

PRODUCT

INFORMATION



BELT FURNACE SERIES BF CONTROLLED ATMOSPHERE CONTINUOUS FURNACE

Centorr/Vacuum Industries revolutionary Belt Furnace design is unlike any other continuous furnace on the market. Introduced in the early 1990's, this design combines the fast throughput of a continuous furnace, with the high temperature capability of a refractory metal or graphite-lined hot zone.

Its cold wall chamber and water-cooled jail design ensures low ambient temperatures around the furnace, even when operating at temperatures up to 2000°C.

KEY FEATURES AND BENEFITS

- ✓ Cold Wall Vacuum furnace design with stainless steel inner and outer jackets with baffled water cooling.
- ✓ Operation to 2000°C. Temperature uniformity of +/- 5°C in uniform effective hot zone. Specials to 2800°C.
- ✓ Repeatable temperature profiles on every component produced.
- ✓ PLC with Industrial Programmable Controller or PC system using Intellution™ FIX32 HMI software customized by Centorr/Vacuum Industries for continuous furnaces, with extensive data acquisition, and remote operation capabilities.
- ✓ Patented Tungsten mesh belt design with Molybdenum, Tungsten, or Tantalum metal hot zones.
- ✓ Novel Silicon Carbide link belt design for use with Graphite Board hot zone.
- ✓ Inert gas system or positive pressure Hydrogen gas system with burnoff towers at entrance and exit tunnels for reducing atmospheres.
- ✓ Cold wall design offers rapid heat up and cool down times (2-3 hours from RT - 2000°C) compared with 3-5 days for heatup/cooldown of refractory hot wall units.
- ✓ Large cycle time reduction translating to excellent throughput. Typical 15 hr "door-to-door" batch furnace cycles can be reduced to 2-4 hr continuous furnace cycles with improved quality.
- ✓ Thin, low mass insulation system does not trap moisture while the system is cold, eliminating days of "conditioning" to control furnace dew point below -60°F.
- ✓ System designed for quick and easy access to the furnace hot zone for repairs and preventative maintenance.
- ✓ The smaller work cross section in a continuous furnace offers minimal thermal inertia compared to large batch furnaces, shortening cycle times.



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BELT FURNACE

Controlled / Atmosphere Furnace

- ✓ **Highest Product Consistency** is assured by the uniform belt speed and repeatable thermal cycle.
- ✓ **Lowest Cost Operation** is provided by the rapid process cycle and unattended operation.
- ✓ **Productivity** is advanced by the fast heat up and cool down cycles, and ability to shut the unit down over weekends (no need to run gas or idle temperature over the weekend).
- ✓ **Minimum Maintenance Cost** is assured by the heavy duty construction and ease of access to all components of the furnace.

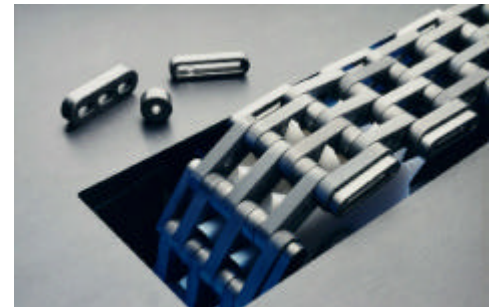
STD MODEL*	2BF	4BF	6BF	8BF	44BF	66BF	124BF
Uniform Effective Hot Zone W x H x L in (mm)	2x0.5x8 (50x13x200)	4x0.62x8 (100x16x200)	6x1x36 (150x25x914)	8x1x48-72 (200x25x1220) (200x25x1828)	4x4x36-96 (100x100x914) (100x100x2440)	6x6x36-96 (150x150x914) (150x150x2440)	12x4x36-96 (305x100x914) (305x100x2440)
Molybdenum Hot Zone	1550°C (2822°F)						
Tungsten Hot Zone	1800°C (3270°F) Silicon Carbide Belt - 2000°C (3630°F) in Ar, N ₂ / 1800°C (3270°F) in Hydrogen W Mesh Belt						
Graphite Hot Zone	1800°C (3270°F) Silicon Carbide Belt - 2200°C (3990°F) Graphite Cloth Fabric Belt - Specials to 2800°C (5072°C)						
Belt Speed	0.4" - 6"/min (10 - 152mm/min)						
Inert Gas Flow (slpm)	14	28	70	90	140	160	220
Approx. Power Supply Size Inert (Hydrogen)** KVA	25 (30)	30 (35)	120 (150)	200 (240)	200 (240)	240 (300)	350 N/A
Water Requirements gpm (liters)	7 (26)	9 (34)	35 (133)	55 (208)	55 (208)	68 (257)	80 (303)
Floor Space ft (m)	4x10 (1.2x3.1)	4x10 (1.2x3.1)	5x14 (1.5x4.2)	6x16 (1.8x4.9)	6x16 (1.8x4.9)	6x16 (1.8x4.9)	7x16 (2.1x4.9)

* Custom sizes available upon request.

** Power is for shortest hot zone listed.

MISC. / OPTIONAL FEATURES

- ✓ CE / VDE / TÜV / CSA approvals and other non-U.S. standards for compliance.
- ✓ Rigid or Flexible water cooled busswork for improved maintenance and best electrical efficiency.
- ✓ Manual rotameter or Mass Flow Controllers for precise, repeatable gas flow.
- ✓ Optional Binder Removal System consisting of thermal oxidizer in dedicated debind zone with inner retort designed for durability, ease of replacement and low cost for efficient binder removal.
- ✓ Automatic loading and unloading conveyor system with optical proximity switch sensors for notification of work boats exiting the furnace.
- ✓ Improved densification, minimized weight loss (dissociation), and preferred crystallinity are all benefits in ceramic processing.



FURNACE APPROVALS

Centorr/Vacuum Industries furnaces are designed to our own internal quality standards developed over our 45 year history, and are built to the following industry standards:

ASTM NFPA 86D FM (for G-10503A Hydrogen Systems)



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MATERIALS PROCESSED

- ✓ Refractory Metals
- ✓ Powders
- ✓ Si₃N₄
- ✓ Ceramics
- ✓ MIM components

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