

VAR-S

FURNACE FOR STEEL

Designed and optimized for the clean remelting standards associated with specialty steels and non-reactive metals, Retech's VAR-S consists of five major sub-assemblies. Each one is independently built, pre-finished, assembled and tested. This modular-build approach ensures repeatable assembly procedures as well as accuracy in making critical adjustments, performing incremental inspections, and testing. The electromechanical design keeps the system compact and eliminates the need for hydraulic systems which can become a contamination source. The modularity also minimizes shipping, offloading, and on-site assembly times.

VAR-S - Optimized for specialty steel and superalloy processing

- Large systems with up to 1000 mm diameter crucibles
- Standard systems with up to 800 mm diameter crucibles
- Custom designs optimized to the customer's requirements

Materials

- Nickel based super alloys
- High strength stainless steels
- Tool steels

Applications

Aerospace, ball bearings, tool steels, process dies, consumer products

Retech's advanced VAR-S systems include process control technology to produce high quality products utilizing the following features:

- Compact footprint for minimal manufacturing space usage
- Free-standing design with simple floor mounting
- Modular design for efficient installation and testing
- 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
- High precision shear beam load cell system for melt rate and melt termination control.
- Accurate power ram positioning and speed regulation
- Coaxial current path
- Accurate X-Y electrode positioning
- Clean, stable DC power supply with excellent drip short control
- Stirring coil with programmable directional control
- Clear 360° degree view of the melt zone
- Stainless steel head liner for improved pump-down times
- Maximized throughput with high-speed changeover
- Melt rate control
- Arc gap control



Designed for ease of maintenance and high uptime. Depending on the customer's needs, Retech offers the following options:

- Modified designs to accommodate the customer's stubs and crucibles
- Extended power ram stroke to accommodate compacted and artwork electrodes
- Deep vacuum levels and decreased pump-down times
- High-definition viewing cameras showing the melt zone
- Programmable bi-directional stirring
- Helium ingot cooling
- Partial pressure operation and control

VAR-S Super Alloy And Steel Furnace Specifications

Nominal Size Range	40"/1000 mm	32"/800 mm
Typical Range of Furnace Capacity	55,000 lbs.	33,000 lbs.
	25 MT	15 MT
Typical Ingot Diameter After Cooling	40"/1000 mm	32"/800 mm
Ingot Length	160"/4050 mm	160"/4050 mm
Electrode Diameter	38"/965 mm	30"/760 mm
Electrode Length	195"/4950 mm	
Weight and Length Assumptions	Steel, 80% fill ratio, 485 lbs/ft ³ (7780 kg/m ³)	
Ram Travel (Typical)*	68"/1725 mm	
Ram Drive Type	Brushless server with encoder	
Position Accuracy	0.001"	
Speed Control Range	<0.01 to 30" (760 mm)/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 Lift (Standard)*	48"/1220 mm	
Lift Method	electromechanical @ ~1 meter/min	
Head Swing	74"/1880 mm radius	
Power Rating	25 kA	15 kA
	@ 40V (load) x 70V (open circuit)	
Envelope Length x Width (ft, m)	20' x 40'	6.1 m x 12.2 m
Height Above Shop Floor (120"/3050 mm ram travel)	24'/7.3 m	

* Other head lift and ram travels available.