CORTEX revenue split by channel and region

Revenue by channel (~70 distributors)



■ Distributors ■ Direct sales

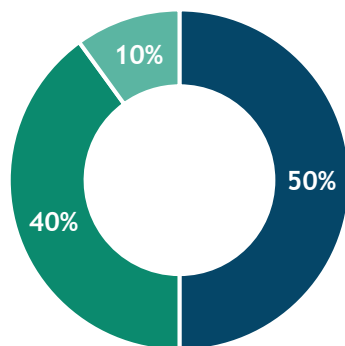
Revenue by region



■ Germany ■ EU (w/o Germany) ■ Other regions

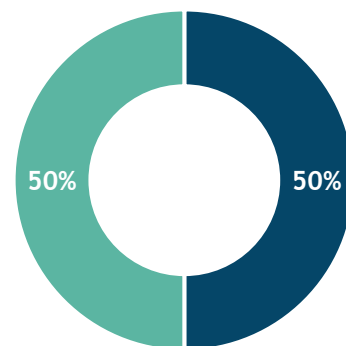
Appendix 3 & 4: CORTEX revenue split by customer segment and product category

Revenue by customer segment



■ Medical ■ Performance ■ Other

Revenue by product category



■ Spiroergometry Devices ■ Consumables

Appendix 5: Income statement of CORTEX Biophysik GmbH

Income Statement Item (€ 000)	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
INCOME STATEMENT					
Turnover	4,620	6,101	6,336	5,883	6,332
Gross margin	3,003	3,966	4,118	3,824	4,116
<i>Gross margin %</i>	65.0%	65.0%	65.0%	65.0%	65.0%
EBITDA	443	875	1,035	937	1,162
<i>EBITDA margin %</i>	9.6%	14.3%	16.3%	15.9%	18.4%
EBIT	212	570	718	643	846
<i>EBIT margin %</i>	4.6%	9.3%	11.3%	10.9%	13.4%
Net income for the year	132	378	480	430	570

Appendix 6: Balance sheet of CORTEX Biophysik GmbH

Balance Sheet Item (€ 000)	FY20/21	FY21/22	FY22/23	FY23/24	FY24/25
ASSETS					
A. Fixed assets	1,340	1,932	2,119	2,342	2,692
I. Intangible assets	1,103	1,547	1,749	2,002	2,315
II. Property, plant and equipment	237	385	369	340	377
B. Current assets	2,400	2,815	3,008	2,732	1,945
I. Inventories	599	834	936	1,114	972
II. Receivables and other assets	614	468	702	639	699
III. Cash on hand and bank balances	1,186	1,513	1,370	979	274
C. Prepaid expenses and deferred charges	47	59	90	74	65
Total assets	3,788	4,806	5,217	5,149	4,701
EQUITY AND LIABILITIES					
A. Equity	1,953	2,330	2,810	3,110	3,117
I. Subscribed capital	87	87	87	87	87
II. Capital reserve	1,068	1,068	1,068	1,068	1,019
III. Profit/loss carried forward	665	798	1,175	1,525	1,441
IV. Net income for the year	132	378	480	430	570
B. Special items for grants	-	15	12	8	6
C. Provisions	356	923	973	981	1,169
D. Liabilities	1,475	1,479	1,356	963	410
E. Deferred income	3	59	66	86	-
Total equity and liabilities	3,788	4,806	5,217	5,149	4,701

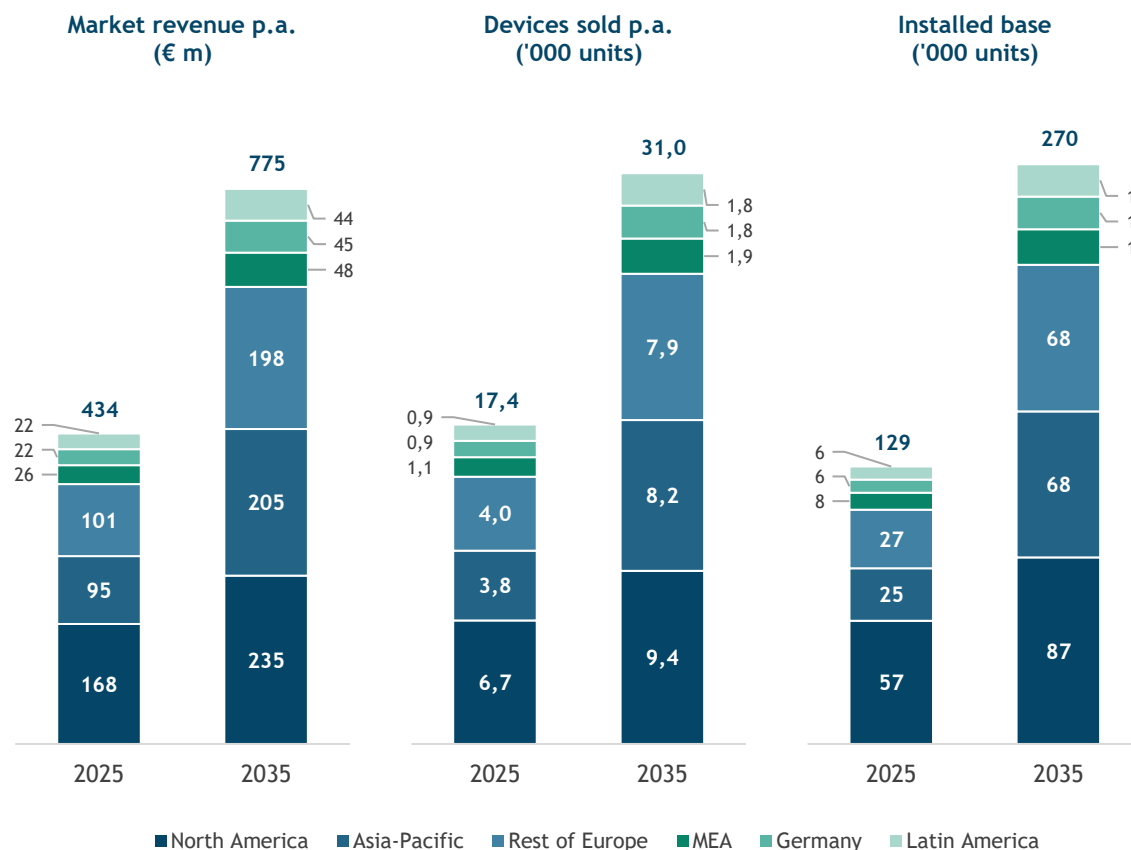
Appendix 7: Product portfolio of selected CPET specialists by system configuration

Company	Stationary CPET	Portable CPET	Mobile CPET	Software Integration
CORTEX Biophysik GmbH	METALYZER 3B on mobile PLUS cart / meta control 3000	METALYZER 3B (portable case system, 580 g)	METAMAX 3B (worn, telemetry, GPS)	High
COSMED S.r.l.	Quark CPET (optional mixing chamber)	-	K5 (wearable, lab and field)	High
Jaeger Medical	Vyntus CPX (cart or table-top)	-	Oxycon Mobile (wearable, 1,000 m telemetry)	High
MGC Diagnostics Corp.	Ultima CPX, Ergocard CPX (cart or table-top)	-	-	Middle
GANSORN Medizin Electronic GmbH	PowerCube Ergo	-	-	High
Geratherm Respiratory GmbH	Ergostik (table-top)	Ergostik (compact USB unit; manual: stationary or mobile use)	-	High
PNO$\ddot{E}$	-	-	Wearable metabolic analyser	High
uVida	-	-	Wearable metabolic analyser	High
VO2 Master	-	-	Wearable metabolic analyser	High
Spirofit	-	-	Wearable metabolic analyser	High

Appendix 8: Active market segments of selected CPET specialists

Company	Medical			PERFORMANCE			OTHER
	Hospital / CP lab	Doctors' practice	Rehab & pre-op	Elite sport	Research / university	Fitness, longevity & wellness	Occupational health
CORTEX Biophysik GmbH	Core	Core	Present	Core	Present	Somewhat present	Present
COSMED S.r.l.	Core	Core	Present	Core	Core	Somewhat present	Present
Jaeger Medical	Core	Present	-	Present	Present	-	-
MGC Diagnostics Corp.	Core	Present	Present	Present	Present	-	-
GANSORN Medizin Electronic GmbH	Core	Core	-	Present	-	-	-
Geratherm Respiratory GmbH	Present	Present	Core	Present	-	Somewhat present	-
PNOE	-	-	-	-	-	Core	-
uVida	-	-	-	-	-	Core	-
VO2 Master	-	Present	-	-	-	Core	-
Spirofit	-	-	-	-	-	Core	-

Appendix 9: Global CPET device market by region: revenue, unit sales and installed base



Appendix 10: Global CPET market by application segment

