

# SECO / SPACE

SECO/WARWICK'S NEWSLETTER

Automation Makes The Future

Commercial Heat-Treaters Block

E-Book

World Needs 1st Choice Technologies

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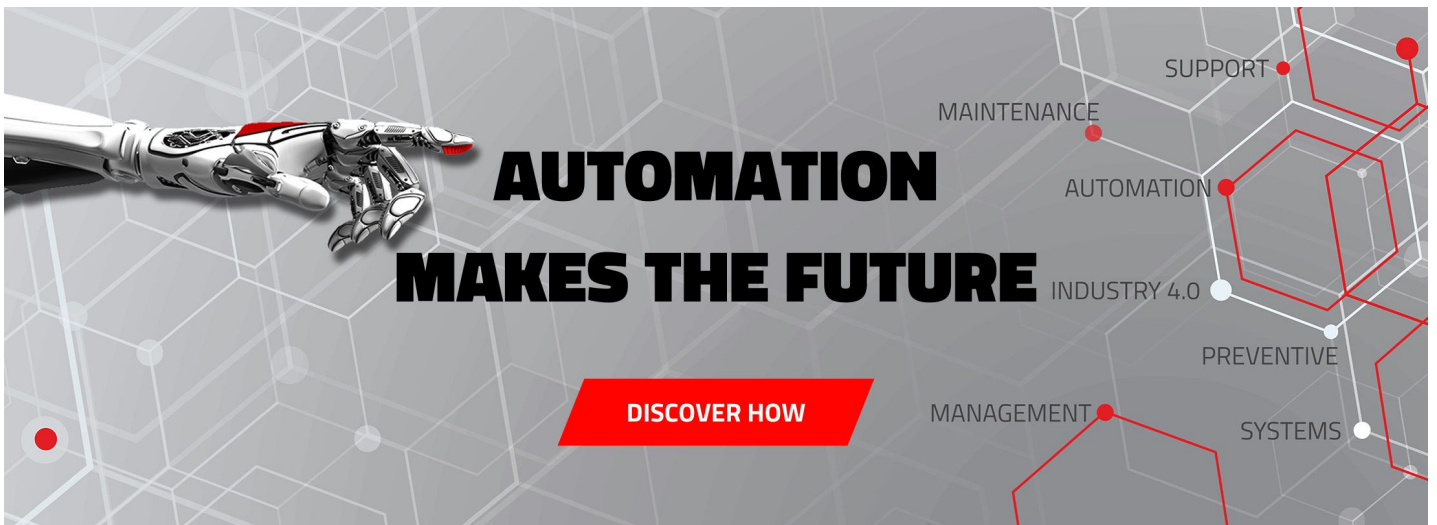
ECOLOGICAL INNOVATIONS

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We Share Our Experience And Knowledge With You

# AUTOMATION MAKES THE FUTURE

This is a story about artificial intelligence (AI), automation, and digitization for heavy industry because heavy industry does not mean hard thinking.



[Automation](#), robotization, remote acceptance, data analysis, and the use of modern technologies to plan and improve efficiency and minimize downtime are industries nowadays. This new approach transforms traditional factories into advanced technology centers capable of delivering products faster, more efficiently with more precision than ever before.

SECO/WARWICK, using data analysis and mathematical models, follows the global trend by offering remote furnace management, maintenance planning, technology to predict potential failures and downtime, the capability to detect technological process anomalies, and monitoring and optimizing energy consumption as part of the FURNACE/PLUS portal.

## Innovation=Automation and vice versa

According to a report by the Boston Consulting Group (BCG), nearly **80 percent of companies around the world consider innovation to be one of their three main priorities this year**, and 66% of them plan to increase spending for this purpose, of which 42% are ready to invest up to 10% more than before. Innovation is one of the SECO/WARWICK Group's values, embedded in its DNA. Industry 4.0 is the guiding principle in the Group's mentality and strategic direction, which identifies AI, automation and digitization as a priority.

*"Automation has long been a key aspect of modern production, and this also applies to metal heat treatment. Automation helps companies increase furnace efficiency and reduce errors. In the area of furnaces, the [FURNACE/PLUS](#) platform can help all furnace users. For example, the platform includes [SECO/PREDICTIVE](#) service, which is an advanced and intelligent control system that enables the detection of potential failures even before they occur. [SECO/PREDICTIVE](#) guarantees high effectiveness in supporting maintenance processes and ensures maximum utilization comfort. **More and more of our customers have decided not only to implement intelligent systems in new installations but also to modernize existing production lines with these options. Care for the environment and ecology has become particularly important in the climate change era, and there is a related emphasis on social responsibility. Through the functionality contained in another FURNACE/PLUS module; [SENERGY](#) provides the opportunity to optimize media consumption. We use data***

*in two ways, both internally as a manufacturer of heat treatment and metallurgy equipment through feedback to the design department, and for our customers, so that they can directly optimize technological processes having data from individual process stages at their disposal"* - explains Sławomir Wachowski, Automation Director at SECO/WARWICK.

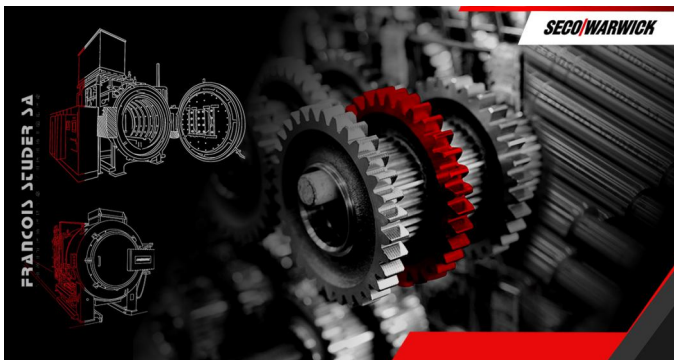
## Services that revolutionize production

The SECO/WARWICK's [FURNACE/PLUS portal](#) provides **full access to current information about the furnace**. The portal includes several modules, and the entire system is gradually expanded, creating one of the most comprehensive support solutions in the industry. Automation services include the [SECO/PREVENTIVE](#) module, which ensures the furnace and its individual components inspection planning and organization as part of the preventive maintenance of a given unit. Another interesting solution is the [Senergy](#) module. It allows users to analyze the consumption of electricity and nitrogen for a selected process, in relation to the average or median consumption of other processes with the same or different recipe. Senergy allows users to preview performed historical processes. It is designed to work on individual furnaces as well as on entire production lines or factories. In the process table you can see, in addition to measuring the total amount of media, the individual recipe segments and the stages of these segments, e.g. heating and holding.

## SECO/WARWICK is ready for new challenges

SECO/WARWICK understands that creating services based on modern technologies is necessary. This new trend, resulting in many ways from the pandemic crisis, introduces a completely new quality of remote services. Digital transformation and the concept of a sustainable economy go hand in hand with energy and environmental challenges. In addition to making profits from their main activities, companies also want to protect the natural environment where they operate. **All this is possible thanks to the FURNACE/PLUS portal - an innovative set of tools for remote equipment management in commercial heat-treating plants.** It can be said that **FURNACE/PLUS integrates many systems and needs in one place, facilitating and automating processes.**

# COMMERCIAL HEAT-TREATERS BLOCK



François Studer SA, a Swiss commercial heat treater has chosen two [SECO/WARWICK](#) furnaces; a [vacuum furnace](#) with 15 bar abs high-pressure gas hardening ([HPGQ](#)), and a furnace for [tempering](#) with vacuum purging.

## Precision furnaces for Switzerland

The François Studer SA hardening plant is an example of Swiss quality and high efficiency (on average, they process two truckloads of charges every day). **Two new solutions will help increase processing capacity while maintaining the processed element's high precision and quality.**



**MACIEJ KORECKI**  
Vice President  
of the Vacuum Segment  
SECO/WARWICK

*The Vector furnace will streamline, increase the hardening process capacity, and improve process efficiency. The advantage of this product is a large working space that can be adjusted to an oversized load, using the round heating chamber's advantages. This is the so-called golden mean for many commercial heat treaters because it can offer numerous additional options. With limited production areas, multifunctional, failure-free furnaces are worth their weight in gold for commercial heat treatment."*

The vacuum furnace on order by the hardening plant enables efficient processes to be carried out at a very good vacuum level, in both medium and high ranges. The round heating chamber allows the placement of oversized loads. Combined with dedicated LPC, HPGQ technology and a high vacuum system, the furnace will fully meet the customer's requirements for hardening and carburizing a wide range of various parts. The solution has a large number of options - it is equipped with FineCarb® vacuum carburizing, pre-nitriding for PreNitLPC® carburizing technology, and LPCN low-pressure carbonitriding.

## Swiss commercial heat treater expands with SECO/WARWICK solutions.

### Vacuum furnaces like Lego blocks – endless possibilities

The partial pressure system used helps to prevent evaporation and sublimation of alloying elements from the load surface during the vacuum heat treatment or vacuum brazing process. Partial pressure control is important when processing many materials to prevent the heating chamber evaporation and contamination. Isothermal quenching provides better control of the cooling process by automatically managing the load temperature and the gas blower motor control using a frequency converter. **The carburizing and low-pressure carbonitriding LPCN options, which the furnace for François Studer SA is equipped with, enables precision processing to increase the steel surface hardness during the entire thermal process.**

**The second furnace on order is a [horizontal retort furnace for gas nitriding](#) using ZeroFlow technology and for high tempering with vacuum purging.**

Commercial heat treaters choose SECO/WARWICK and [Vector](#)



Both furnaces have big advantages, including low heat losses and good temperature uniformity in the heating chamber, which is resistant to fast wear. Commercial heat treaters are specialists in metal heat treatment and a very demanding group of recipients. SECO/WARWICK furnaces operate in leading European and American hardening plants.

*"We are constantly developing. We needed to add the capacity to utilize vacuum carburizing, pre-nitriding for carburizing technology and low-pressure carbonitriding, and the new Vector fits these needs perfectly. The retort furnace, on the other hand, significantly increases the hardening plant's processing capacity in terms of time-consuming tempering and nitriding processes using ZeroFlow technology,"* concluded Francois Studer, CEO of Francois Studer S.A.

# COMMERCIAL HEAT-TREATERS BLOCK

## Commercial heat treater Nitron do Brasil uses [Vector](#). Discover why.

Single chamber vacuum furnace - Vector will operate in a new production hall and will handle the increasing volume of orders.

### SECO/WARWICK can dance the business samba

In Brazil, commercial heat treaters are particularly fond of Vector single-chamber vacuum furnaces. [Another Partner](#) in this region used this line of furnaces to improve and increase their hardening process power and boost process economics.

The [Vector](#) vacuum furnace on order will solve Nitron do Brasil's problem of hardening larger elements because the furnace is equipped with a large working space. This will affect the process economics (energy savings and the graphite chamber's increased efficiency) and the process's cleanliness and speed.

The furnace is equipped with convection heating - a system that improves heat transfer efficiency when heating at lower temperatures, as well as directional cooling, which allows the system to cool parts with problematic shapes efficiently in various ways.



*We were looking for a solution that would help increase our metal processing capabilities and efficiency and effectiveness. Vector is the first-choice furnace and will operate in a completely new production hall. We know it works in many commercial heat-treating plants in Brazil and works perfectly everywhere in the country. The fact that SECO/WARWICK cooperates with a Brazilian company operating locally is important!"* - says Peter Lutz, President of Nitron do Brasil.

Commercial heat treaters are one of the SECO/WARWICK Group's main partners. Commercial heat treaters daily deal with many types of materials and a wide range of processes and technologies. All customers in this industry have the key parameter in common- **operational efficiency**, i.e., short production cycles and low production costs.

## E-BOOK ABOUT THE BEST SOLUTIONS FOR COMMERCIAL HEAT TREATERS

SECO/WARWICK furnaces are perfect for everyday standard hardening work. The technology allows users to have precise control of process parameters (also remotely), and the design is safe for operators and the environment. Thanks to this, it is possible to carry out processes while adhering to requirements for temperature uniformity, heating dynamics, vacuum ranges, and cooling rates; specifications that are important considerations in this industry.

These are also very versatile solutions, prepared to carry out many processes using one furnace. This **versatility is appreciated in the commercial heat treatment industry**, which carries out orders for many customers from various industry and business areas.

### Today's needs of commercial heat treaters based on our experience are:

- / operational efficiency,
- / high quality processing,
- / low production costs,
- / economics, flexibility, and ecology of the solution,
- / technological exchange and replacement of obsolete technologies,
- / elimination of production downtime,
- / wide range of temperature control systems,
- / wide range of processes,
- / and quick delivery times.



# WORLD NEEDS 1ST CHOICE TECHNOLOGIES



**SECO/WARWICK** will deliver 2 aluminum homogenizers and 2 coolers, to Partner how has multiple locations throughout North America. One of each unit will be sent to locations on opposite sides of the US.

## Homogenize and Cool Down

**Homogenizers** are an annealing furnace used in the aluminum industry to prepare log billets for extrusion. They heat the aluminum alloy logs to near-melting temperatures, then allow them to cool slowly, leaving a **uniform molecular structure free of stresses or irregularities that compromise extrusion quality.**

## Homogenizer for the West

**While proper homogenization requires a slow cool-down period, these large loads would take far longer than necessary to cool passively,**

## EcoTitanium develops its capacities with the SECO/WARWICK Group solutions

**EcoTitanium is the first European company to melt Titanium alloy ingots with cold hearth furnace and by recycling reverts generated by its customers. The company, which is a subsidiary of Aubert & Duval, has again chosen SECO/WARWICK as a supplier of the vacuum metallurgy segment technology - VAR.**

EcoTitanium, a European plant for recycling and refining Titanium alloys for critical applications, has been opened in France in 2017. It was the first plant in Europe to melt Titanium with cold hearth furnace, a technology that allows to recycle Titanium reverts coming from forging and machining castings of the Aerospace supply chain. The SECO/WARWICK Group then became the main supplier of advanced vacuum metallurgy technology of this strategic European project, and therefore securing the creation of an autonomous European Titanium channel.

*“For EcoTitanium, we, as Retech and SECO/WARWICK, delivered seven years ago: a plasma furnace (PAM) for consolidation and refining of titanium scrap using plasma torches operating in an inert gas atmosphere, and VAR technology for further refining of titanium ingots. The current contract is a continuation of this project. We will deliver a VAR furnace, which will significantly increase the Partner’s processing capabilities”* said Earl Good, Managing Director of RETECH.

## SECO/WARWICK USA to supply longtime aluminum industry with aluminum billet homogenizers and coolers

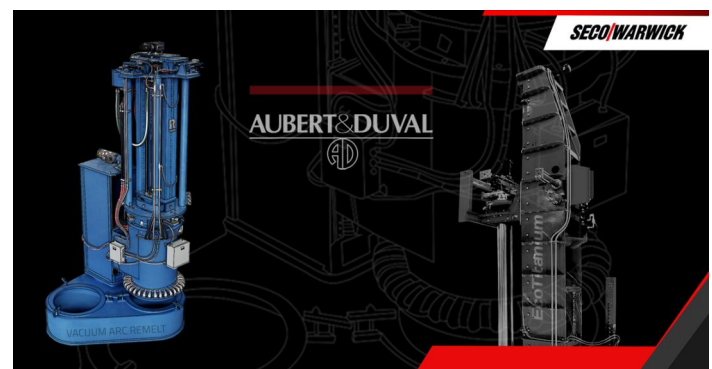
**so after homogenizing, the load is removed from the homogenizer and placed into a cooler unit.** The cooling is accomplished using a bank of high-power fans to keep fresh air passing over the hot ingots but cooling aluminum alloy to room temperature from close to 1000 F is not as simple as just placing the load in front of the fans. Instead, the cooler has walls that contain the heated air so it can be safely ducted to the exterior.

## Homogenizer for the East

On the eastern side, the furnace and cooler are of a different style and customized to fit within the tighter footprint available in the facility. It is configured as a two-position traveling furnace with car-bottom loading, which means the furnace is mounted to roll on rails, with a door at both ends, so the load can be staged in open floor space, then the furnace rolls over the top of it.

**The cooler system is mounted on parallel rails, with an extendable roof and end walls, such that it can enclose the load, still stacked on the same furnace car-bottom.**

The furnace will replace the first traveling furnace that SECO/WARWICK ever fabricated, installed back in 1975, when the plant was under different ownership.



**SECO/WARWICK Group – A specialist in titanium processing** This delivery to EcoTitanium is consistent with the significant increase in demand for Titanium, especially from the Aerospace industry. The VAR furnace will increase the Partner’s production capacity and can respond to the increased demand for titanium in Europe. EcoTitanium has created the first integrated Titanium processing plants in Europe, which opens the door to European, ecological and innovative solutions for the [Aerospace industry](#).

*“The delivery of this VAR furnace will help us to secure our customers growing Titanium needs in a context of unprecedented production ramp-ups. We are pleased to open this new chapter of EcoTitanium history with our long-term partner SECO/WARWICK. SECO/WARWICK has indeed offered us best-in-class solutions in the field of vacuum metallurgy technology, in particular with its PAM from its Retech brand which allows us to use up to 80 % of recycled materials and to divide by up to four CO2 emissions of Titanium melting”* – says Jean-François Juéry, President of EcoTitanium.

# WORLD NEEDS 1ST CHOICE TECHNOLOGIES

## 9-furnace contract: 6 Vectors and 6 Tempering Furnaces

SECO/VACUUM, a division of SECO/WARWICK Group, awarded the largest contracts to date for the division.

Fabrication has begun for three [Vector® Vacuum Furnaces](#) and six Tempering Furnaces with supporting auxiliary systems.

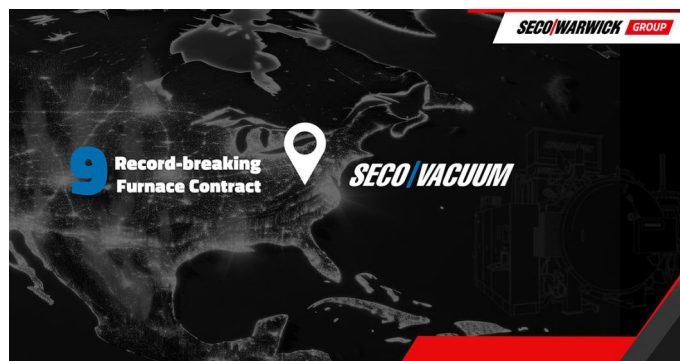
They will be going to a returning heat-treat partner who is already operating twelve SECO/VACUUM furnaces at their various locations throughout North America.

### Atmosphere to Vacuum Upgrade

These furnaces are a **continuation of the heat-treater's strategic planning** to modernize all their facilities from atmospheric heat-treatment to vacuum processes which offer cleaner, safer, more cost-effective operation while also allowing for finer process control and a reduced carbon footprint.

The Vector® is a single-chamber gas quenching vacuum furnace using high pressure quench (2 to 25 bar) which can be applied to a wide variety of heat-treating processes and applications, including hardening, tempering, annealing, solution heat treating, brazing, and sintering. It provides important capabilities for producing high uniformity in heat treated parts, high consistency in workloads, and high speeds in batch processing with low consumption of power and process gases. These particular Vectors will be used primarily for hardening.

Tempering is a process primarily used to increase the toughness of hardened ferrous-alloy parts. The tempering process is typically applied after a hardening process. SECO/VACUUM's line of [Tempering Furnaces](#) is designed for quick and efficient atmospheric tempering. Convection heating allows this tempering furnace to reach process temperatures and conditions, enabling smoother heat-treat process flow at an often-congested stage of the overall heat-treat process.



To maximize process throughput they chose to order six tempering furnaces to go with their three Vectors because, while the Vector is capable of tempering as well, for optimum throughput two dedicated tempering furnaces are required to keep up with the relatively shorter hardening cycle of a single Vector.

Each of the 9 units, Vectors and tempering furnaces alike, are front-loading, horizontally configured furnaces with a 36 x 36 x 48 inch working volume and a 3300 lb. capacity.

Heat-treating operations will have to shut down entirely during the modernization changeover.

To minimize disruption and get the heat treat partner back up and running as swiftly as possible, in addition to providing the furnaces, SECO/VACUUM will also serve as the general contractor, overseeing the installation of the new furnaces, auxiliary systems, wiring, piping and ventilation needed prior to commissioning and operator training.

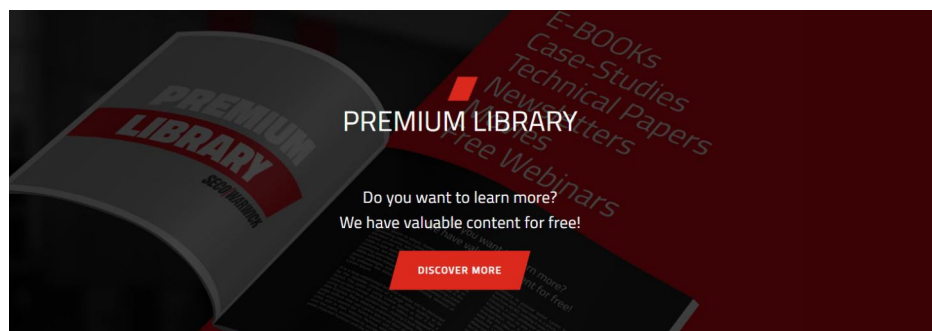
*"Our relationship with this heat-treat Partner goes back a long way. It is a testament to our commitment to our partner's success that they not only continue to return for more furnaces, but that they place their trust us in to manage the entire project in order to get them back to serving their customers as fast as possible"* - said Piotr Zawistowski, SECO/VACUUM Managing Director.

## PREMIUM LIBRARY

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