

Our strategy for sustainable profitable growth

Digitalization is perhaps the most important trend shaping the modern world. The ability to embed unimaginable computing power into increasingly smaller devices, and to share and analyze vast amounts of data in real time around the globe has opened up tremendous new opportunities to improve the quality of life for people everywhere.

And although we've used digital information for decades – including an IBM data storage unit developed in 1956 with a capacity of five megabytes that weighed about a ton – the Digital Revolution is still in its early days. In 2015, the volume of digital data generated around the world amounted to some 100 million terabytes.* In 2021, it was estimated to be almost 14 billion terabytes. By 2025, it is expected to reach close to 160 billion terabytes.

The technology underlying this development is the semiconductor. Silicon semiconductor chips can contain millions of transistors in a tiny space, allowing data to be stored and processed quickly and efficiently. The more transistors you can build into a chip – that is, the smaller you can make the transistor – the more powerful the chip is.

In many of the latest chips, transistors are 10 nanometers or smaller, roughly equivalent to a protein molecule in size. Manufacturing such a chip requires a near-pure vacuum. Even the smallest molecule-sized contaminant could significantly reduce a chip's performance. And as demand grows for evermore powerful semiconductors – used in data centers, smart factories, electric and self-driving vehicles, 5G telecoms networks – transistor sizes decrease even further, requiring even cleaner vacuum process chambers.

This is where VAT plays its mission-critical role in the Digital Revolution. VAT is the world's leading manufacturer of vacuum valves, mechanical components that open and close the various process chambers used in chip fabrication – such as cleaning, etching, film deposition – while ensuring a consistently pure vacuum environment through the entire process.

Similar processes are used to manufacture high-resolution displays, such as LED (light-emitting diode) and OLED (organic light-emitting diode) screens used in smart phones and televisions. Photovoltaic energy cells are also manufactured in a high-vacuum environment. Other industries are also turning to high-vacuum manufacturing processes where extreme precision is required, such as industrial coatings, medical devices and pharmaceutical manufacture. VAT serves all of these markets with the most advanced valve technologies, a flexible global footprint, and long-standing relationships with some of the world's most demanding customers.

VAT serves an attractive, fast-growing market

The semiconductor industry is VAT's largest end market, accounting for some 75% of net sales in 2021. VAT typically sells its valves to OEMs (original equipment manufacturers) who build the valves into larger products, generally referred to as wafer fabrication equipment (WFE). OEMs then sell these to the ultimate end user, the chip fabricators.

As a result, VAT's primary demand driver is investment from semiconductor manufacturers into large fabrication facilities, both new capacity and the retrofit and upgrade of existing equipment. In 2021, global WFE spending grew by 40% from its previous record level in 2020, reaching almost USD 90 billion, and is expected to grow by another USD 10 billion or more by 2025.

* Source: Applied Materials, September 2021

VAT benefits from this in two ways. The first is simply the growing volume of semiconductors needed as chips are used in more and more devices. Increasing chip fabrication requires more vacuum valves. The second factor is the development of new chip designs that are more powerful and more energy-efficient. These newer chips typically pack more transistors into the same or a smaller space, which in turn often requires more process steps (and more valves) and higher manufacturing purity (through more advanced valve designs).

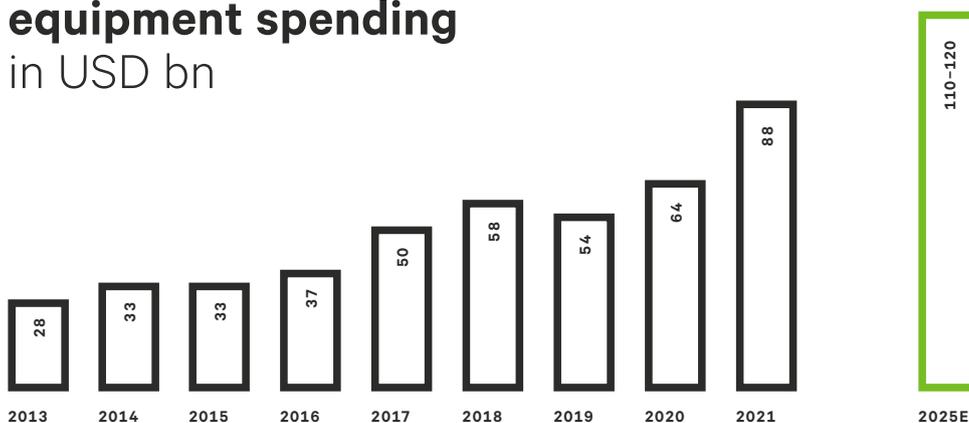
Similar trends are taking place in the displays and solar photovoltaic industries. Growth is being driven by both volume requirements as well as new technologies that significantly improve product performance, whether it's screen resolution in displays or energy-conversion efficiency in solar panels. Both require more and better vacuum valves.

VAT also supplies vacuum valve solutions to other industries, such as specialized industrial coatings that must be applied in an ultra-clean environment, or the crystal pulling process used to produce silicon wafers or substrates for the semiconductor industry. VAT valves are used in scientific equipment, such as particle accelerators and electron microscopes, and in nuclear fusion reactors, such as the ITER magnetic fusion device being developed in a 35-country, multi-decade collaboration.

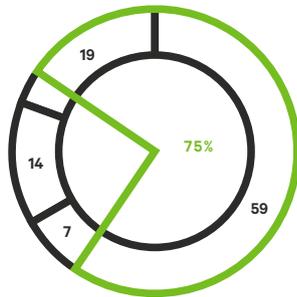
Like many capital-intensive industries, semiconductor, display and solar panel manufacturing has historically tended to be cyclical. Very large investments were made in new capacity, which was then absorbed over several years before a new cycle of investment begins. While this remains true today, cyclicality has decreased in recent years as the market for semiconductors and the use of high-vacuum manufacturing processes has diversified from its roots in the computing industry into other areas, such as mobile devices, aerospace and automotive, coatings, medical applications, and others. In addition, as the installed base of vacuum equipment has grown, so too has the need for service, retrofits and upgrades, a low-capital business which provides a more reliable stream of revenues.

Geographically, many of VAT's largest customers in the semiconductor, display and solar industries have their major production centers in Asia, although Europe and the US remain key locations, especially for chip technologies such as extreme ultraviolet lithography (EUV). Being close to customers, especially in times of rapid market and technology changes, is becoming increasingly important to maintain and build technology leadership, customer relationships and market share.

Wafer fabrication equipment spending in USD bn



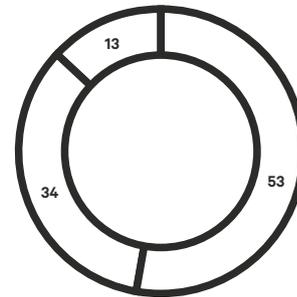
Sales Breakdown by Market Segment 2021 in %



59 SEMICONDUCTOR
7 DISPLAY & SOLAR
14 ADVANCED INDUSTRIALS
19 GLOBAL SERVICES

75% OF VAT'S GROUP
SALES ARE
SEMICONDUCTOR
RELATED

Regional Sales Breakdown 2021 in %



53 ASIA
34 AMERICAS
13 EMEA

VAT's set-up optimizes its competitive advantages

VAT is clearly and simply organized so that its businesses are positioned to best meet the needs of its customers and to gain the greatest benefit from their competitive advantages.

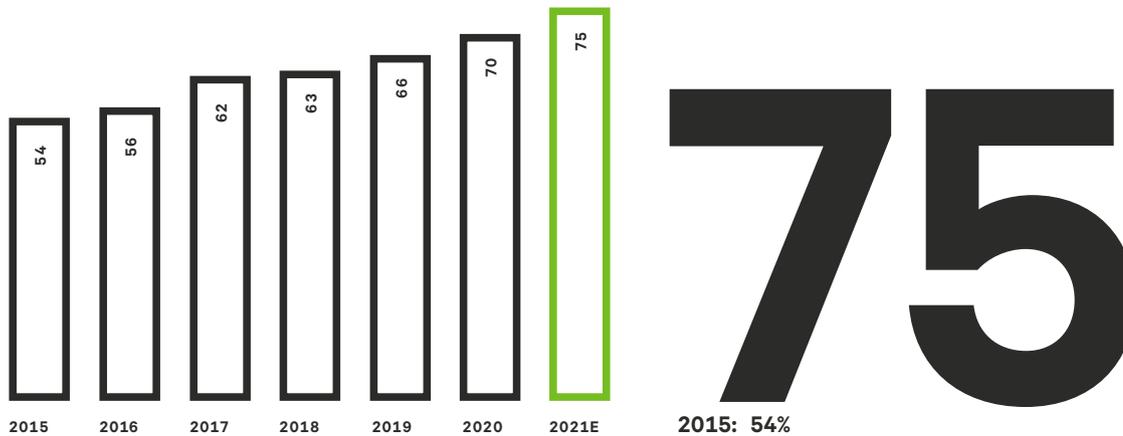
The company has two segments. The Valves segment is focused on VAT's core vacuum valves technology and consists of three business units aligned with its biggest markets: Semiconductors, Display & Solar, and Advanced Industrials. The second segment, Global Service, supplies a growing range of service products and solutions to help customers improve their competitiveness through increased productivity and uptime.

VAT is headquartered in Haag, Switzerland, close to where it was founded in 1965. This remains the company's primary production facility and the site of most of its research and development activities, along with the industry's only particle measurement lab, in the US. In 2012, VAT built a second manufacturing plant in Penang, Malaysia, to support its growing customer base in Asia. In 2021, the plant accounted for sales of about CHF 170 million, 70% higher than the previous year. With the announcement in December 2021 of a further expansion of capacity in Malaysia, the company expects the plant to eventually take over the major share of total global valve production.

This global footprint has enabled a step change in VAT's ability to collaborate closely with customers to develop precisely the solutions they need and to deliver them faster. It has also increased operational flexibility, allowing the company to quickly shift production and supply to meet these changing needs and to optimize productivity and cost. And by diversifying the talent pool, this expansion fosters innovation, broadens the company's base of expertise and offers people new opportunities to grow, both personally and professionally, making VAT a more attractive employer.

VAT's market share in the high-end semiconductor market*

in %



* Semiconductors includes LED displays.

Innovation is a key differentiator

In the technologically demanding markets that VAT serves, the ability to innovate quickly in close collaboration with customers is a key competitive advantage. VAT has a long history of investment in R&D, typically spending about 5% of revenues on technology innovation every year. This is roughly equal to the total annual revenues of its closest competitor. In December of 2021, VAT took another step to secure its technology leadership with the announcement of a CHF 40-million investment in a new innovation center at its head office location in Switzerland. The center will bring all of the company's Switzerland-based R&D staff under a single roof to enhance product development and improve collaboration with VAT's US-based particle lab and its growing engineering capabilities in Malaysia.

The company assesses the return on this investment partly through the number of specification wins, agreements with customers on new product designs to address specific customer requirements for upcoming generations of new equipment. Spec wins translate into revenues as the customer rolls out its new equipment for the semiconductor, display and solar markets. VAT achieved more than 110 spec wins in 2021, a new record. The company also places a high priority on intellectual property protection and currently owns more than 400 active patents worldwide, more than all of its competitors combined.

Based on this combination of technology leadership, deep customer relationships, global production and service footprint and highly-qualified and engaged people, VAT has been able to steadily outgrow the overall market on a regular basis. The more technologically challenging the market, the greater VAT's market share.

Profitable growth strategy to 2025

VAT aims to continue this strong performance and capture the many growth opportunities emerging from global digitalization megatrends, and is implementing a simple and clear strategy to achieve this goal.

The first element is to continue to gain market share in its core valves business. Success in this area depends to a large extent on continuing to build its technology lead as the size of semiconductor nodes continues to shrink and chip architectures become more complex. These developments require more process steps and higher process purity. VAT technology that reduces the release of particles during valve opening and closing, for example, gives the company a significant advantage in this rapidly growing market.

Another focus is to grow VAT's service business. Our growth over the years has created an installed base of more than a million valves around the world. Maintaining their operation at peak performance is vital for semi manufacturers to maximize yield, uptime and productivity. To address these needs, VAT is developing new service products, such as customized upgrades and retrofits that can be easily installed with minimal production disruptions. The company is improving its service delivery footprint with upgraded service centers close to key customers.

A third lever for driving growth is to expand into profitable adjacent markets that build on VAT's existing technology strengths. These include specialized valve modules that can be integrated into process chambers to provide additional functionality. Motion components, such as lifters and positioners, represent another attractive adjacency along the wafer path.

Finally, making valves and related components smarter by integrating sensors, analytics and device-to-device communications and control systems will allow future valve systems to be self-monitoring, self-tuning, self-learning and self-maintaining. This will contribute to lower customer operating costs and significant productivity improvements.

Securing both growth and profitability

To ensure that VAT's growth remains profitable, the company will continue to focus on operational performance in three primary areas.

The first is to become more cost competitive by taking full advantage of the company's flexible global footprint. This means, for example, developing suppliers in best-cost countries who can reliably meet VAT's global quality and manufacturing requirements. VAT also aims to keep investing in manufacturing and engineering resources that are close to its customers. This allows the company to respond faster and more cost-effectively to changing customer needs. The recently announced CHF 70 million expansion of production in Malaysia is an important step in this strategy. This investment is expected to more than double VAT's output from Malaysia to over CHF 1 billion once the plant is running at full capacity.

Four strategic priorities



Another lever is to create seamlessly integrated business processes across the entire value chain. This drives faster time-to-market and lower operational costs while freeing up employees to focus on delivering more value to customers – more innovation, greater reliability, higher product and service quality.

The third element in VAT's operational strategy is ultimately to create a robust and high-performance organization that can adapt faster than the competition to changing market circumstances. This will be a company that has developed flexible and resilient supply chains, that uses innovative and differentiating manufacturing processes, and that can attract and retain highly-trained and motivated people across all of its markets.

New mid-term targets

VAT believes that its market and technology leadership, its flexible global footprint, and its steadily improving operational performance give it significant competitive advantages that will allow it to continue to outgrow the market while sustaining attractive profitability.

Based on this ambition, the company regularly publishes a set of short- and medium-term financial targets against which its performance can be measured. Since the last set of mid-term targets (2020–25) was announced in December of 2020, market conditions have changed significantly. WFE in 2021 alone amounted to some USD 90 billion, already well above the level of USD 80 billion originally expected for 2025. Leading market research firms now expect 2025 WFE to reach USD 110-120 billion, about 45% above the December 2020 forecast.

As a result of these changes, VAT has revised its mid-term targets for the period 2020–2025.

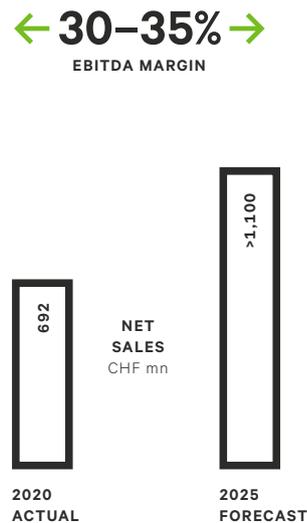
The key changes from a sales and profitability perspective are that the company now expects net sales in 2025 of approximately CHF 1.5 billion, an increase of 36% compared with the previous target of CHF 1.1 billion. Also, the EBITDA margin target has increased to 32–37% of net sales, up from 30–35%.

VAT also understands that financial and economic targets are not the only way to measure success and value creation. We have many stakeholders with diverse perspectives on what constitutes value. These include our obligations to the communities in which we operate, a commitment to reduce our impact on the environment, and the creation of a welcoming and motivating work environment for all our employees.

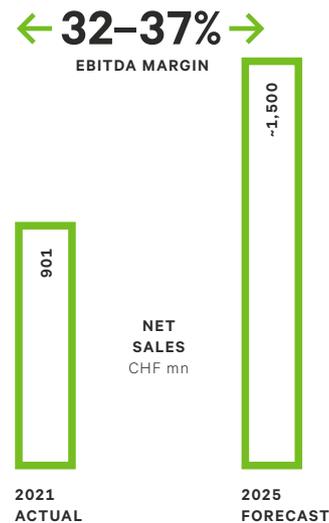
We believe that these values are mutually reinforcing. VAT will not be able to achieve its business goals unless it also meets its social and environmental responsibilities. Environmental stewardship is not only directly linked to production efficiency and costs, but is also a prerequisite for attracting and retaining the best people. Similarly, creating an inclusive and motivating workplace sets the foundation for high employee performance, especially in fast-changing markets. VAT is committed to continuous improvement in this important area.

Mid-term targets realigned to more positive market outlook

Targets
at December 2020



Targets
at March 2022



Looking ahead with confidence

VAT is the market and technology leader in an attractive market with a positive long-term growth outlook. We've reached this position by building a number of competitive advantages over many years: deep relationships with our customers and a commitment to our mutual success; a dedication to technology innovation with a sharp focus on high-performance vacuum valves, mission-critical to the Digital Revolution; a global footprint that brings us closer to our customers and provides operational flexibility; and an engaged and highly-skilled workforce dedicated to delivering value to our customers. Together, these have contributed to a financial profile characterized by consistent long-term growth, profitability and cash flow across the business cycle.

At the same time, markets are changing. New technologies are constantly emerging. The global economy is subject to unforeseen developments, as the COVID-19 pandemic has made all too clear. Competitors work hard to outperform and gain market share.

We believe that VAT is in a strong position to meet these challenges and to thrive. Our consistently strong performance since VAT was listed on the SIX Swiss Exchange in 2016 demonstrates our company's resilience and adaptability and the success of our strategy and business model. We aim to continue this performance well into the future, driven by our conviction that we have the potential to create even more value for all of our stakeholders and that we have an important role to play in the creation of a more prosperous interconnected world.