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## Business Analysis on SMA Solar Technology AG

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## I. INTRODUCTION

Among the top solar technology and energy management solution providers worldwide is SMA Solar Technology AG. The organization was established in Germany in 1981, and since then it has expanded to a position among the biggest and most reputable businesses in the solar sector. SMA develops, produces, and markets inverters, power electronics, and other solar-related goods and services to clients all over the world. The company's products and services are used in many areas of solar power applications, including residential, commercial, and industrial. SMA is a publicly traded company, and it's headquartered in Niestetal, Germany. The company is known globally with offices all over the world and it focuses on providing sustainable energy solutions to customers around the world. It is known for its high-quality products, innovative solutions, and excellent customer service. With sales of over €1 billion in 2015, the SMA Group led the world market for solar inverters, a vital part of all PV<sup>1</sup> facilities, and it provides cutting-edge critical technologies for future power supply structures. More than 3,500 employees work with the Group internationally. Worldwide, there are over 700 patents and utility models that cover SMA technology. Comprehensive services and operational management of massive PV power plants are added to the list of services. The Group's parent business, SMA has been listed on the Frankfurt Stock Exchange's Prime Standard since 2008 and also been listed on the Xetra Stock Exchange's.

## II. HISTORY

Werner Kleinkauf, Peter Drews, Reiner Wettlaufer, and Günther Cramer (1952-2015), who were all former board members, created the business. The business was founded as a distinct entity from the University of Kassel. To underscore the emphasis on solar energy and the company's globalization, the name was changed to its current form, SMA Solar Technology, in June 2008. At the same time, the division responsible for railway technology was split off to become SMA Railway Technology GmbH, which was later sold to the Chinese company Beijing Dinghan in 2017.

- After the annual general assembly in June 2009, the board underwent more significant changes. Reiner Wettlaufer, one of the founders, joined the supervisory board. Marko Werner and Roland Grebe, who had both worked for the business for more than 20 years, were appointed chief marketing and sales officers and chief technology officers, respectively. The board also included Uwe Hertel in operations and Jürgen Dolle in human resources in April 2010. [2]

- The supervisory board of SMA decreased the size of the managing board as part of the company's transition in 2015. Martin Kinne and Lydia Sommer left the board in December of that year. Roland Grebe (board member for human resources and IT), Juergen Reinert (board member for operations and technology), and Pierre-Pascal Urbon (chief executive officer, board member for strategy, finance/legal, and sales) made up the managing board of SMA as of January 2016. [2]

- As of January 1, 2017, the following individuals make up the managing board of SMA Solar Technology AG: Pierre-Pascal Urbon, Jürgen Reinert, Ulrich Hadding, who serves as deputy CEO and is a board member for technology and operations (CEO, board member for strategy, sales, and service). After resigning from the managing board on October 15 in accordance with the supervisory board, Pierre-Pascal Urbon left the firm on December 31 at his own decision. Jürgen Reinert was appointed chief executive officer of SMA Solar Technology AG on the same day, and in addition to overseeing operations and technology, he is in charge of strategy, sales, and service. Investor relations have been added to Ulrich Hadding's, responsibilities along with continuing to be in charge of finances, human resources, and legal matters. [2]

<sup>1</sup>Photovoltaics is the conversion of light into electricity

### III. ORGANIZATIONAL & REPORTING STRUCTURE

The Legal structure of SMA Solar Technology AG is the parent company of the SMA group. As the parent company, SMA holds directly or indirectly, 100% of the shares of all the operating companies that belongs to the SMA group (29 group companies). Those 29 group companies were consist of 7 domestic companies and 22 companies based abroad. In addition, SMA Solar Technology AG holds a 42% interest in elaxon GmbH. The Reporting structure of the company is demonstrated as below [3].

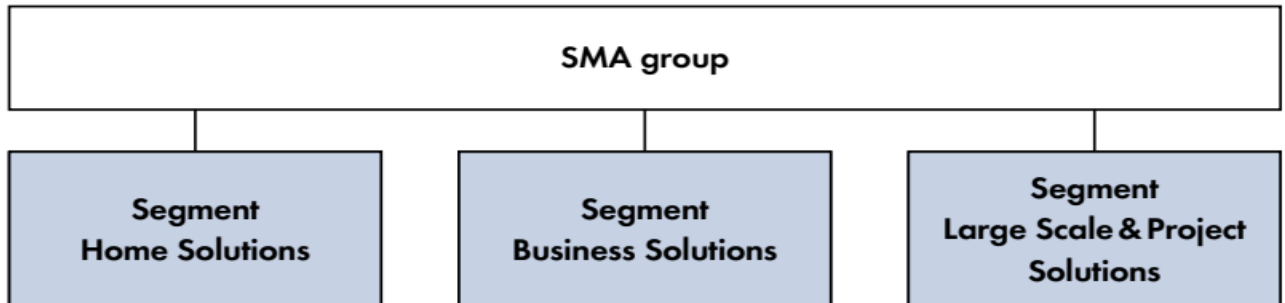


Figure 1: Organizational & Reporting structure

The Organizational structure of the SMA group is consists of three major Segments, the Home Solutions, the Business Solutions, and Large Scale & Project Solutions. The executive bodies consist of the Annual General Meeting, the Managing Board, and the Supervisory Board. They were characterized by openness, intensity and constructiveness. [3]

#### 1. The Managing Board

Since October 15,2018, The SMA member of the Managing Board is Dr.-Ing. Jürgen Reinert (Chief Executive Officer, Board Member for Strategy, Sales and Service, Operations and Technology) and Ulrich Hadding (Board Member for Finance, Human Resources and Legal) [p16]. The main role of the Managing Board is:

- Regularly updating the Supervisory Board on the SMA group's sales, earnings and general situation.
- Manages the company
- It present detailed information on proposed business policies
- Planning questions concerning Corporate planning, in particular financial, investment, production and personnel planning
- Planning business transactions to the Supervisory Board

#### 2. The Supervisory Board

The Board represents shareholders and employees in equal measure, consists of the Roland Bent, Kim Fausing (Deputy Chairman), Alexa Hergenröther, Uwe Kleinkauf (Chairman), Ilonka Nußbaumer and Jan-Henrik Supady as shareholder representatives. Six other members represent the employees on the Supervisory Board [3]. The main role of the Supervisory Board:

- Supervises, appoints and advises the Managing Board
- Continuously monitored the Managing Board with regards of the law, Articles of Incorporation and rules of Procedure
- Scrutinized and discussed business transactions that require the Supervisory Board approval

#### 3. The Annual General Meeting main role is to elects shareholders representatives to the Supervisory Board

#### IV. PRODUCT PORTFOLIO

A global leader in solar technology is SMA Solar Technology AG. Inverters, power electronics, and other solar-related products and services are designed, produced, and sold by the business. SMA Solar Technology AG offers the following products:[4]

- A vital part of every solar power system, inverters are the company's main product. For both home and commercial applications, SMA provides a large selection of inverters.
- Systems for monitoring: SMA provides customers with real-time monitoring systems that let them monitor the performance of their solar power systems.
- Energy storage options: The business also provides customers with energy storage options that let them store extra solar energy for later usage.
- Software and services are also provided by SMA to assist customers in the design, installation, and maintenance of their solar power systems.

The product portfolio of SMA Solar Technology AG is created to satisfy the requirements of various consumers, from residential to commercial, and to provide a broad range of solar technology goods and services to the sector. A crucial component of the company's overall business strategy is its product portfolio because it aids in revenue generation and business expansion [4].



Figure 2: Product Portfolio

#### V. BUSINESS MODEL

SMA Solar Technology AG runs on a business strategy that relies on selling its goods and services to clients all over the world. Inverters, power electronics, and other solar-related goods and services are designed, produced, and sold by the company to customers for use in a variety of solar power applications, including residential, commercial, and utility-scale projects. In addition, SMA makes additional income from licensing deals with other businesses that make use of its technology and intellectual property. By entering into maintenance and service contracts with its clients, the business also makes money. These contracts make sure that the systems of the clients are functioning at their best and that any problems are fixed as soon as possible [5].

Tools for business models such as Business Model Canvas can be applied either from the outside in or from the inside out to assist sustainability. By seeing an organization via several forms of idealized business models or archetypes, an outside-in approach examines prospects for innovation. Offering direction to seize new possibilities enables businesses to explore novel methods to produce and deliver sustainable value and to develop the structure of their business models. This strategy aids businesses in modifying their current business model to fit a specific archetype, which could lead to innovations that promote sustainability[6].

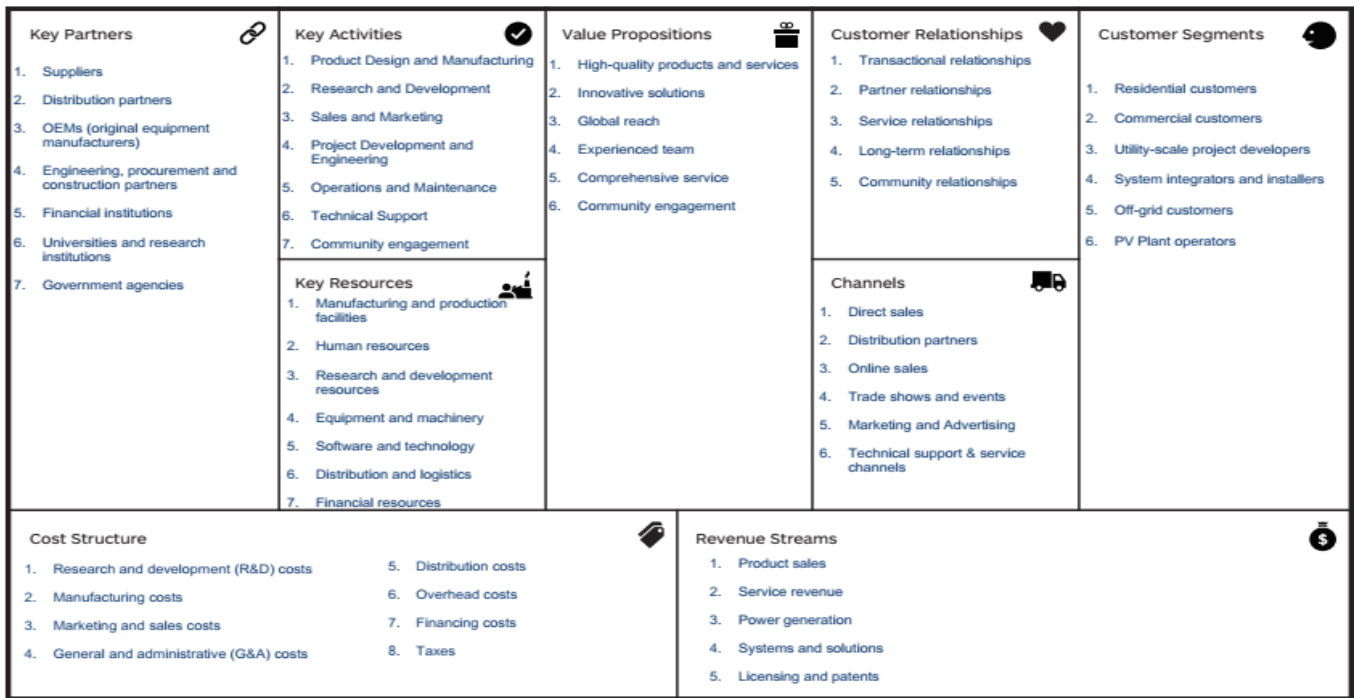


Figure 3: Business Model Canvas

#### A. Customer Segments

SMA Solar Technology AG's diverse product portfolio allows it to serve a wide range of customer segments in the solar industry, providing sustainable energy solutions and helping them reduce their energy costs. Customer segmentation are one of the important aspects of any organization as it helps the company to identify the target market it includes companies from the sectors of investment, project development, EPC (Engineering, Procurement, and Construction), system integration, energy supply, operation and maintenance services, the housing sector, wholesale and installation companies as well as small and medium-sized commercial enterprises. In SMA the customer segment is structured as follows: [7]

- In the Home Solutions segment,
  - SMA provides private PV systems to international markets, with and without storage systems and smart home solutions.
  - Energy System Home is a comprehensive, single-source package that includes hardware, software, and services
  - Single-phase and three-phase string inverters
  - Storage systems
  - Electric vehicle charging solutions
  - Services, accessories, and goods for communication
  - Digital energy services
- In the **Business Solutions segment**,
  - Focus on global markets for small to medium-sized PV systems
  - Targeted towards small and medium-sized businesses, housing industry
  - Operational management of commercial PV systems
  - Digital services
  - Solutions for charging management and billing of electric vehicle fleets on the ennexOS platform

- The **Large Scale & Project Solutions**,
  - Division of SMA focused on international PV power plant markets
  - Provides comprehensive solutions with the best grid service and monitoring features
  - Storage options for large-scale PV and storage power plants
  - Solutions for hydrogen production optimized by Sunny Central Storage product line
  - Global implementation of PV diesel hybrid and large-scale storage projects
  - Modernization and functional improvement of PV power plants (Repowering)

### *B. Value Proposition*

The company is known for its state-of-the-art technology and the latest development in the field of sustainable energy. SMA's solar technology portfolio is rich with many innovations that changed the market. A good value proposition gives customers worldwide reasons to choose SMA products and services above all other products in the market. SMA shares some of their extraordinary own values such as: [8]

- Innovation
- Excellent quality
- Customer orientation based on partnership
- Commitment as a result of employee participation
- Flexibility and continuous improvement
- Financial Success
- environmental responsibility
- Fairness and honesty

To accomplish their values and become customer's first choice they offer:

- Experienced specialists in 20 countries on six continents with a strong sense of commitment
- Excellent product quality
- Global presence
- State-of-the-art, order-based, and highly flexible production
- Systematic reduction of the prices of our inverters and of the life-cycle costs of photovoltaic power plants
- Top-quality service and customer support

### *C. Channels*

SMA Solar Technology AG uses a worldwide distribution network to sell its products and is largely dependent on the high reputation of its products. In addition, uses various channels to reach and serve its customers, such as direct sales through its sales team and offices, distribution partners, online sales through its website and e-commerce platforms, trade shows and events, marketing and advertising campaigns, and technical support and service channels through phone, email, and remote assistance. The company's channels are diverse and adaptable to different regions and target audiences. [9]

### *D. Customer Relationship*

SMA Solar Technology AG communicates with customers through various channels such as

- Customer events
- SMA partner program
- SMA Solar Academy seminars
- International trade fairs

Despite the limitations due to the pandemic, the company continued the dialogue and collaboration with customers in 2021, using various analog and virtual formats and communication channels, including live streams, seminars, webinars, and a glossary. Customers have an increasing interest in transparency and sustainability, and the company aims to process customer inquiries faster by developing a glossary and assigning topic areas to SMA experts for up-to-date information [10]. They provide superior support for customers' day-to-day business through the new service portal, the Online Service Center. The portal allows



customers to order a replacement device in just a few clicks and gives a structured overview of the plants and devices. The troubleshooting system allows customers to access SMA expertise directly, keeping them up-to-date at all times with full access to everything they need. [11]

### E. Revenue Streams

Revenue streams refer to the ways in which a company generates income from its products or services. SMA Solar Technology AG likely has several revenue streams. The SMA Group, a company that sells PV inverters have made a significant amount of sells during the reporting period from January to September 2022. [12]

The SMA's earnings increased significantly in the first nine months of 2022. The key financial (in million) for SMA:

- Total MW sold for the period (Q1-Q3 2022) [€8,730m] was decreased (-15%) compared to the same period of the previous year (Q1-Q3 2021) [€10,279m].
- The SMA group's total sales for the period (Q1-Q3 2022) [€724m] was decreased (3%) compared to the same period of the previous year (Q1-Q3 2021) [€745m].
- The Home Solutions segment sales for the period (Q1-Q3 2022) [€229m] was increased (7%) compared to the same period of the previous year (Q1-Q3 2021) [€214m].
- The Commercial & Industrial Solutions segment sales for the period (Q1-Q3 2022) [€191m] was increased (9%) compared to the same period of the previous year (Q1-Q3 2021) [€176m]. Thanks to the slowly easing supply situation for electronic components.
- The Large Scale & Project Solutions segment sales for the period (Q1-Q3 2022) [€304m] was decreased (15%) compared to the same period of the previous year (Q1-Q3 2021) [€355m]. The decline in sales is mainly attributable to project delays.

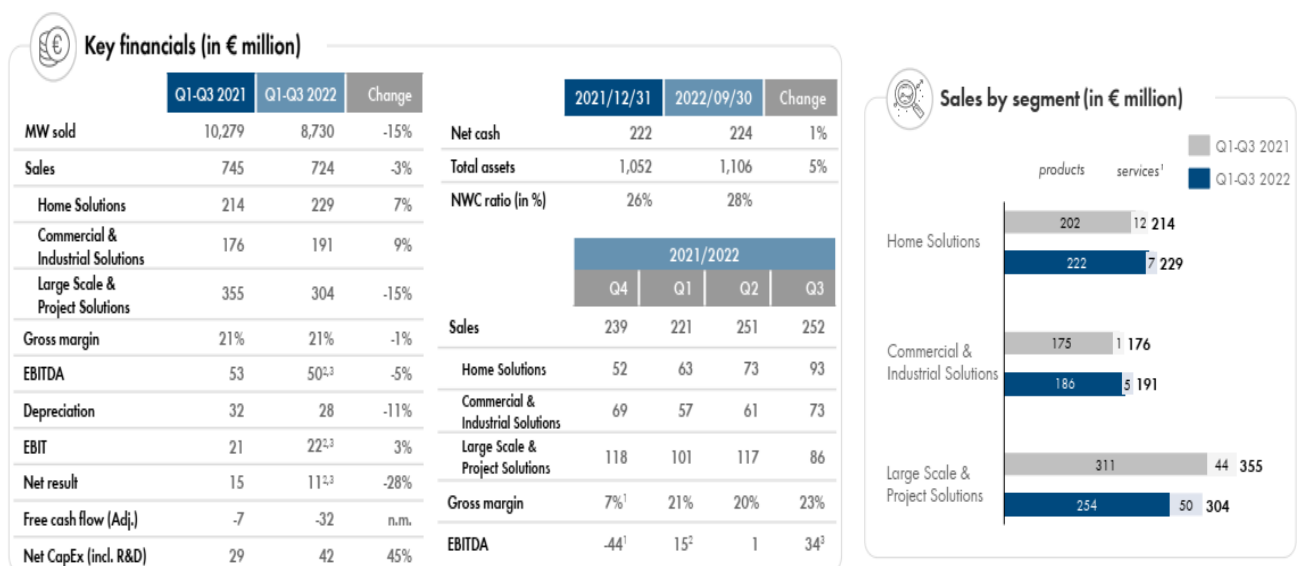


Figure 4: Key Financials

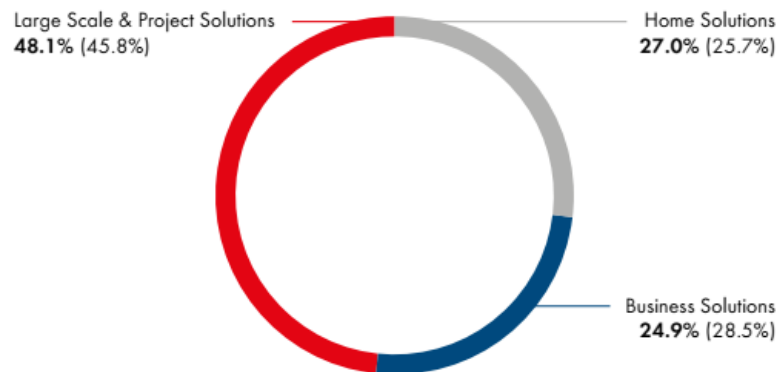
The company sales by segment shows [16]:

- Home Solutions segment, significantly increases profitability
- Business Solutions, affected by shortage of components and reluctance to invest
- Large Scale & Project Solutions segment, stable sales



## Sales by segments <sup>1</sup>

in %



<sup>1</sup> Gross sales before sales deductions (previous year's figures in parentheses)

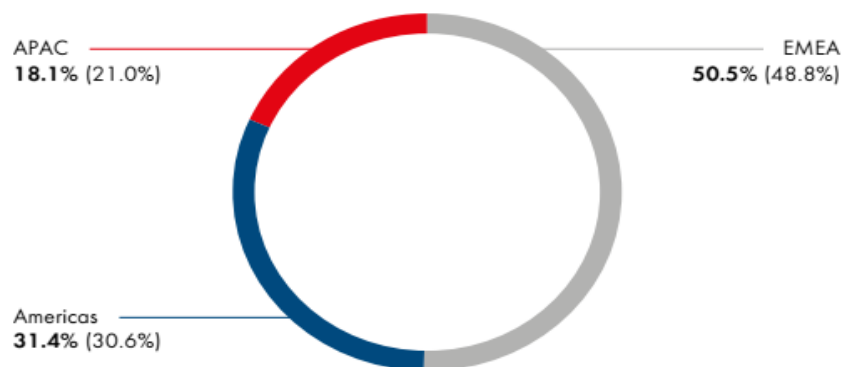
Figure 5: Sales by segments

The company sales by region shows [16]:

- In EMEA<sup>2</sup> region, Germany is most important market
- U.S market rises sharply
- In APAC<sup>3</sup> region

## Sales by regions <sup>1</sup>

in %



<sup>1</sup> Gross sales before sales deductions (previous year's figures in parentheses)

Figure 6: Sales by region

<sup>2</sup> Europe, Middle East and Africa region

<sup>3</sup> Asia-Pacific region excluding China

### F. Key Activities

SMA is a company that specializes in developing and selling energy systems and solutions, including PV inverters, battery storage solutions, energy management systems, EV charging solutions, and services for the operation and maintenance of photovoltaic power plants and hydrogen production. The inverters have integrated functions for maximum yield and include features such as SMA ShadeFix and SMA Smart Connected for shade management and monitoring. SMA Solar Technology AG, a company that designs and manufactures solar power solutions, likely has several key activities that are essential for its business operations. These could include: [7]

- Research and development
- Product design and manufacturing
- Sales and marketing
- Customer service and support
- Operations and logistics
- Financial management
- Compliance and regulations
- Human resources, which is responsible for managing the company's employees

### G. Key Resources

The effective operation of SMA Solar Technology AG depends on a number of essential resources [13]:

- They have a group of skilled engineers, technicians
- Sales representatives who are well-versed in the solar sector
- They also have manufacturing and production facilities to create and produce their goods and services
- Investments in research and development.
- Cutting-edge machinery and equipment during the production process, to ensure that everything is manufactured to the greatest quality standards
- They design, monitor, and manage their products using software and technology
- Logistics and distribution infrastructure in place to deliver their goods to clients all around the world.
- The financial means to maintain the business' expansion and level of competition, including cash, credit lines, and investments.

### H. Key Partners

Key partners are individuals or organizations that provide essential resources or services to a company in order to help it achieve its goals. These partners can include suppliers, customers, and strategic partners. Key partners are important because they can provide access to new markets, customers, and technologies, as well as help reduce costs and increase efficiency. They can also provide valuable expertise and support for the company's R&D<sup>4</sup> and marketing efforts. Additionally, key partners can help to mitigate risks and increase the company's competitiveness. In the case of SMA Solar Technology AG, key partners could include suppliers of raw materials and components, distributors and installers of solar systems, and research institutions for developing new technologies. Partners such as [14][15]

- Danfoss A/S
- Elexon GmbH
- Mannheim-based energy company MVV Energie AG

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<sup>4</sup> Research & Development

## 1. Cost structure

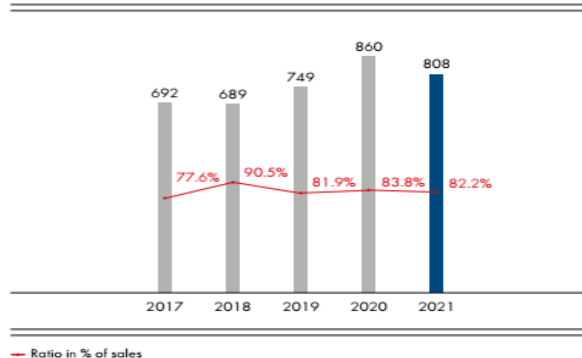
SMA Solar Technology AG's cost structure includes costs associated with inventory, trade payables, receivables, and liabilities from advance payments received, which contribute to their net working capital. It can be assumed that the company has a strategy of stockpiling in view of the ongoing shortage of materials, as stated in the statement of cash flows, resulting in an increase in the inventory amount, which is also reflected in the cost of sales. [16]

The following is the costs for the period of (2021):

- The cost of sales for the reporting period was [€808.2 m].
- Personnel expenses remained almost unchanged at [€117.6m].
- Material expenses fell to [€610.2m] due to lower sales volume.
- Selling expenses decreased to [€85.4m].
- Research and development expenses after deducting capitalized development costs amounted to [€50.2m].
- General administrative expenses were [€50.4m].

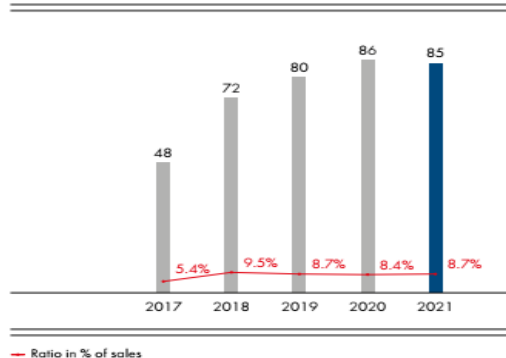
### Cost of sales

in € million



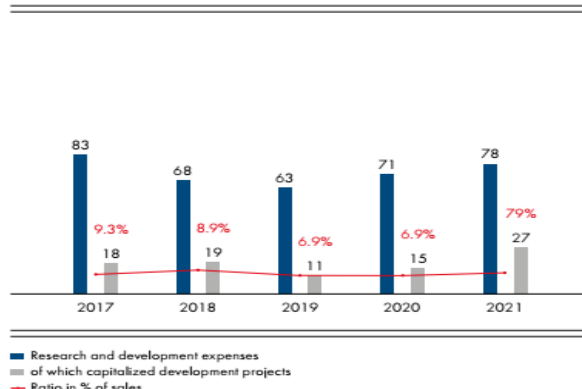
### Selling expenses

in € million



### Research and development expenses

in € million



### Administrative expenses

in € million

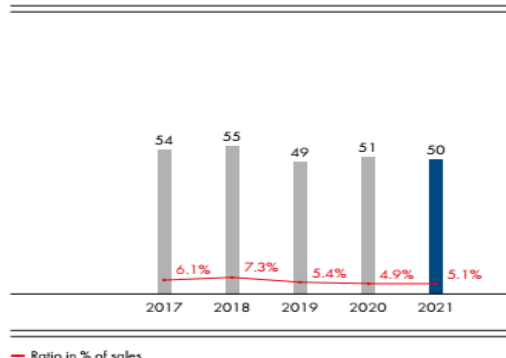


Figure 7: Costs and Expenses

## VI. MARKET POSITION

SMA's goal is to develop into an innovative and sustainable "energy transition company" that offers suitable solutions for all essential areas of future energy supply. In order for the company to evolve in a market full of competitors, it must create an image for its customers. With a strong presence in international markets and an emphasis on offering comprehensive solutions for electric car charging and energy management, SMA is a leading manufacturer of solar and battery-storage systems and solutions. SMA is able to serve clients globally, including businesses in the investment, project development, engineering, procurement, and construction, system integration, energy supply, operation, and maintenance services, housing, wholesale, and installation sectors, as well as small and medium-sized businesses [7].

- SMA has experienced specialists in 20 countries on six continents.
- SMA is a leading company in the solar inverter market, and it has a sizable production plant in Germany that has an annual production capacity of 21 GW.
- They are able to remain nimble and adjust to changes in the demand of the worldwide market because of their extensive global presence and adaptable offerings for diverse applications and areas.

Due to the ongoing COVID-19 pandemic in 2021, the SMA group experienced difficulties, especially in the second half of the year when there was a lack of electrical components. The company found it challenging to properly address the strong demand for storage systems, EV charging options, and energy management for residential clients as a result. Despite this, the company was still able to sell 13,584 MW worth of inverters, generating €983.7 million in revenue—still short of 2020. They have expanded their digital offerings, signed contracts to supply large-scale storage power plants in Australia and Europe, and have successfully positioned themselves in the green hydrogen production market. They have projects in use in the US, Europe, Asia, and Australia and their technologies meet the highest international standards for grid integration and provision of grid services [17].

Dated March 31, 2022

### Shareholder Structure

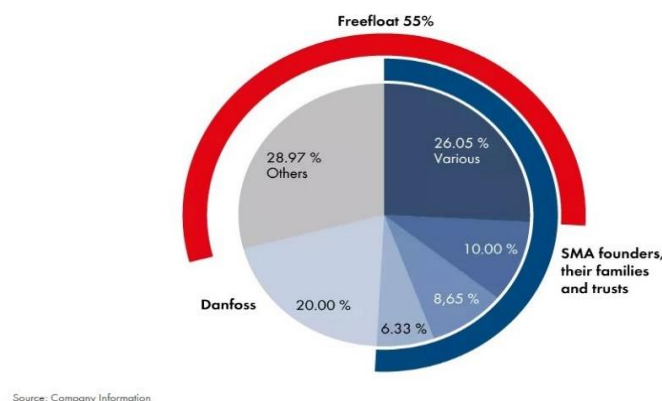


Figure 8: Shareholder Structure

The SMA group has a share capital of €34.7 million and it is distributed among different groups of shareholders as can be seen in the above graph [18].



Figure 9: SMA Share Market

By January 27, 2023, the company's share stock on Xetra closed at €77.65 with an increase of +0.75 (+0.98%) from the previous day. The performance of the share over different periods is also can be seen from the graph:

- 1 Year ago: +146.98%
- 3 Years ago: +107.62%
- 5 Years ago: +84.53%

According to the SMA share market, information the highest and the lowest price over the past year with the highest being €79.05 on January 27, 2022, and the lowest being €26.82 on January 27, 2023. Overall, the SMA group's stock has had a positive performance over different periods. In addition, The SMA had good growth in stock prices [19].

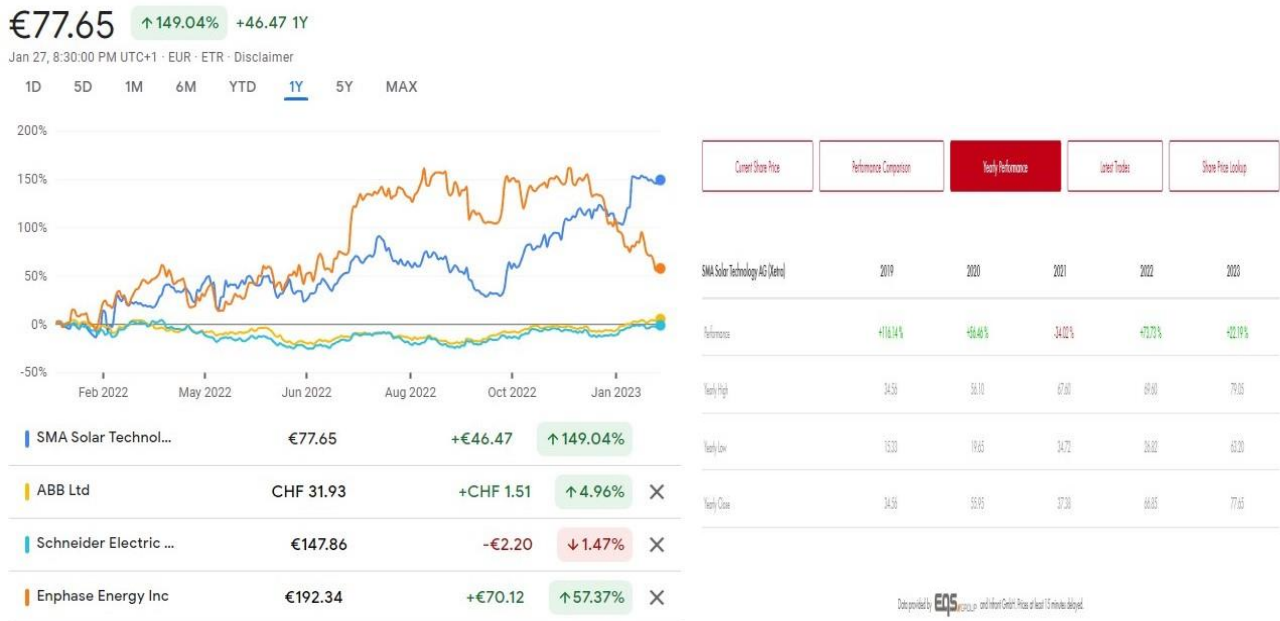


Figure 10: SMA Share Market Compression

According to the previous graph, we can see how SMA stock price during the past year was steadily increasing in compression to another competitor, which indicates that the company is having a strong market position in compression to the previous year and among other competitors [19].

## VII. COMPETITION

The SMA group's great success in the field of PV systems had increased not only the profit and the reputation of the company but also the competition between other organizations. With varied degrees of success depending on the market and area, individual competitors are trying to seize market shares through extremely aggressive pricing and terms and conditions policies. There is a chance that rival companies will continue to enhance the quality, functionality, or performance of their products and adjust to market demands in some markets more successfully than the SMA group. Due to overcapacity in some markets, growing price pressure in some market categories, particularly from Chinese rivals, may negatively affect the SMA group's future commercial development [20].

The SMA group mitigates this risk through user-friendly IT systems, better service offers that are tailored to our customer's demands, and optimal warranty conditions in order to uphold and further raise our customers' happiness. Although the present price increases for raw materials and electronic components may lessen their effects, cost-out initiatives and numerous projects to boost efficiency are producing consistent outcomes and will be pursued systematically [20].

## VIII. FINANCIAL SITUATION

As of December 31, 2021, annual report, SMA Solar Technology appears to have a strong financial position. The financial situation (in millions) of the SMA group can be structured as follows [21]:

## 1. SMA Financing analysis:

- Financial liabilities increased by [€5.6m] from [€41.1m] as of the end of (2020) to [€46.7m] as of the end of (2021).

## 2. Liquidity analysis:

- Net cash flow from operating activities was positively influenced by the operative business adjusted for special effects with [€94.3m] for the period (2021) compared to [€-31.4 m] for the period (2020).
- Net working capital, showed significant rise, due to the stockpiling strategy with [€257.5m] for the period (2021) was increased 26.2% compared to [€210.6m] for the period (2020) with 20.5%.
- Net cash flow from investing activities, showed significant rise with [€-81.6m] for the period (2021) compared to [€-36.5m] for the period (2020).
- Net cash flow from financing activities, this included repayments of financial liabilities to banks repayments of lease liabilities and SMA Solar Technology AG's dividend payment with [€-20.8m] for the period (2021) compared to [€-12.4m] for the period (2020).

## Multi-period overview of SMA group financial position

in € million	2021	2020	2019	2018	2017
Equity	410.4	439.1	416.9	424.5	611.5
Equity ratio in %	39.0	41.8	37.6	42.9	50.3
Non-current liabilities	289.9	270.5	259.3	244.5	285.2
Current liabilities	352.2	341.6	431.1	320.3	319.5
Share of non-current provisions in total assets in %	9.9	8.0	6.8	6.6	7.5
Financial liabilities	46.7	41.1	34.5	20.4	20.8
Net cash	221.7	226.0	303.0	305.5	449.7
Net working capital	257.5	210.6	159.5	177.4	167.9
Net cash flow from operating activities	94.3	-31.4	-1.2	-54.3	116.8
Net cash flow from investing activities	-81.6	-36.5	83.1	7.4	-81.2
Net cash flow from financing activities	-20.8	-12.4	-10.7	-14.5	-11.5

Figure 11: SMA Financial position overview

## 3. Investment analysis:

- Investment in fixed assets such as conversions and new buildings and extensions of buildings, for machinery and equipment in total [€17.6m] (2021) compared to [€20.2m] (2020).
- Investments in intangible assets, these largely related to capitalized development costs [€29.9m] (2021) compared to [€18.5m] (2020).
- Investments in Amortization of intangible assets [€11.5m] (2021) compared to [€11.6m] (2020).

## IX. COMPANY STRATEGY & INTERNATIONALIZATION STRATEGY

SMA Solar Technology AG's purpose is to think long-term, strive for an environmentally friendly and resource-saving way of doing business, and have a livable planet for future generations in mind. Their vision is to pioneer access to clean energy and their mission is to leverage 40 years of expertise and passion in renewables to drive the world's energy transition with their partners. The company values trust, performance, and team spirit, and its actions are influenced by the brand values of being sustainable, passionate, connected, visionary, and a reliable partner. Therefore, SMA has sets of the objective to achieve such as: [7]

1) Closer to the customer: They developed an organizational structure to achieve this strategic objective and targeting segment-specific customer groups will enable them to act even faster and with greater focus.

2) Stability through profitability: They aim to achieve an EBITDA<sup>5</sup> margin of at least 10% by 2025 by reducing quality costs and cost of sales, generating a consistently positive free cash flow, and optimizing working capital. The company's ultimate goal is to continuously increase company value, and by 2025, employees are to be given greater levels of participation in the company as shareholders through a stock participation program.

3) Holistic Sustainability: SMA prioritizes sustainability in all areas of the company, with objectives to supply the company with fully climate-neutral electricity and heat by 2025, implement the principle of the circular economy, strive to be an exemplary employer, bring diversity to life, and contribute to positive social development across the entire value chain.

4) Shaping the future with innovations: Positions itself for the future by using its technological expertise, experience, and innovative strength in existing and new business fields. The company aims to stand out from competitors with new digital approaches such as an end-to-end digital system landscape, prioritize innovation activities and investments in customer-added value, and develop expertise in addressing complex issues.

5) Powerful partnerships: The company aims to develop a powerful partner network in order to create comprehensive solutions with high customer value, expand the scope of action and generate long-term capabilities and synergy effects. The company is centralizing and structuring the partner management process in order to increase efficiency, productivity, and competitiveness and to become a systems and solutions provider.

## X. EMPLOYER BRANDING & STRATEGY

SMA Group is proud of their employees' commitment and willingness to learn, and because of these essential factors, the SMA group had achieved many successes. SMA group principles are fairness and respect, putting their values of trust, performance, and team spirit into practice in their everyday work and creating scope for responsible, entrepreneurial action and opportunities for shaping international collaboration. SMA group has a variety of employees according to the annual report for 2021 as they have the highest number of employees personal since 2017. [23]

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<sup>5</sup> Earnings before interest, taxes, depreciation and amortization



## Employees

Reporting date	2021/ 12/31	2020/ 12/31	2019/ 12/31	2018/ 12/31	2017/ 12/31
Employees (excl. trainees, learners and temporary employees)	3,353	3,126	2,998	3,231	3,057
Learners	94	80	67	50	62
Trainees	63	58	59	72	94
Temporary employees	226	388	442	290	701
Total employees (incl. trainees, learners and temporary employees)	3,736	3,652	3,566	3,643	3,914

Figure 12: Employee Report

SMA group provides many opportunities for their employees by improving their abilities and enhancing their skills through intensive programs and benefits that the company provides to their employees.

## A. Training

Through Vocational training as a key element in securing and fostering the next generation is a high priority at the SMA group. They offer training at the Kassel/Niestetal location in five different training occupations in the industrial/technical and commercial sectors. As of December 31, 2021, 63 young people were in Vocational training unlike the previous year December 31, 2020, 58 people. In addition, 94 learners gained practical experience and some initial insights into potential career areas at the SMA group. The benefits that trainees receive from SMA are:

- International nature of the organization
- The opportunity to complete language training courses
- The chance to complete an internship on project work at an international location for a defined period of time

## B. Occupational Health &amp; Safety

As 2,858 employees, trainees, learners, and temporary employees have been covered by a certified management system for occupational safety and health as of December 31, 2021. That corresponds to 69% of all SMA group personals. At the SMA group they follow the STOP procedure strategy the substitution check (S) ensures that it is necessary to perform the activity or to use the hazardous material. If this is the case, technical measures (T) to reduce the risks are defined. If such measures are not possible or not sufficient, organizational measures (O) are taken. In the final step or in addition to the other measures, personal protective measures/equipment (P) have to be used. Their objective is to avoid work-related accidents and illnesses. The SMA aims to lost time incident rate of <1.5 [24]

## C. Health

SMA's health management, a policy is aimed at avoiding chronic unfavorable stress and thus minimizing the risk of illness and maintaining employees' ability to work and be employed in the long term. As employees age, comprehensive health promotion and ergonomics are becoming increasingly important. They also have offered vaccination sites with 1,000 employees taking advantage of this offer [24].

## D. Fair Pay &amp; Benefits

SMA's goal is to use individual company regulations to create attractive employment conditions that benefit both employees and the company. The benefits portfolio of the company can be broken down into financial benefits, offers for promoting physical and mental health, support for a balanced lifestyle, and possibilities of individual development paths [23].

1. Fair pay, is based on the requirements of each position and the individual performance. The remuneration ranges are regularly reviewed globally every two to three years and are adjusted if necessary. In Germany, temporary

employees at the SMA group have received the same hourly wage as SMA group employees performing similar duties.

2. Benefits, there is a differentiation between full-time and part-time employees or between SMA group employees with fixed-term and permanent contracts. In Germany, They include additional benefits such as vacation pay, Christmas bonus, special leave, lifelong working-time accounts, public transport subsidies, sick pay allowance, company pensions, death benefits, and anniversary bonuses.
3. Various other company benefits are offered to encourage and support a good balance between family and career, including family services, emergency childcare, and childcare during school vacations.

#### E. Diversity & Equal Opportunities

SMA aims that all employees to have the same opportunities for development, regardless of gender, nationality, religion or ideology, disability, age, or sexual orientation. On December 31, 2021, 75.3% of employees were male (December 31, 2020: 75.2%) and 24.7% female (December 31, 2020: 24.8%). They developed a strategy called Diversity strategy, which aims to increase the proportion of female employees within the SMA group as a whole to 26% by 2025 and 30% by 2030. To accomplish that:

1. Advertising all vacancies as both full-time and part-time positions
2. Measures for flexible work and for balancing family and career

#### AREA OF ACTION: EMPLOYEES

	2021	2020
<b>Employees SMA group (excl. temporary employees)</b>	<b>3,353</b>	<b>3,126</b>
female	827	775
male	2,526	2,351

Figure 13: Employee Male-Female

#### F. New Work

The SMA group supports initiatives to align the organization in a role-based and self-organized manner create self-organized teams and continuously design working environments that support agile working methods in changing project teams. Creating new challenges and opportunities to test and improve their skills.

## XI. CONCLUSION

This study investigated every area of SMA's operations as well as its short-term plans. From this, we may conclude that although SMA has experienced a difficult setback period because of the COVID-19 pandemic, SMA is motivated to strengthen its leadership position in the next years. In order to have an even more stable future and fulfill its future strategic plan, it is advised that SMA, one of Germany's top solar technology solution providers, utilize its knowledge and what they have learned from its past.

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