Vacuum Induction Melting (VIM) Furnaces

- Equilax (EQ) casting
- DS/SC casting
- Cold wall (CW) Induction casting
- Alloying VIM

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Founded in 1963, Retch 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 (Vacuum Induction Melting) furnaces, Retch offers the widest selection of casting furnace processes, including directional solidification, single crystal casting, equilix casting, and cold wall induction.

According to the fast growth of the metal heat processing market, Retch 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 supply, maintenance already own furnaces, unified spare parts availability and united service support for wide range of Heat Processing Equipment.

Pic 1. “Equilix, DS/SSC, structures casted in VIM furnace”

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 metallurgy 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 superior performance to our customers. We have always placed a great emphasis on 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 environmentally friendly technologies.

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

- Vacuum Induction Melting furnaces
- Vacuum Arch Melting 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/SSC. VIM for production of large turbine blades”

Available Features

- One-touch vacuum system startup and shutdown
- Industrial touch screen operator interface with selectable languages
- All electric and pneumatic actuators, no hydraulics
- Horizontal and vertical feed systems for bulk feed, inputs, and oriners
- 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/SSC baffle removal system
- Single or multi-zone mold heaters for EQ or DSSC application
- Closed loop DS/SSC 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 (50kg), 250kg, 500kg, 1000kg, 1500kg, and 2000kg

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. Retch produces equipment known for its high yield 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 user-friendly control system offers precision pouring, accurate and repeatable temperature control, a smooth, 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. Retch’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/SSC 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
- RC-based process control system with data acquisition
- Melting 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

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