RETECH
A SECO/WARWICK COMPANY

VAR-T

FURNACE FOR TITANIUM

Designed for titanium, zirconium and reactive metals, the Retech VAR-T consists of five major sub-assemblies, each component being independently built, pre-finished, assembled and tested prior to final installation. This modular-build approach enables repeatable assembly procedures as well as accuracy in making critical adjustments, performing incremental inspections, and testing. The result is greatly expedited shipment, offloading and on-site erection work

VAR-T – Designed for the unique requirements of titanium and similarly reactive metals

- 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
- Custom designs optimized to the customer's requirements

Materials

- Reactive metals such as titanium and zirconium
- Refractory metals such as tungsten and niobium
- Amorphous metals and super alloys

Applications

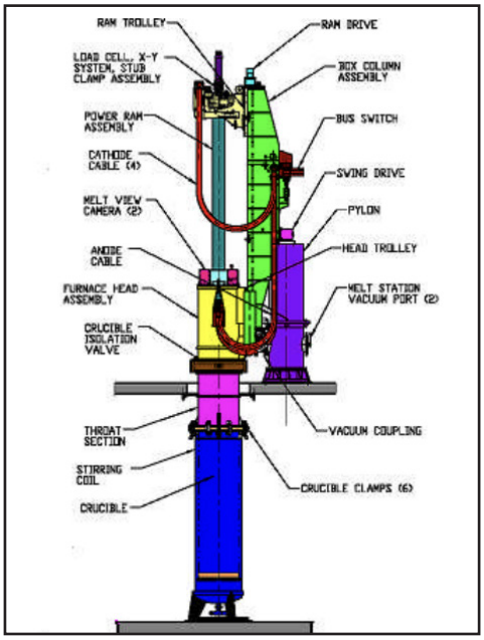
Aerospace, nuclear, petrochemical, marine, chemical, tool steels, consumer products

Retech's advanced VAR-T systems include process control technology to produce high quality products utilizing 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 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 annual production 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:

- Lock valves to allow simultaneous inert cooling and melting
- 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 pump-down times
- High-definition viewing cameras showing the melt zone
- Helium ingot cooling
- Partial pressure operation and control



VAR furnace diagram of parts

VAR-T Titanium Furnace Specifications

Nominal Size	42"/1100 mm	36"/900 mm
Typical Range of Furnace Capacity	50,000 lbs.	25,000 lbs.
	23 MT	12 MT
Typical Ingot Diameter After Cooling	42"/1050 mm	36"/910 mm
Ingot Length	194"/4925 mm	184"/4675 mm
Electrode Diameter	39"/990 mm	32"/812 mm
Electrode Length	236"/6000 mm	
Weight and Length Assumptions	Titanium, 60% fill ratio, 281 lbs/ft^3 (4506 kg/m^3)	
Ram Travel (Typical)*	120"/3050 mm to 200"/5080 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	2"/5.0 cm (nom) @ electrode tip, DC actuated	
Furnace Head Lift (Standard)*	90"/2290 mm	
Lift Method	electromechanical @ ~1 meter/min	
Head Swing	66"/1676 mm radius	
Power Rating	50 kA	35 kA
	@ 40V (load) x 70V (open circuit)	
Envelope Length x Width (ft, m)	32' x 50'	9.8 m x 15.2 m
Height Above Shop Floor (120"/3050 mm ram travel)	34'/10.4m	

* Other head lift and ram travels available.

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