

VACUUM ARC REMELTING (VAR) FURNACES

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

● SECO/WARWICK

● RETECH

● SECO/WARWICK

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Precise Ram Drive with Speed & Position Regulation
Precise Load Cell Weighing System
Advanced Melt Process Control
Ingot Quality & Reliability
Homogeneity
Repeatability
Cleanliness

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SECO/WARWICK Group is a leading manufacturer of industrial heat processing equipment, specializing in state-of-the-art, custom built or standard vacuum furnaces and controlled atmosphere furnaces. The globally integrated organization includes SECO/WARWICK S.A. Poland - headquarters, SECO/WARWICK Corp. in the USA, SECO/WARWICK China and SECO/WARWICK Allied India. SECO/WARWICK has a track record of more than 1000 installations in over 48 countries worldwide.

RETECH is the premier supplier of vacuum melting technologies for the special metals industry, with over 400 installations in 18 countries, and a 46 year tradition as a VAR leader and innovator. Retech, headquartered in Ukiah, California (USA), is the most highly integrated specialty metals furnace supplier in the world. Retech recently established an East Coast Technical Center in New Jersey (USA), as the center of excellence for the Retech VAR Product Group and for special steels/superalloys market development. Retech has been a key contributor of important advancements in vacuum arc melting, precision pouring, cold hearth melting, consumable casting, and metal powder production.

Retech's partnership with SECO/WARWICK in Poland enhances its worldwide vacuum processing equipment sales, marketing, engineering, manufacturing and service capabilities. Particularly important to the EU market is SECO/WARWICK's assured abilities to provide "grassroots" metric designs, seamless adherence to EU standards and directives, and local service and support.

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...

We respond 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 ingots) and Light (910mm) sizes

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

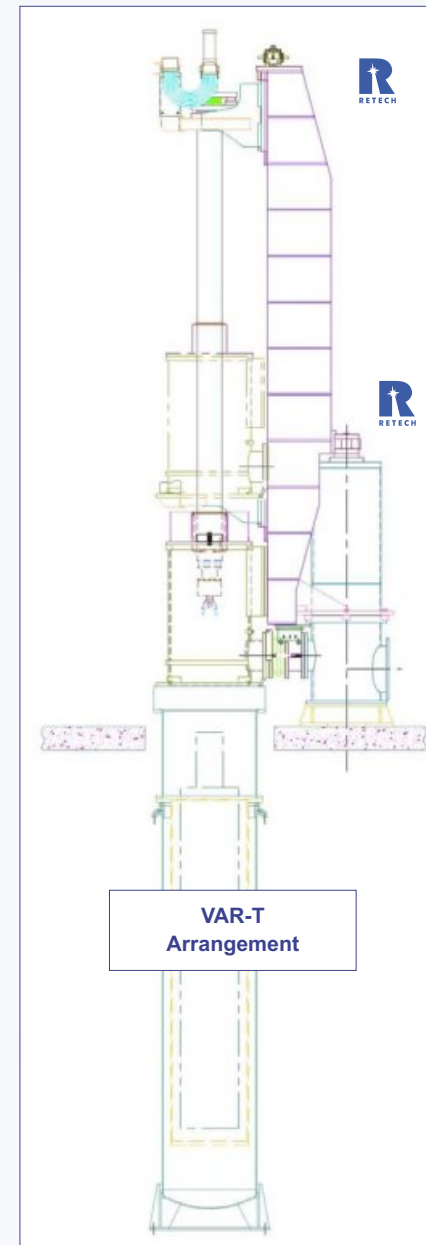
Advanced Melt Process Control

We provide 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 Receipts
- 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

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.



	Stainless Steel, Tool Steels and Superalloys		Titanium, Zirconium, and Other Reactive Metals	
	VAR-S 40"/1000 mm	AR-S 32"/800 mm	VAR-T 42"/1100 mm	AR-T 36"/900 mm
Furnace Capacity	55,000 lbs. 25 MT	33,000 lbs. 15 MT	50,000 lbs. 23 MT	25,000 lbs. 12 MT
Max Ingot/Crucible Diameter	40" / 1000 mm	32" / 800 mm	42" / 1050 mm	36" / 910 mm
Crucible Flange Diameter	55" / 1400 mm	50" / 1270 mm	60" / 1500 mm	54" / 1375 mm
Max Ingot Length	160" / 4050 mm	160" / 4050 mm	194" / 4925 mm	184" / 4675 mm
Max Electrode Diameter	38" / 965 mm	30" / 760 mm	39" / 990 mm	32" / 812 mm
Max Electrode Length	195" / 4950 mm		236" / 6000 mm	
Weight and length assumptions:	Steel, 80% fill ratio, 485 #/ft3 (7780 kg/m3)		Titanium, 60% fill ratio, 281 #/ft3 (4506 kg/m3)	
Ram Design				
Ram travel (standard *):	68" / 1725 mm		120"/3050mm to 200"/5080mm	
Maximum Stub Length	22" / 570 mm		brushless servo w/ encoder	
Ram drive type:	brushless servo w/ encoder		brushless servo w/ encoder	
Position accuracy:	0.001 inch		0.001 inch	
Speed control range:	<0.01 to 30" (760mm) / min		<0.01 to 30" (760mm) / min	
Current path:	Fully coaxial to top of ram		Fully coaxial to top of head	
Load cell system accuracy:	0.01%, high repeatability		0.01%, high repeatability	
X-Y positioning	1.5" / 3.8 cm (nom) @ electrode tip, DC actuated		2" / 5.0 cm (nom) @ electrode tip, DC actuated	
Furnace Head				
Furnace head lift (standard *):	48" / 1220 mm		90" / 2290 mm	
Lift Method	electromechanical @ ~1 meter/min		electromechanical @ ~1 meter/min	
Head swing:	74" / 1880 mm radius		66" / 1676 mm radius	
Power rating:				
	25 kA	15 kA	50 kA	35 kA
	@ 40V (load) x 70V (open circuit)		@ 40V (load) x 70V (open circuit)	
Envelope				
Length x Width	20' x 40' 6.1m x 12.2m	20' x 40' 6.1m x 12.2m	32' x 50' 9.8m x 15.2m	32' x 50' 9.8m x 15.2m
Height above shop floor (120" / 3050 mm ram travel)	24' / 7.3m	24' / 7.3m	34' / 10.4m	34' / 10.4m

* Other head lift and ram travels available.