



Vacuum Induction Melting

(VIM) Furnaces

- Equiax (EQ) casting
- DS/SC casting
- Cold wall (CWI) induction casting
- Alloying VIM



SECO/WARWICK Group

POLAND
SECO/WARWICK S.A.
ul. Sobieskiego 8
66-200 Świebodzin
Tel: +48 68 3820 501
Fax: +48 68 3820 555
info@secowarwick.com.pl
www.secowarwick.com.pl

USA
SECO/WARWICK Corp.
P.O. Box 908, 180 Mercer St.
Meadville, PA 16335-6908
Tel: +1 814 332 8400
Fax: +1 814 724 1407
info@secowarwick.com
www.secowarwick.com

USA
RETECH SYSTEMS LLC
100 Henry Station Rd.
Ukiah, CA 95482, USA
Tel: +1 707 462 6522
Fax: +1 707 462 4103
jferraiu@retechsystemsllc.com
www.retechsystemsllc.com

GERMANY
SECO/WARWICK GmbH
Heilbronner Strasse 150
70191 Stuttgart, Germany
Tel: +49 711 217 29 60 10
Fax: +49 711 217 29 60 19
info@secowarwick.de
www.secowarwick.de

POLAND
SECO/WARWICK Thermal S.A.
(formerly Elterna)
ul. Świerczewskiego 76
66-200 Świebodzin
Tel: +48 68 3819 800
Fax: +48 68 3819 805
thermal@secowarwick.com.pl
www.secowarwickthermal.com.pl

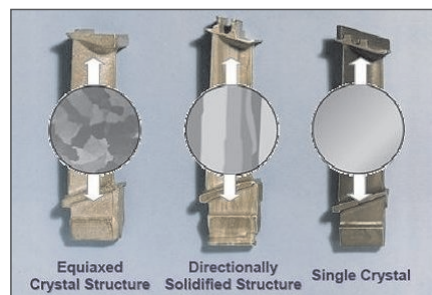
INDIA
SECO/WARWICK Allied Pvt. Ltd.
Allied House, Road No.1,
Chembur, Mumbai n 400 071, India
Tel: +91 22 2528 4028
+91 22 6797 3018
Fax: +91 22 2554 8782
ACEPL - allied@alliedfurnaces.com
AF - incinerator@alliedfurnaces.com
www.alliedfurnaces.com

CHINA
SECO/WARWICK RETECH
Thermal Equipment Manufacturing
(Tianjin) Co., Ltd.
7B Second Xeda Road
Tianjin, China 300385
Tel: +86 22 238 28300
Fax: +86 22 238 28305
s.wozniak@secowarwick.com.pl
www.swretech.com.cn

RUSSIA
SECO/WARWICK
Kostyakova 11/1
125422 Moscow, Russia
Tel/Fax: +7 495 9767160
Tel/Fax: +7 495 9777435
moscow@secowarwick.com.pl
www.secowarwick.com.pl



Founded in 1963, **Retech Systems LLC**, a world leader in the manufacture of vacuum metallurgical equipment, offers a wide range of casting solutions for the precision investment casting industry. As the world's leading supplier of VIM Precision Investment Casting furnaces, Retech offers the widest selection of casting furnace processes, including directional solidification, single crystal casting, equiax casting and cold wall induction.



Pic.1 „Equiaxed, DS/S.C. structures casted in VIM furnace“

According to fast growth of metal heat processing market, **Retech Systems LLC**, Metallurgical Furnaces manufacturer and **SECO/WARWICK S.A.**, Heat Treatment Equipment supplier decided to merge their best values.

This Alliance benefits for Customers with full, complex service on many fields: new equipment supplying, maintenance already own furnaces, unified spare parts availability and united service support for wide range of Heat Processing Equipment.

The **SECO/WARWICK** Group is among the world's leading producers of thermal processing furnaces for metals, in terms of sales volume and product range. We are also one of the technological leaders in our field, thanks to a state-of-the-art R&D division equipped with a complete metallography laboratory.

The business of the **SECO/WARWICK** Group includes production of five main product groups: vacuum heat treatment equipment, aluminum heat exchanger brazing systems, aluminum heat treatment systems, atmospheric furnaces and vacuum metallurgy furnaces.

SECO/WARWICK has proven thousands of times its commitment to high quality products that provide a superior performance to our customers. We have always placed a great emphasis on the innovation to deliver a state of the art equipment and technologies, that surpass its times. Our Global Research and Development Center, equipped with industrial furnaces gives you an edge over the competition delivering new, efficient and environmental friendly technologies.

Allied Companies **Retech Systems LLC** and **SECO/WARWICK S.A.** offer wide range of vacuum metallurgical equipment:

- **Vacuum Induction Melting furnaces**
- Vacuum Arc Remelt furnaces
- Electron Beam furnaces
- Powder Production Equipment
- Plasma Arc Melting furnaces
- Environmental Remediation Equipment
- Laboratory and Pilot production furnaces



Pic 2. „Batch type VIM furnace for pilot production“



Pic 3. „50 kg EQ for production of turbine blades“



Pic 4. „100kg EQ for production of turbine blades“



Pic 5. „200 kg EQ/DS/.S.C. VIM for production of large turbine blades“

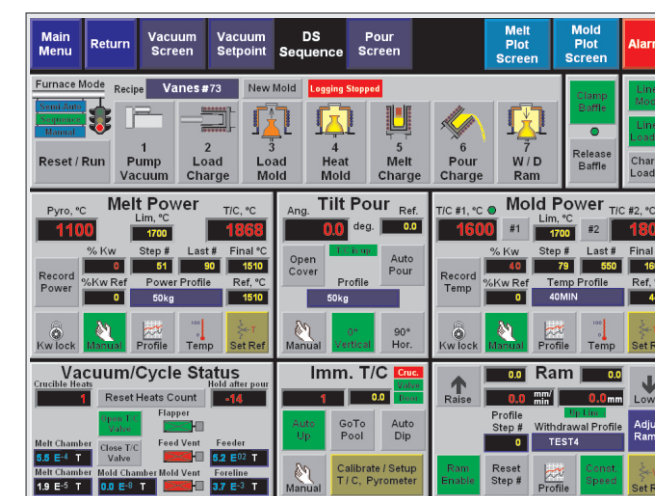
Available Features

- One touch vacuum system startup and shutdown
- Industrial touchscreen operator interface with selectable languages
- All electric and pneumatic actuators, no hydraulics
- Horizontal and vertical feed systems for bulk feed, ingots, and/or liners
- Teachable one or two-axis precision pouring systems with manual or automated profile pouring
- Door mounted melt box for fast change-out and easy overhead access
- Precision melt temperature measurement with combination Opto/TC calibration independent of crucible fill ratio
- In process, DS/SC baffle removal system
- Single or multi-zone mold heaters for EQ or DS/SC application
- Closed loop DS/SC solidification control (temperature and withdrawal position)
- Partial pressure control melting and inert gas mold cooling
- Wide range of standard furnace configuration and capacities including: lab size (<1 kg), 25kg, 50kg, 100kg, 150kg, and 200kg

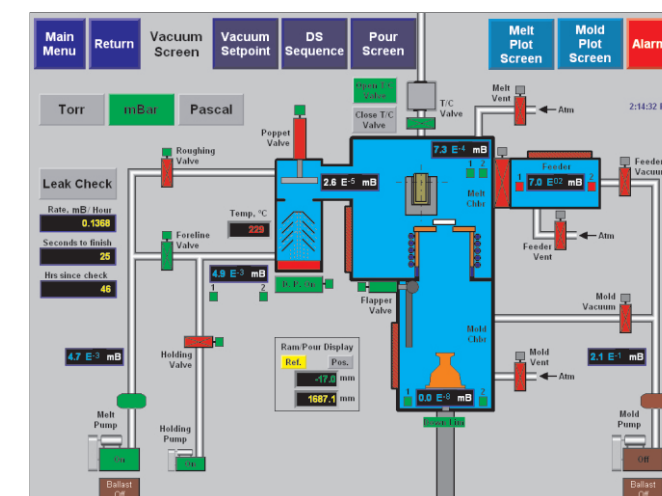
With more than 40 years of experience as a worldwide supplier of precision casting and melting equipment, our experience with this successful technology has resulted in proven performance control with minimal maintenance. Retech produces equipment known for its high yields and low operating costs, and has responded to demands of the industrial gas turbine market by offering systems capable of producing larger and larger components.

Our users friendly control system offers precision pouring, accurate and repeatable temperature control, a smooth but responsive withdrawal system and comprehensive data acquisition. Each of these features is controlled by a state-of-the-art PLC/computer package with sequenced or manual operations. Retech's recipe driven control system offers our customers the repeatability features necessary to maximize throughput and yields, thus supplying them with a competitive advantage.

Advanced Casting Process Control



Pic 6. Master control screen including DS/SX sequence



Pic 7. Vacuum system screen

In order to repeatedly produce high quality products, we provide the most advanced casting process control technology including:

- PLC based control system fully interlocked for safety
- PC based process control system with data acquisition
- Melt recipes utilizing saved profiles for melting, pouring, heating, and withdrawing
- Graphical creation and editing of process profiles
- Melt log collection for part certifications
- Available network storage of recipes, profiles, melt logs, and data acquisition
- Ethernet or modem interface connection for remote support