SECO/WARWICK

INVENTION MEETS RELIABILITY

VACUUM ARC REMELTING (VAR) FURNACES

Vacuum Arc Remelted (VAR) steels, superalloys, titanium alloys and zirconium alloys are used in a large number of demanding applications, where cleanliness, homogeneity and improved fatigue properties in the final product are essential. Aerospace, power generation and nuclear industries rely on the properties and performance of materials processed in VAR systems.

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ADVANTAGES

- Vacuum or inert melting atmosphere.
- Melt rate control based on alloy and ingot size.
- Removal or reduction of dissolved gases, such as hydrogen, nitrogen and carbon dioxide.
- Reduction of undesired trace elements with high vapor pressure.
- Processing of segregation sensitive alloys.
- Controlled solidification of ingots to avoid.
- macro-segregation and reduce micro-segregation.
- ow energy input for remelting processes.
- Ceramic free process.
- Range of materials that can be processed.

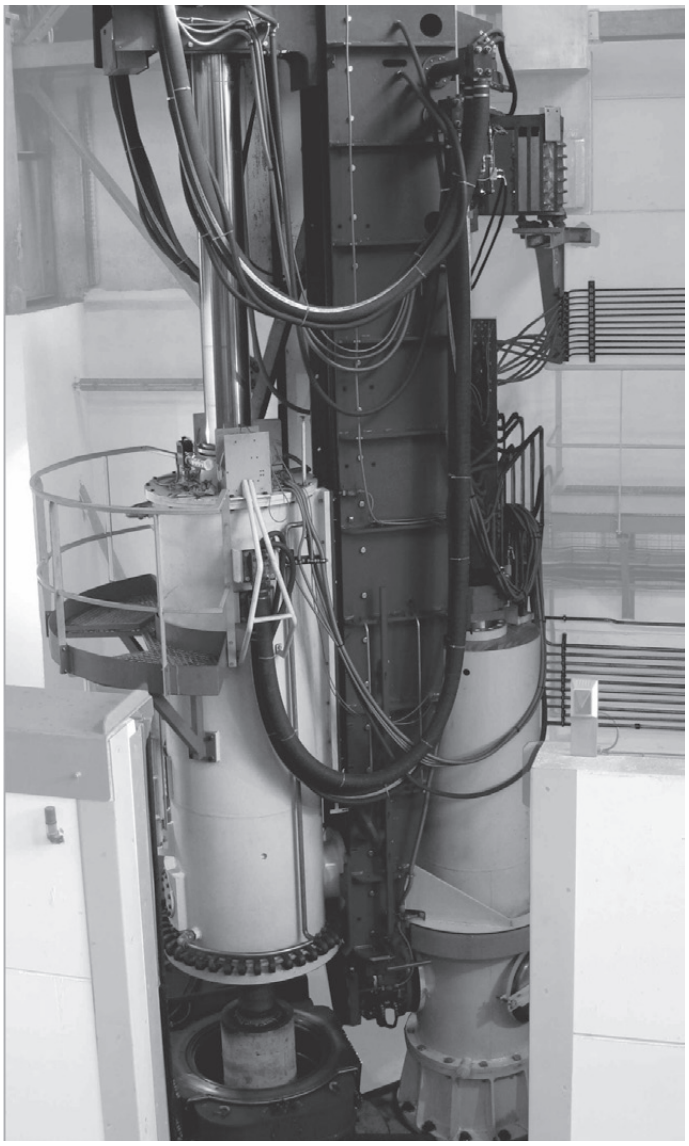
SECO/WARWICK can support you with VAR systems that are efficient, reliable, and robust allowing you to effectively provide your customers with increasingly complex materials that meet the needs of their advanced applications.

VAR-T - Traditional design for reactive metals such as titanium and zirconium.

- Large systems with up to 1100 mm diameter crucibles.
- Medium systems with up to 800 mm diameter crucibles.
- Small systems with up to 400 mm diameter crucibles.

VAR-S - Optimized for specialty steel and superalloy processing.

- Next-generation accessible, compact, electromechanical design.



- Large systems with up to 1000 mm diameter crucibles.
- Standard systems with up to 800 mm diameter crucibles.

Advanced VAR systems include process control technology to repeatedly produce high quality products, and the following features:

- Free-standing design independent from building structure.
- Remote operator control console.
- PLC based control system with computer based HMI.
- Ethernet communication interface.
- Data acquisition.
- Multiple melt recipe storage.
- Intuitive multi-segment recipes and a variety of melt modes.
- Accurate ram drive positioning and speed regulation.
- Accurate X-Y electrode positioning.
- Clean, stable DC power supply with excellent drip short control.
- Melt rate control:
  - Power,
  - Electrode position,
  - Loss-in-weight*.
- Arc gap control:
  - Voltage,
  - Drip short.
- Clear 360o degree view of the melt zone.
- Stainless steel head liner for improved pumpdown times.
- Maximized throughput with high speed changeover.
- Designed for ease of maintenance and high uptime.

OPTIONS

- Modified designs to accommodate the customer's stubs and crucibles.
- High precision shear beam load cell system for melt rate and melt termination control.
- Elimination of hydraulics to reduce contamination risk and complexity.
- Extended power ram stroke to accommodate compacted and artwork electrodes.
- Deep vacuum levels and decreased pumpdown times.
- High definition viewing cameras showing the melt zone.
- Programmable bi-directional stirring.
- Helium ingot cooling.
- Partial pressure operation and control.

SECO/WARWICK
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SECO/WARWICK is the 1st choice supplier
of solutions for heat treatment and metallurgy.

We create innovative products that provide our customers with reliable, safe and environmentally friendly solutions for heat treatment and metallurgy and ensure the economic efficiency of their businesses. Expertise includes end-to-end solutions in 5 categories: vacuum heat treatment, atmosphere, and aluminum thermal processing, controlled atmosphere brazing of aluminum heat exchangers and vacuum metallurgy.

SECO/WARWICK Group, with 8 companies located on 3 continents, has customers in nearly 70 countries with more than 4000 deployed solutions. The company provides standard or customized state-of-the-art heat processing and metallurgy equipment and technologies to leading companies in the following industries: automotive, aerospace, electronics, tooling, medical, recycling, energy including nuclear, wind, oil, gas, solar and production of steel, titanium, and aluminum.

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