VACUUM ARC REMELTING (VAR) FURNACES

- Model VAR-T...Titanium, Zirconium and Other Reactive Metals
- Model VAR-S...Stainless Steels, Tool Steels and Superalloys

Founded in 1963, Retech has more than 40 years of experience melting specialty metals.

Retech’s advanced Vacuum Arc Remelting (VAR) furnaces are designed to meet a wide range of melt specifications.

- Ingot Quality & Reliability
  - Homogeneity
  - Repeatability
  - Cleanliness
- Precise Ram Drive with Speed & Position Regulation
- Precise Load Cell Weighing System
- Advanced Melt Process Control
RETech’s Advanced VAR Designs
Exceeding the Demands of Leading Specialty Metals Producers

As demand increases for VAR processed materials in aerospace, power generation, chemical process, oil and gas, medical, consumer, automotive, and other emerging industries...

As customers relentlessly press for increased quality, consistency, higher volumes and lower prices from their producers...

Retech responds with intelligent VAR furnaces arrangements that exceed expectations: efficient, reliable and robust, offering lower net investments and reduced cost of ownership.

**VAR-T**
- Traditional design for titanium, zirconium and reactive metals.
- Standard Heavy (1100mm/43” ingots) and Light (910mm/36”) sizes.

**VAR-S**
- Optimized for non-reactive specialty steel and superalloy processing
- Next-generation accessible, compact, electromechanical design.
- Heavy (1000mm/40”) and Light (800mm/32”) sizes.

- Clean, stable DC power supply with excellent drip short control.
- Precise ram drive positioning and speed regulation.
- Precise shear beam load cell system to 0.01% accuracy.
- Accommodates all industry-standard stubs and crucibles.

- Maximized throughput with smooth stainless steel head interior, high speed changeover, improved pumpdown times, redesign of wear parts for ease of maintenance and 98% projected uptime.
- Free-standing design independent from building structure.
- Hydraulics are eliminated to reduce cost and complexity.
- Intuitive multi-segment recipes, and a variety of melt modes.
- Raised crucible flange split line prevents contamination and improves safety.
- Improved clarity and detail of melt view with a 360° view system and optional High Definition view of melt pool.

Traditional VAR-T designs are continually updated to maximize productivity, minimize net total investment, and improve operator safety.

Next-generation VAR-S furnaces include advanced process controls, and an accessible, compact, all-electromechanical design.
Retech Engineering

Headquartered in Ukiah, California, Retech is an international manufacturer with operations worldwide. Its Ukiah operation is the most highly integrated vacuum metallurgical processing equipment facility in the world, bringing together an exceptional team with thousands of man-years of experience in furnace design, manufacture, start-up and support in a 130,000 square foot (12,000 m²) state-of-the-art, ISO9001 Certified facility.

Retech Engineering will work with you to specify, supply, install and commission your entire furnace system:

- Furnace Head
- Melt Stations
- Crucibles
- Vacuum System
- Power Supply
- Power Bus & Cables
- Water Cooling System
- Pneumatics & Utility Manifolds
- Motor Control Center
- Control System
- Options & Accessories

Advanced Melt Process Control

Retech provides the most advanced process control and data acquisition technology to repeatedly produce high quality products, featuring:

- PLC Based Control System
- Precise and Accurate X-Y Electrode Drive Positioning
- Precise and Accurate Load Cell System
- Operator Interface Station
- Melt Recipes
- Melt Rate Control
  - Voltage
  - Current
  - Drip Short
- Data Acquisition
- Remote Ethernet/modem interface
- Optional Programmable Bi-Directional Stirring
- Optional Helium Gas Cooling and Partial Pressure Control

Retech is ISO 9001 Certified
VAR FURNACE DESIGN PARAMETERS

The Retech VAR is designed to accommodate existing stubs, electrodes, and crucibles. Standard rated parameters are shown. Contact Retech Engineering to modify designs for custom requirements.

### VAR Furnace Design Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>VAR-S 40”</th>
<th>VAR-S 32”</th>
<th>VAR-T 42”</th>
<th>VAR-T 36”</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Furnace Capacity</strong></td>
<td>55,000 lbs</td>
<td>33,000 lbs</td>
<td>50,000 lbs</td>
<td>25,000 lbs</td>
</tr>
<tr>
<td></td>
<td>25 MT</td>
<td>15 MT</td>
<td>23 MT</td>
<td>12 MT</td>
</tr>
<tr>
<td><strong>Max Ingot/Crucible Diameter</strong></td>
<td>40” / 1000 mm</td>
<td>32” / 800 mm</td>
<td>42” / 1050 mm</td>
<td>36” / 910 mm</td>
</tr>
<tr>
<td><strong>Crucible Flange Diameter</strong></td>
<td>55” / 1400 mm</td>
<td>50” / 1270 mm</td>
<td>60” / 1500 mm</td>
<td>54” / 1375 mm</td>
</tr>
<tr>
<td><strong>Max Ingot Length</strong></td>
<td>160” / 4050 mm</td>
<td>160” / 4050 mm</td>
<td>194’ / 4925 mm</td>
<td>184’ / 4675 mm</td>
</tr>
<tr>
<td><strong>Max Electrode Diameter</strong></td>
<td>38” / 965 mm</td>
<td>30” / 760 mm</td>
<td>39” / 990 mm</td>
<td>32” / 812 mm</td>
</tr>
<tr>
<td><strong>Max Electrode Length</strong></td>
<td>195” / 4950 mm</td>
<td>236” / 6000 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Ram Design**
- **Ram travel (standard *)**: 68” / 1725 mm
- **Maximum Stub Length**: 22” / 570 mm
- **Ram drive type**: brushless servo w/ encoder
- **Position accuracy**: 0.001 inch
- **Speed control range**: <0.01 to 30” / min
- **Current path**: Fully coaxial to top of ram
- **Load cell system accuracy**: 0.01%, high repeatability
- **X-Y positioning**: 1.5” / 3.8 cm (nom) @ electrode tip, DC actuated

**Furnace Head**
- **Furnace head lift (standard *)**: 48” / 1220 mm
- **Lift Method**: electromechanical @ ~1 meter/min
- **Head swing**: DC actuated
- **Power rating**: 25 kA @ 40V (load) x 70V (open circuit)

**Envelope**
- **Length x Width**: 20” x 40” / 6.1m x 12.2m
- **Height above shop floor**: 24” / 7.3m

* Other head lift and ram travels available.

Thank you for your interest in Retech VAR equipment.

We appreciate the opportunity to support your melting operations.

---

Retech Systems LLC Corporate Headquarters
100 Henry Station Road
Ukiah, CA 95482 USA
Phone: 1-707-462-6522 Fax: 1-707-462-4103
http://www.retechsystemsllc.com/

Retech Systems LLC East Technical Center
790 Woodlane Road
Westampton, NJ 08060 USA
Phone: 1-609-267-3222 Fax: 1-609-267-4880