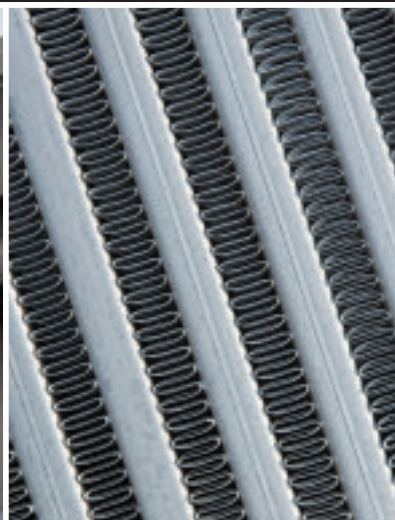




# World Class Heat Processing Equipment





## President's letter



Thank you for your interest in SECO/WARWICK. We are an integrated global company providing heat transfer equipment and services with exceptional quality and value. SECO/WARWICK is a full service supplier, providing initial support services, design, manufacturing, system installation, start up and operator training.

Our values are integral to our name:

**Satisfying Customers with  
Excellent Equipment,  
Cost Effective Solutions, and  
Outstanding Service**

Our company is committed to continuously advancing our technology, improving our products, reducing our costs and satisfying our customers. Our strategy is to provide global engineered products manufactured and serviced locally. We look forward to working with you to develop system solutions for your company.

*Jeffrey William Boswell*



SECO/WARWICK Group references include among others:

- over 500 Sealed Quench universal chamber furnaces
- over 500 vacuum furnaces for heat treatment, brazing and sintering
- over 150 lines for brazing of CAB heat exchangers
- over 2000 furnaces for other uses, including chamber, car, bell, pit, bogie hearth, roller hearth furnaces, pusher, rotating hearth, cast link conveyors, mesh belt, rotary retort, non-ferrous melting equipment and many other furnaces and material handling systems.

The SECO/WARWICK Group has equipment in operation in over 60 countries around the world, in all lines of industry including automotive, aerospace, commercial heat treatment, electrical steels, tube & pipe manufacturing, gear manufacturing, HVAC, electronics, lighting, medical equipment, food, nuclear applications, primary aluminium and aluminium recycling.



## History



**ELTERMA 1955**

The SECO/WARWICK Group technical expertise is founded upon the innovations developed over the past 100 years of our collective experience. This expertise plays a crucial role in developing value-added products for today's rapidly changing global manufacturing environment.

Advanced technology, research and development, engineering expertise and quality manufacturing have fueled SECO/WARWICK S.A.'s rapid growth since 1991. Global integration has provided the SECO/WARWICK Group with even more resources for future development and growth.



**SECO/WARWICK 1958**

### 1991

Signed joint-venture contract with SECO/WARWICK Corporation (USA)



**Joint-venture 1991**

### 2002

Acquisition of the intellectual property and name of Camlaw Ltd.



### 2003

Addition of ELTERMA S.A. to SECO/WARWICK Group



**SECO/WARWICK China**

### 2004

Establishment of SECO/WARWICK Moscow

### 2005/2006

SECO/WARWICK Ltd. becomes parent company of SECO/WARWICK Corp., and the new world headquarters for the global SECO/WARWICK Group



**SECO/WARWICK Corporation**

### 2006

Establishment of the SECO/WARWICK Group global structure



**ELTERMA S.A.**

### 2006

Establishment of joint venture with Tianjin Kama Electric Thermal Equipment Manufacturing Co. Ltd. in Tianjin, China to create SECO/WARWICK (Tianjin) Industrial Furnace Co., Ltd.



**SECO/WARWICK S.A.**

### 2007

SECO/WARWICK Sp.z o.o. changes name to SECO/WARWICK S.A. and functions as the parent company for SECO/WARWICK Corp., ELTERMA S.A., SECO/WARWICK China, SECO/WARWICK Moscow





## Vacuum furnaces

SECO/WARWICK offers a wide variety of Vacuum furnaces and process technology for heat treatment including: Bright hardening, High-pressure gas hardening, Vacuum carburizing FineCarb®, Bright tempering, Gas nitriding (with vacuum purge), Bright annealing, Quench annealing, Degassing, Brazing and high-temperature brazing, Diffusion welding, Sintering (WC, MIM, ceramics), Solution heat treatment, CVD/graphitization and can custom design specialty process equipment to meet our client's needs.

We meet the needs of our customers in aircraft, automotive, defense, metalworking, medical, nuclear, tool industries and sectors of scientific research and service with a broad range of furnace sizes, with load capacities up to 5000 kg.



← Vacuum carburizing Fine Carb®

SECO/WARWICK vacuum furnace assembly facility →



← HPQ 10/12 bar 900x800x1200mm

Aircraft and energy industry →



← Tool shop Furnaces 600x600x900 mm 10 bar

Vertical furnaces/tool and aircraft industry →



← Tool shop Furnace 900x800x1200 mm 10 bar and Double chamber 600x600x900 mm 20 bar

Sintering WC/MIM/60 bar →



← Tempering furnaces 600x600x900 mm option ZeroFlow™ gas nitriding

10<sup>-7</sup> mbar →



← Oil quench furnace

Custom built HPQ/ 16 bar 600x600x3600 mm →





# Aluminium process furnace systems

Our five basic product groups include coil/foil annealing, solution heat treatment & ageing, log homogenising, ingot heating and melting furnace systems. We offer advanced technology to reduce cycle times, conserve energy and improve cooling rates.

Our control and material handling systems are designed for each unique production environment. With our experience, we are the single source for all your aluminium process furnace system needs and we guarantee the performance of our equipment.



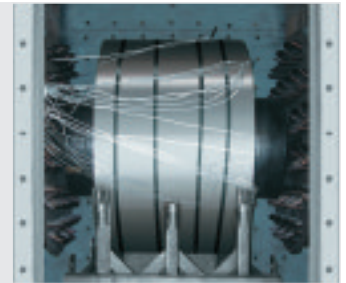
Roller hearth aluminium solution heat treatment and ageing lines for castings



Roller hearth aluminium solution heat treatment furnaces for extruded parts and plates



Vortex Jet Heating™ system in aluminium coil and foil annealing furnaces



Log and ingot homogenising furnaces



Melting and holding furnaces



**COIL • FOIL • BILLET • INGOTS • CASTINGS • FORGINGS**





## CAB - Controlled Atmosphere Brazing Systems

We offer a wide range of custom engineered solutions from small batch vacuum purge brazing systems and semi-continuous systems for infrequent demand, to large scale continuous furnace systems designed to deliver efficient, flexible throughput on a continuous basis. Our offer includes CAB Brazing Lines for Aluminium and Copper heat exchangers. A typical CAB Aluminium Line consists of Degreaser, Fluxer, Afterburner, Braze Furnace and Cooling System.



← Convection preheat/Radiation type CAB line

Active Only® CAB convection furnace →



← CAB laboratory chamber furnace with vacuum purge

Radiation style CAB Line →



← CAB convection-fired furnace

CuproBraz® 3-chambered furnace convection-fired →



← Fluxer

Afterburner with the heat exchanger →



← Degreasing/cleaning unit

Cooling system →



SECO/WARWICK is the exclusive supplier of CAMLAW CAB equipment service and replacement parts.





# Atmosphere heat treatment furnaces and systems



ELTERMA S.A. provides industrial furnaces for heat treatment and heat-chemical treatment of metals in controlled atmosphere as well as complete production systems that include: atmosphere generators, loading and unloading machines, quench tanks, washers, dryers and fully automatic computer control systems.  
For bath or semi continuous process requirements, ELTERMA provides a selection of standard and custom designed furnaces.

## Continuous Furnace Lines

## Batch Loading Furnaces



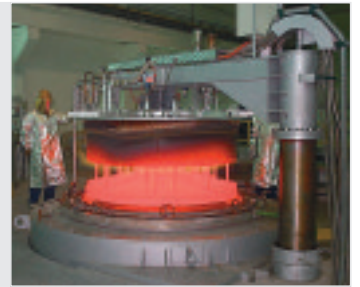
← Mesh Belt furnace line for hardening and tempering

CaseMaster® Sealed Quench chamber furnace →



← Roller Hearth furnace line for annealing

Pit furnace line using a gas fired retort furnaces with controlled atmosphere →



← Pusher Hardening Furnace and Cast Link Conveyor Furnace for tempering

Rotary hearth furnaces for heating before forging →



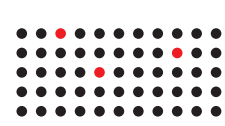
← Pusher Furnaces

High-temperature chamber atmosphere furnace →



Furnaces and protective atmospheres for heat treatment are mainly applicol in automotive, aircraft, bearing and machine-building industries. They are used for heat treatment of work loads such as gear wheels, shafts, joined components, bearings and forgings.



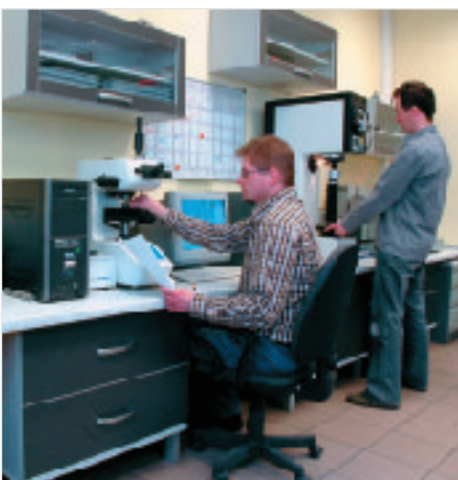


## R&D, Laboratory



The goal of the Research and Development Department is to advance the present and future needs of the global materials market by identifying the direction for technical development, and new areas of interest. The R&D Lab provides customers with technical support that is both convenient and confidential. A special group of experts works on selected assignments supported by both domestic and foreign scientific centers. The department is

equipped to perform research in leading technologies that as well as rendering services and giving technical support to facilitate the optimization of the client's individual process. The testing and research services are performed in a fully equipped, modern laboratory. The R&D staff is active in domestic and foreign conferences and in scientific and trade seminars, has been widely published in technical journals and provides consulting services.







# Spare parts, Repairs and Modernization

The SECO/WARWICK Group provides spare parts and repair services for all equipment manufactured by SECO/WARWICK. We are the exclusive owner of the CAMLAW technology, and can deliver spare parts for furnaces for soldering based on the original technical drawings.

We offer:

Spare parts for vacuum furnaces: hot zones, heating, graphite and molybdenum elements (jets, nuts, supporting beams, supporting

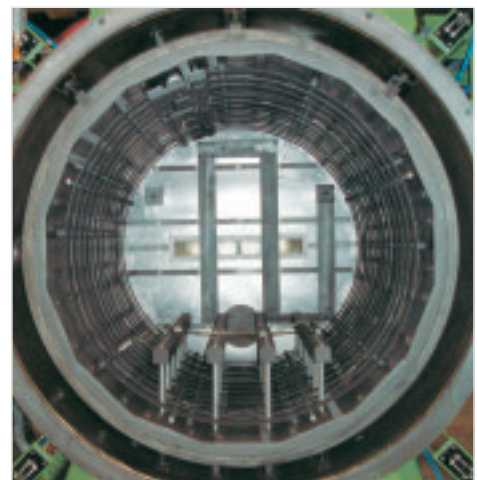
poles...), convection rotors, molybdenum components (nuts, locators...), (welding and casting) tooling and so on.

Spare parts for furnaces of aluminium treatment and for CAB: muffles, transportation belts, curtains, bearings, for oxygen analyser, mixers/rotors, burners, heating elements, rollers and drive systems, etc.

Spare parts for atmospheric furnaces: heating elements, oxygen probes, loading baskets and trays, muffles, retorts, lids and rotors.



The SECO/WARWICK Group guarantees technical service including repairs, rebuilds and modernization of our equipment.





## Service

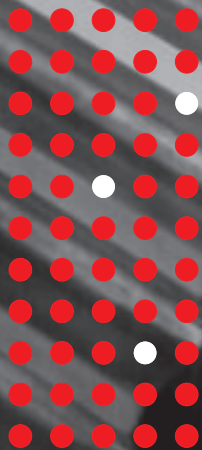
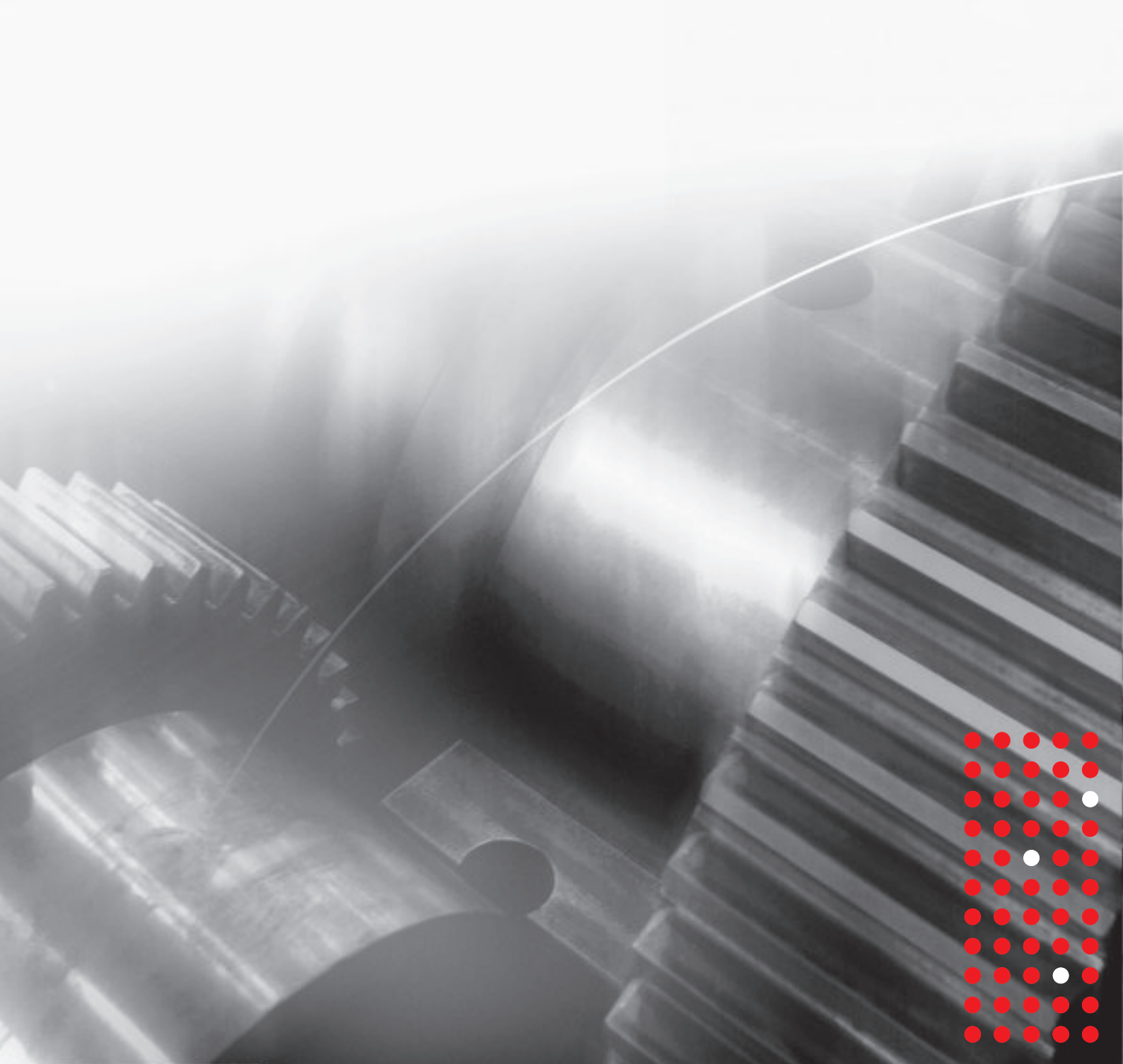
The SECO/WARWICK service team is made up of field engineers that are trained to solve problems and get equipment running quickly and efficiently. We provide support for installation, start up, testing, preventive maintenance and equipment breakdowns. We understand our customers' need for a quick response in emergency situations and provide prompt and reliable service.

Additional services include:

- Warranty and aftermarket repairs
- Periodic inspections
- Maintenance
- Operator Training







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