

SECO / SPACE

SECO/WARWICK'S NEWSLETTER

YEAR IN THE CAPTURE
**SECO/WARWICK GROUP
IN 2022**

SECO/WARWICK doubles profits
GROUP RESULTS

SECO/WARWICK partnership and supports
CORPORATE SOCIAL RESPONSIBILITY

Electromobility and CAB as a common denominator
FUTURE & MARKET

SECO/WARWICK vacuum technologies are number 1
1st CHOICE TECHNOLOGY

- EXPERIENCED PARTNER
- INNOVATIVE PRODUCTS
- ENVIRONMENTAL TECHNOLOGIES
- MORE THAN 4000 IMPLEMENTED SOLUTIONS
- PRESENCE IN 70 COUNTRIES
- COUNTLESS AWARDS
- 70 PATENTS



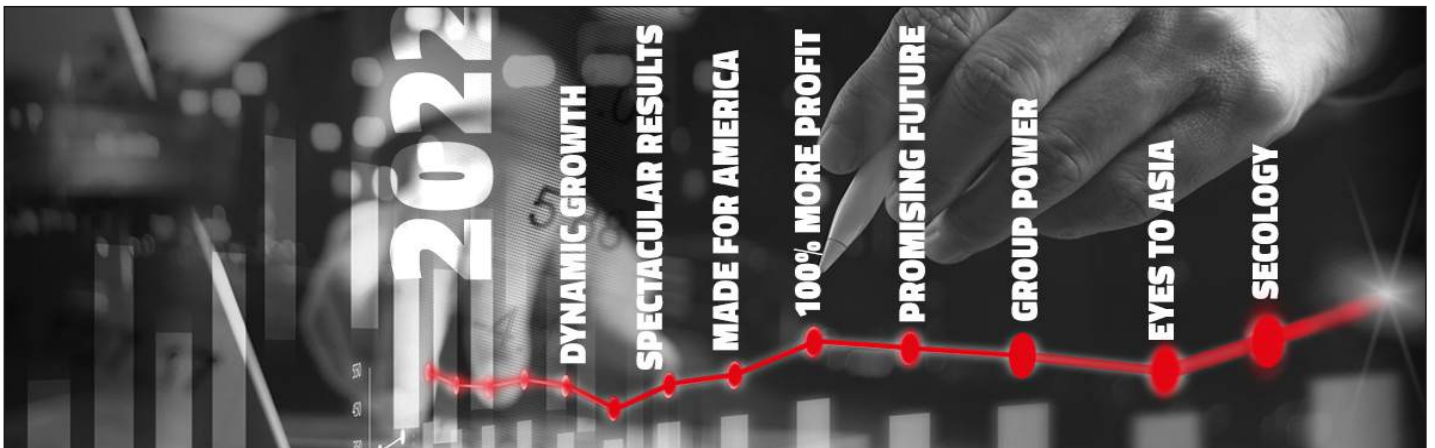
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CHOICE

SECO/WARWICK Group doubles its profits in 2022

2022 was a difficult year for global geopolitics and the economy. Despite this, SECO/WARWICK the first choice among manufacturers of metal heat treatment and vacuum metallurgy furnaces, can talk about an excellent year.



The great results of the Group were influenced by several factors: the growth of production activities in China, dynamic market development in America, and the huge number of orders related to the electromobility industry expansion. In the first three quarters of 2022, the company had over 100% more profit than in the previous year, and sales revenues amounted to PLN 448.87 million in this period (PLN 335.09 million in 2021).

Let the results speak for themselves

The Group's financial results prove how good this year was for SECO/WARWICK. At a time when the world was plunged into chaos and a deep economic crisis, SECO/WARWICK recorded record profits. The first three quarters of 2022 brought an increase in sales by 34% y/y, with a sales gross margin higher by 1 percentage point (22.9% in the reporting period). The higher sales value reflected the Group's order book condition. The largest sales increase was recorded by the Vacuum Furnace segment (52%). The segment of furnaces for aluminum heat treatment and brazing - Aluminum Process - showed higher sales by 49% compared to the previous year's corresponding period, and the segment of melting furnaces was up by +3%. Aftersales (spare parts and service) increased by 36%.

"Our results support current macroeconomic trends which have changed the way customers view supply chains. Primarily in the USA in the titanium processing area. In connection with the pandemic period experience, the war in Ukraine and the tense situation between the USA and China, manufacturers want to secure the acquisition of titanium for the products intended for the aviation market, and this means that we are gaining more and more orders from North America. Such reshoring, in other words, moving production back to Western Europe and the USA, is of great importance to us. Another direction supporting our results is electromobility - the Chinese subsidiary sells equipment for heat exchanger production to markets around the world. Electromobility is a very strong trend, and, despite the crisis, this direction is not changing. Currently, thanks to this trend, a noticeable part of our margin comes from China," - said Sławomir Woźniak, CEO of SECO/WARWICK Group.

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Market development in the USA - titanium processing is the key

For SECO/WARWICK, 2023 will be the year of American companies. The SECO/WARWICK Group boasts customers in 70 countries, while the American branch - SECO/VACUUM - serves 125 customers, after only five years of operation! Development also means the need to hire additional engineering and production personnel and the need to increase production

The great results of the Group | The growth of production activities in China | Dynamic market development in America | Orders related to the electromobility | 100% more profit than in the previous year

capacity, hence the company's move to a new headquarters with 50% more office space and 300% more hall space.

The second American company belonging to the Group - RETECH, which will celebrate its 60th birthday next year, has delivered and commissioned many vacuum metallurgy equipment projects during the last year, mainly VIM, VAR, PAM solutions and furnaces using a consumable electrode.

In turn, the third American company focused on the service and sale of products from the atmospheric furnace segment, including aluminum process and CAB, increased sales under the leadership of the new managing director - Marcus Lord. Last month, the company won a significant contract for a furnace renovation at the U.S. Mint, and a key contract for an aluminum melting furnace project.

"Undoubtedly, the VIM furnace, one of the most popular products in the Retech vacuum metallurgy portfolio, has contributed to our success. There is also interest in modern technologies, such as the PAM furnace, of which Retech is the undisputed market leader. The Group's key step on the American market will be the start of vacuum furnace production and the needs of our partners for titanium melting furnaces. Titanium processing is currently the second most important industry for us," - explains S. Woźniak.

Business expansion in China and India

2022 was a breakthrough year for the SECO/WARWICK Chinese branch. The company has started vacuum furnace production at the Chinese SECO/WARWICK factory. This is the Group's third product line produced and offered directly from China. By renting another assembly hall, the area was doubled, which significantly improved efficiency and shortened delivery times. In the first half of 2022, orders for SECO/WARWICK furnaces were placed by many companies from this market, including those specializing in [heat exchanger production](#), such as Jiangsu RIDEA.

"We are one of the leading manufacturers of lines for heat exchanger brazing. It is thanks to our furnaces that radiators for passenger cars, vans, agricultural machines, and power generators used by leading automotive concerns are executed. The technology's unflagging popularity is also evidenced by the fact that the product for this segment has its own brand - EV/CAB, under which we sign solutions dedicated to electric vehicles," - explains Piotr Skarbiński, Vice President of the Aluminum and CAB Products Segment in the SECO/WARWICK Group.

Around the world, the demand for battery coolers is increasing due to the expansion of the electric vehicle market. SECO/WARWICK, a leader in CAB line production, perfectly cooperates with the automotive industry by providing solutions which help to develop electric vehicle technology. Thanks to this technology, we contribute to the trend, and the obligation, to strive to reduce exhaust emissions and care for the natural environment.

SECO/WARWICK plans to develop production in India based on cooperation with local partners. In January 2023, the Indian company was headed by a new Managing Director - [Binoy Koshy](#), who will oversee the entire process.



"We are analyzing the development of assembly in India, and we want to expand the company's business by implementing a strategy for the local production of vacuum furnaces and aluminum segment equipment. It will not require large investments. It's more about renting halls and finding subcontractors. Due to the geopolitical situation, we would like to have two possible export locations in Asia, so next to China, the second production zone would be in India. This would also help to optimize the Group's costs," - sums up the CEO of the SECO/WARWICK Group.

Big brands among SECO/WARWICK customers

In 2022, SECO/WARWICK worked for global brands, recognized manufacturers, leaders in their segments, and companies listed on the major stock exchanges around the world.

In Europe, SECO/WARWICK has supplied tire manufacturer [Michelin](#) with a compact vacuum furnace, the [Vector®](#). It will be indispensable in the gas quenching process of tools for the premium segment of tire production.

Härtewerk Chemnitz GmbH, similarly to [Aalberts Surface Technologies](#), reached for a SECO/WARWICK brand furnace. The Super IQ is the first vacuum heating furnace by SECO/WARWICK at the German [Härtewerk](#) plant in Chemnitz, and the first Super IQ solution (heating in vacuum, cooling in a classic atmospheric oil quench) in Germany.

A breakthrough event on the European market was also the signing of an agreement with the Swedish company [GreenIron H2 AB](#) to supply a series of furnaces for processing metals from post-production waste without the use of fossil fuels. It's a step into the green era.

2022 was the year of deliveries to unique markets including [Rafael Advanced Defense Systems](#), an Israeli pioneer in the field of defense and cyber solutions, who purchased a [titanium casting vacuum furnace](#), which is the first such solution on the Israeli market.

In the USA, the heat treatment of the seventh and the last module of the world's largest superconducting electromagnet has been successfully completed. A specialized vacuum furnace supplied by SECO/VACUUM, belonging to the SECO/WARWICK Group, was used to implement the project. [General Atomics](#) is responsible for the project, being a part of the international ITER program. At the end of the year, the [US Mint of Philadelphia](#) selected SECO/WARWICK for the major modernization of their retort furnaces. This project will run for five years. A leading Asian catalyst manufacturer - [Ecocat India](#), whose mission is to purify the air by delivering innovative catalysts for the automotive sector, has ordered a high-pressure [vacuum furnace](#) with gas quenching. Chinese [HUBEL RADIATECH](#) joined the customer group by purchasing an innovative EV/CAB solution dedicated to electromobility. Last year, vacuum furnace production began at the Chinese SECO/WARWICK factory, and thanks to the rental of another, twin assembly hall, the production area was doubled, which significantly improved efficiency and shortened the delivery time of project solutions. In the first half of 2022, orders for SECO/WARWICK furnaces were placed by a number of companies on this market, including a global manufacturer, [Jiangsu RIDEA](#) specializing in the [production of heat exchangers](#).

Plans for 2023 - development, development, development

2023 will be an American year. Commencement of the vacuum furnace production in the USA by SECO/VACUUM, the 60th anniversary of RETECH and a new chapter in the history of SECO/WARWICK USA under the leadership of the new managing director - [Marcus Lord](#).



SECO/WARWICK expects that the order share from the USA in its order book will continue to grow due to businesses remodeling and the manufacturing production transfer to the USA. In the area of investments, the company does not anticipate large expenditures but analyzes a stronger production diversification with India under the leadership of the new managing director. The SECO/WARWICK Group focuses on promoting ecological solutions, which are not only an opportunity but also an obligation for socially responsible enterprises. SECO/ECO is not just a slogan, but a fact, which the Group will present at the Thermprocess 2023 fair in Dusseldorf.



CSR is in SECO/WARWICK's DNA

SECO/WARWICK, one of the world's largest companies manufacturing industrial heat treatment furnaces, constantly shows what socially responsible business means.



In 2022, SECO/WARWICK and its employees planted thousands of trees, pro bono designed and manufactured metal constructions for the State Fire Department and funded the ongoing SECO/HEARTS recycling program.

The industry leader from Świebodzin supported both large charity organizations for example, The Great Orchestra of Christmas Charity, DKMS Foundation or Noble Gift, and organized local CSR campaigns which enriched their neighboring communities. SECO/WARWICK helps because we know how important values and people are.

SECO/WARWICK is a family company. Not only because its owners still work there and their families are involved, but because for decades, we continue to employ subsequent generations of our employees. That is why family is the value on which our corporate social responsibility is based. SECO/WARWICK focuses on supporting the local community, ecology and community.

SECO/WARWICK has been creating a consistent model of responsible business for many years. The company focuses on supporting the local community, the environment and on building opportunities for future generations. For SECO/WARWICK, social responsibility is primarily acting for the benefit of preserving the environment, not only because helping is important, but it is essential to make decisions that are responsible, credible, impartial, honest, and safe. That is why SECO/WARWICK has a global plan of social initiatives which it supports, organizes, or participates in.

"Although we operate all over the world, our hearts beat locally, hence the support of local initiatives which are important to us. In 2022, Polish employees planted 3,000 trees and cleaned up the nearby (Łagów) forest. "Green blood" flows in the SECO/WARWICK DNA, and the genetic code leaves a permanent ecological

footprint. Our actions show that companies should focus on sustainable development, because it is our commitment to future generations," says Sławomir Woźniak, CEO of the SECO/WARWICK Group.

Year 2022 - SECO/ECO

Planting a forest is not the only social initiative in which the company and its employees took part last year. Solidarity and cooperation - residing under the company value of PARTNERSHIP - is always important!

"It's not difficult to help. The trick is to do it consciously, in a planned way and in line with the company's strategy. That is why we have developed a concept of CSR activities to support local social actions which build small homelands. This year we helped the local Fire Department, and on the occasion of its 30th anniversary, we delivered structural elements to update their firefighting equipment.

"For several years, we have been providing local communities with SECO/HEARTS – original containers for plastic caps, which have already become a permanent part of the surrounding landscape. We also actively support large foundations, including The Great Orchestra of Christmas Charity, DKMS or Noble Gift. Importantly, SECO/WARWICK employees are actively involved in all these initiatives. We help together, because this is how we understand partnerships in many dimensions," explains Katarzyna Sawka, VP of Marketing of SECO/WARWICK Group.

The aforementioned [SECO/HEARTS](#) is SECO/WARWICK's flagship environmental and social campaign. It helps not only to protect the natural environment, but also to finance many socially important initiatives. A ton of plastic caps generates revenue up to PLN 1,000. For this amount, it is possible to carry out as many as ten rehabilitation classes for the youngest disabled children. By collecting plastic caps together, we show solidarity to those most in need. The company has already built and delivered 9 such containers. One full container holds nearly 80 kg of plastic caps. Depending on the location, they are emptied and refilled several times a year. Last year, SECO/HEARTS containers were filled with caps worth nearly PLN 7,000.



KATARZYNA SAWKA
VP of Marketing
of SECO/WARWICK Group.

"We are an organization focusing on CSR activities which not only have a financial dimension, but also a social one engaging us, the employees. We consciously involve our employees, partners, and customers in helping. This is the key to understanding responsible business, and thanks to this we support the idea of partnership and a sense of community,"

SECO/WARWICK engages its partners in helping

According to the SECO/WARWICK Group, being socially responsible is not limited to meeting formal and legal requirements. "The outcomes of CSR activities are an investment and a source of development not only for the company, but also for its partners. One of the campaigns aimed at improving the products and service quality offered by the Group combines business with helping. The surveyed customers (Customer Feedback Loop) supported autistic children with their responses.

"After the contract completion, we provide the customer with a satisfaction survey, the aim of which is to answer the question of what we could do better in the future. Surveys are an important evaluation tool. To encourage our partners to share their insights, each completed survey is worth \$10, which as a company, we donate to help autistic children. In this way, we once again combine business with aid and become socially responsible together with the MADA Foundation, where we continue to make a financial contribution," sums up Katarzyna Sawka, VP of Marketing of SECO/WARWICK Group.

SECO/ECO, because SECO/WARWICK is in harmony with nature

Planting trees, cleaning forests or SECO/HEARTS are social activities which fit into the ecological trend – a cause that is extremely important for SECO/WARWICK. In this spirit (SECO/ECO), the company established cooperation with the ZEROBAN social cooperative, which sews bags, cosmetic bags, and briefcases from damaged or outdated advertising banners.

"Even when ordering promotional gadgets or gifts, we think about the idea of responsible business. Cooperation with Zeroban is important not only due to its ecological dimension, but also because it is a social cooperative supporting socially excluded people," added K. Sawka, who leads the CSR team in the SECO/WARWICK Group.

Little big initiatives

SECO/WARWICK is one of the largest companies in the region. It employs over 800 people globally and is one of the leading market players in the production of equipment for metal heat treatment and vacuum metallurgy. Every year, the company receives a number of awards in the field of innovation, business development and ecology. In 2022, we received the title of Good Company, which shows that our social activities are noticed and appreciated.

"Our participation in projects organized by recognized social brands results from the need to be part of important projects. As every year, we supported the Great Orchestra of Christmas Charity, which is a model of social activities and a beautiful showcase of Polish charity. Together with the employees, as every year, we organized a Noble Package, which, apart from basic necessities (collected and purchased by employees), included a washing machine and a sewing machine as part of the company's support. We partner with each other in charity. Similarly, we organized help for victims of the war in Ukraine, and the Bone Marrow Donor Day, organized together with the DKMS Foundation. All activities have a common denominator - engaged employees and aid co-creators. We are glad that we can be an accelerator of these activities," proudly emphasizes S. Woźniak.

The main idea of CSR is to activate companies and go beyond their core business. It means noticing higher needs, without focusing on profits. Withdrawal from only commercial activity is the privilege of every thriving company. SECO/WARWICK is grateful that by being able to use its potential, it has a chance to positively influence the community.

PLAY VIDEO



Record-breaking results, an expansion in production, increased employment and unique projects



2022 was a breakthrough year for the SECO/WARWICK Chinese branch. The company started vacuum furnace production and executed 40+ projects.

Record-breaking results and dynamic development within the electromobility industry, which launched the EV/CAB technology designed to equip companies producing battery cooling plates for electric vehicles. These developments enable SECO/WARWICK China to dynamically increase employment and resulted in the delivery of the largest continuous CAB line in the company's history. These are only some of the milestones of the past Year of the Tiger. Sales of the flagship continuous CAB line solutions for aluminum brazing in a protective atmosphere, increased year-over-year by as much as 30%.

SECO/WARWICK CAB lines for brazing in a protective atmosphere

Thanks to the expansion of the production facilities, SECO/WARWICK significantly increased production capacity and shortened delivery times. In 2022, orders for SECO/WARWICK furnaces were placed by a number of companies from this market, including Jiangsu RIDEA, a global manufacturer specializing in [heat exchanger production](#) or HUBEI Radiatech.



PIOTR SKARBIŃSKI
Vice President
of the Aluminum and CAB Segment
SECO/WARWICK

We see a very dynamic increase in demand for CAB lines for the production of heat exchangers for electric and hybrid cars. We are selling more and more of them. Our furnaces operate not only in Asia, but also in Europe, Latin and North America, as well as in Africa. The controlled atmosphere brazing process heats the product to brazing temperature, then maintains a uniform product temperature for a specified period of time in a protective oxygen-free nitrogen atmosphere. Our solutions are very well known on the Chinese market. In 2022, we sold as many as 20 CAB lines, and compared to 2021, this is an increase of nearly 30 percent. Many of the sold solutions will be a part of production lines for battery coolers for electric and hybrid cars. The electromobility segment growth, resulting from legal regulations and the growing global awareness related to the need to care for the natural environment, makes SECO/WARWICK optimistic for the growth of product lines and technology dedicated to the Battery Cooler segment - EV/CAB,

EV/CAB – the automotive industry focuses on e-mobility

Around the world, the demand for battery coolers is increasing due to the growing production of electric vehicles. **SECO/WARWICK, a leader in CAB line production, perfectly cooperates with the automotive industry** by providing solutions which help develop the technology for the production of electric vehicles. In this way, it (indirectly) fits in with the trend and the obligation to **care for reducing exhaust emissions and for the natural environment.**

"In the field of energy vehicle manufacturing, the need for brazing large battery coolers is growing rapidly. We have launched the production of non-standard EV/CAB lines where we use a number of specialized solutions dedicated to these products. Thanks to independently controlled heating and cooling zones, corrugated muffle design, unique curtain chambers and many other design features, excellent and stable brazing conditions are guaranteed for this specific product. Year 2022 also resulted in the implementation of record-breaking projects. For a manufacturer of automotive components, we have designed and manufactured the widest CAB line in the SECO/WARWICK China history. The unit is 2300 mm wide, and is used to produce large battery coolers," summed up P. Skarbiński.

In the first half of 2022, 4.3 million electric cars were sold worldwide, which meant an increase of 62% this year. The share of electric vehicles in new passenger car sales increased by 11.3% in this period. The world record holder was Norway, where 77 % of new car purchases were electric cars, followed by Iceland (52%) and Sweden (32%).

Currently, the global market value is approx. USD 285 billion, but by 2028, the average annual growth rate will reach from 24 to 30 %, which will translate into a market worth USD 1.3 trillion and a 33 % market share will be electric cars. Much depends on China's GDP growth rate. In order to encourage the purchase of electric and hybrid cars, the Chinese Ministry of Finance decided to extend (until the end of this year) the suspension of the commercial tax collected on purchases. The most popular and cheapest car on the market (\$4,500) is the small four-seater Hongguang Mini EV, produced by Wuling Motors, a joint venture of the state-owned SAIC Motor and the American

concern, General Motors. Significant players on the market are also Li Auto, NIO and Xiaopeng Motors, offering vehicles under the Xpeng brand. Since 2020, cars have also been manufactured in Shanghai by Tesla, which sold 400,000 vehicles in the first 8 months of 2022 alone, an increase of 67 % compared with the previous year. The production of electric buses is also developing very quickly, and more than 30 Chinese conglomerates have declared the implementation of zero-emission transport in the next few years.

Launch of vacuum furnace production in China and plans for 2023

Last year, SECO/WARWICK started manufacturing vacuum furnaces in China. This is the Group's third product line produced and offered directly from this branch. This makes the company more responsive to customer needs.



YEDONG LIU
Managing Director,
SECO/WARWICK RETECH CHINA

"By manufacturing vacuum equipment in Asia, we are positioned for faster deliveries. Presently, we are implementing six local projects in this segment. Thanks to the new production facilities, we have gained double efficiency. We can carry out as many as 10 orders at the same time - 7 CAB lines and three other solutions, for example, equipment for vacuum heat treatment and vacuum metallurgy. Thanks to this fast development, we are valued within the industry. Last year, SECO/WARWICK China was awarded the title of "Customer Satisfaction Brand Top 10," which ennobles and obliges."

Last year, according to the Chinese calendar, was the Year of the Tiger, distinguished by courage and activity. These features were clearly visible in this year's activities at the Chinese company.

China is coming out of a strict Covid policy. Chinese demand is a lever that can drive prosperity all around the world. The year 2023 is the Year of the Rabbit in the Chinese lunar calendar. The rabbit, on the other hand, is a symbol of vitality and happiness, symbolizing a good life and well-being. In the new year, China will continue to bring positive energy and stability to the world. In the Chinese horoscope, the Rabbit means the arrival of peace, wealth, happiness, and harmony, which SECO/WARWICK China wishes for itself and for all our Partners.



SŁAWOMIR WOŹNIAK
CEO of SECO/WARWICK Group.

"2022 definitely belonged to SECO/WARWICK CHINA, which had a historical and therefore record-breaking year full of new orders. The company boasts a 55 percent increase in production compared to the previous year, and the profit was more than three times higher compared to 2021. This is due to numerous projects implemented this year (including 11 foreign ones). This was possible thanks to the cooperation with 3 subcontractors for the CAB line installations, 2 in Mexico and 1 in China. It is in China where we already produce solutions for the vacuum furnace and vacuum metallurgy segment. This looks promising, looking at the achievements so far in the field of CAB technology furnace production. This is why increasing employment from 66 to 108 and doubling the production area was a necessary decision."

The CAB Solution for electromobility from SECO/WARWICK

EV/CAB is a special CAB aluminum brazing furnace for the manufacture of EV battery coolers. It is SECO/WARWICK's answer to the needs of the electric car market.

EV/CAB is a complete system that is suitable for the manufacture of oversized heat exchangers. With continuous operation, the system guarantees a smooth manufacturing process and high-efficiency performance. The greatest asset of this unsurpassed model is the perfect uniformity of temperature distribution across the width of the conveyor belt. As a result, you get perfect and reproducible parts, which is the key to manufacturing success.



SECO/WARWICK's vacuum technologies win the market



This past year, SECO/WARWICK recorded a very good year in the sale of vacuum technologies. It is becoming more and more evident that these modern solutions are gradually displacing atmospheric furnaces due to their huge production efficiency, production economy and the ecology associated with vacuum processing.

The SECO/WARWICK Group has strengthened its position as a vacuum technology leader. The market is increasingly choosing vacuum furnaces: a single-chamber - Vector, and two- and three-chamber furnaces from the CaseMaster Evolution family. They are mainly of interest to the aviation, energy, tooling, and automotive industries as well as to commercial heat treaters.

The Vector continues to be a leader in vacuum technology

In the wide range of SECO/WARWICK Group products, [Vector®](#) is by far the most versatile [vacuum furnace](#) and the most popular product in the company's portfolio. Vector is a universal, single-chamber vacuum furnace used for annealing, brazing, quenching and tempering, as well as for low-pressure carburizing. It provides heating and cooling precision temperature control, which allows for high quality, as well as economical and efficient furnace operation. Vector furnaces meet all international standards and the requirements of many heat treatment processes. In 2022, producers from dozens of countries took advantage of the wide possibilities offered by Vector technology. The market is also increasingly choosing the Vector furnace with **high-pressure gas quenching (HPGQ)**.

This solution was used in Europe by tire manufacturer Michelin, which purchased a Vector® [compact vacuum furnace](#). It will be indispensable in the gas quenching process for tools in the premium tire production segment. Aalberts Surface Technologies, a top [SECO/WARWICK's customer](#), decided to cooperate with the Group once again. In 2022, the commercial heat treater placed orders with SECO/WARWICK on two occasions - the Aalberts Group already has 10 SECO/WARWICK solutions. This year's contracts were related to the delivery of two vacuum furnaces to the Group's Spanish branch - Aalberts Surface Technologies TEY, and to the expansion of the Group's Polish hardening plant with an innovative AFT technology line based on [two-chamber atmospheric furnaces](#). It is worth noting that Aalberts ordered the largest solution from SECO/WARWICK portfolio, a horizontal retort furnace for high tempering with vacuum purging.

In the USA, the heat treatment of the seventh and the last module of the world's largest superconducting electromagnet has been successfully

completed. A [specialized vacuum furnace](#) supplied by the American branch was used to implement the project. General Atomics is responsible for the project, being a part of the international ITER program.

3Es - Ecology, Economy, Efficiency - this is how SECO/WARWICK's vacuum technologies win the market.

CaseMaster Evolution - two and three chamber innovations

For SECO/WARWICK, 2022 is also a year of dynamic growth for the CaseMaster Evolution two- and three-chamber furnace solutions. Härtewerk Chemnitz GmbH, one of Germany's largest heat treaters, has purchased the Super IQ model, a double-chamber vacuum furnace combining modern, low-pressure carburizing with traditional oil quenching. The furnace eliminates the need to use a classic carburizing atmosphere and the associated danger resulting from the presence of open fire and carbon



MACIEJ KORECKI
Vice President
of the Vacuum Segment
SECO/WARWICK

"Customers choose this technology because it is green, productive and cost-effective. 3E technologies (economy, efficiency, ecology) are definitely the future. We promote the CaseMaster Evolution group of products because it is perfect for heat treatment facilities and can successfully replace obsolete and non-ecological atmospheric equipment with gas carburizing. Super IQ solves the pain points for hardening plants because the system can be switched on and off without additional time and energy expenditure. It is economical because it does not require maintenance at specific temperature parameters during standstill as is the case for traditional atmosphere furnaces. Vacuum treatment also increases the final product quality and process safety. The work takes place in a non-flammable environment."

monoxide. Instead, the Super IQ allows for clean treatment and can achieve carburizing at a higher temperature to speed up cycles and improve efficiency. Parts are also much cleaner and brighter. The Super IQ is a well-thought-out replacement for traditional IQ gas-heated atmosphere furnaces. Technological progress allows the system to work at higher temperatures for vacuum carburizing and clean quenching without decarburizing effects.

Due to the increased interest in vacuum solutions, SECO/WARWICK started the production of these furnaces in Asia last year, making the first deliveries directly from the region for the Andritz Group.

Along with economic growth, in the face of growing environmental requirements, the emphasis on the economic and ecological responsibility of industry representatives is increasing.

Vacuum solutions on the American market

The American market is an important recipient of these technologies in the vacuum solution segment.



PIOTR ZAWISTOWSKI
SECO/VACUUM Managing Director

"During the five years of SECO/VACUUM's existence, as many as 55 vacuum furnaces have been sold. Ten of them were launched last year. They went to the largest manufacturers from the aviation, automotive and tool industries. The sale and start-up of the innovative UniCase Master furnace in the aviation industry was also a success. This is a system for vacuum heat treatment intended for individual vacuum carburizing and hardening in nitrogen for mechanical transmission components such as gears, shafts, rings and bushings using the single-piece flow method."

"In the future, we would like to develop production in India based on cooperation with local partners. We are analyzing the development of assembly in India, and the expansion of the Chinese company's business through the local production of vacuum furnaces. Achieving this goal will not require large investment outlays. The strategy will be implemented by renting halls and finding subcontractors,"

summed up SECO/WARWICK Group CEO, Sławomir Woźniak.

S(ECO) future

SECO/WARWICK intensively supports "green technologies." A good example of this commitment to the environment is the [gas nitriding technology](#), ZeroFlow®, which allows for a significant cost reduction by reducing the consumption of expensive ammonia several times when compared to traditional nitriding processes. In turn, the use of vacuum carburizing in pit furnaces - [Pit-LPC](#) for large-size parts allows for shorter process times coupled with a reduction in energy and gas consumption. This directly decreases production costs, while improving the quality of the results when compared to traditional technology. This solution is most often chosen by heavy industries, the bearing industry and wind power plants.

The aforementioned SuperIQ is a solution with low-pressure carburizing technology, thanks to which the consumption of process gases is significantly reduced, and thus, CO₂ emissions into the atmosphere are reduced to an absolute minimum.

Care for the environment is understood by the Group as sustainable production and ecological innovation built into every project and furnace design. This is part of SECO/WARWICK's long-term strategy, in which vacuum technologies play a leading role.

In 2022, SECO/VACUUM received multiple vacuum furnace orders focusing on the automotive, tool and die and nuclear applications. Additionally, eight new furnaces were installed and commissioned at locations throughout the country, including these notable projects:

- A vacuum tempering furnace for a Pennsylvania manufacturer of electronic components,
- A vacuum aluminum brazing furnace for an aircraft components manufacturer,
- An annealing furnace for an instrumentation sensor manufacturer,
- A tempering furnace for an aircraft controls manufacturer, the latest of five SVT furnaces for this customer,
- A vacuum nitriding furnace for a manufacturer of specialized pipe, valves and fittings with unique controls HMI.

Asia - the dark horse of vacuum technology

The year 2022 was a significant awakening of the Indian market, the potential of which is not to be underestimated. A leading Asian catalyst manufacturer – Ecocat India, whose mission is to purify the air by bringing innovative catalysts for the automotive sector, has ordered a high-pressure [vacuum furnace](#) with gas quenching. Another Vector vacuum furnace has been delivered to Atlas Autos Ltd, (An Atlas Group Company), the largest manufacturer of motorcycle parts in Pakistan. The furnace is designed for hardening and tempering processes, and its design will allow the gas quenching of tool and die components to be used in automotive production. SECO/WARWICK has supplied a Vector vacuum furnace for Sundram Fasteners Limited, an Indian fastener manufacturer. The furnace will be part of the process for high-quality aircraft screw manufacturing.

PLAY VIDEO

TOP BESTSELLERS

CASEMASTER EVOLUTION (CME) – T
THREE CHAMBERS, DOUBLE THE PERFORMANCE

- / ECONOMICAL SOLUTION FOR CASE HARDENING
- / BY LOW-PRESSURE CARBURIZING AND HIGH-PRESSURE GAS QUENCHING
- / SEMI-CONTINUOUS, FLEXIBLE, HIGH VOLUME PRODUCTION
- / COMPACT AND LOW FOOTPRINT EQUIPMENT



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