

HUMPBACK CONVEYOR BELT FURNACES

For applications that require extremely low dewpoints, low oxygen levels, and the use of hydrogen atmosphere, the C.I. Hayes “BAC-MH” Humpback Conveyor Belt Furnace is a proven design. It is a mesh belt conveyor furnace that surrounds its raised heating chamber and main cooling sections with inclined entry and exit tunnels, thereby taking advantage of the low density nature of hydrogen gas. Heavier air stays low with minimal infiltration past the furnace doors. Light hydrogen stays high in the heating and cooling zones. This design makes extremely low dewpoints and oxygen levels possible in the furnace, necessary for processing stainless steel and other materials.

Introduced in the 1950's, the humpback furnace has evolved through sound engineering design to provide stable and uniform process conditions, longevity of furnace parts and relative ease of maintenance.

Features

The basic design features include a belt drive system, inclined entry and exit tunnels, a multi-zone heating chamber and a series of flanged cooling sections. Transfer chambers contain double rollers that ensure a smooth transition of the belt direction between the horizontal and inclined planes. Within the heating chamber is a high nickel alloy muffle with thermal shock plates on which the belt rides. The muffle itself is fully supported throughout the heating chamber with heating elements positioned above and beneath.

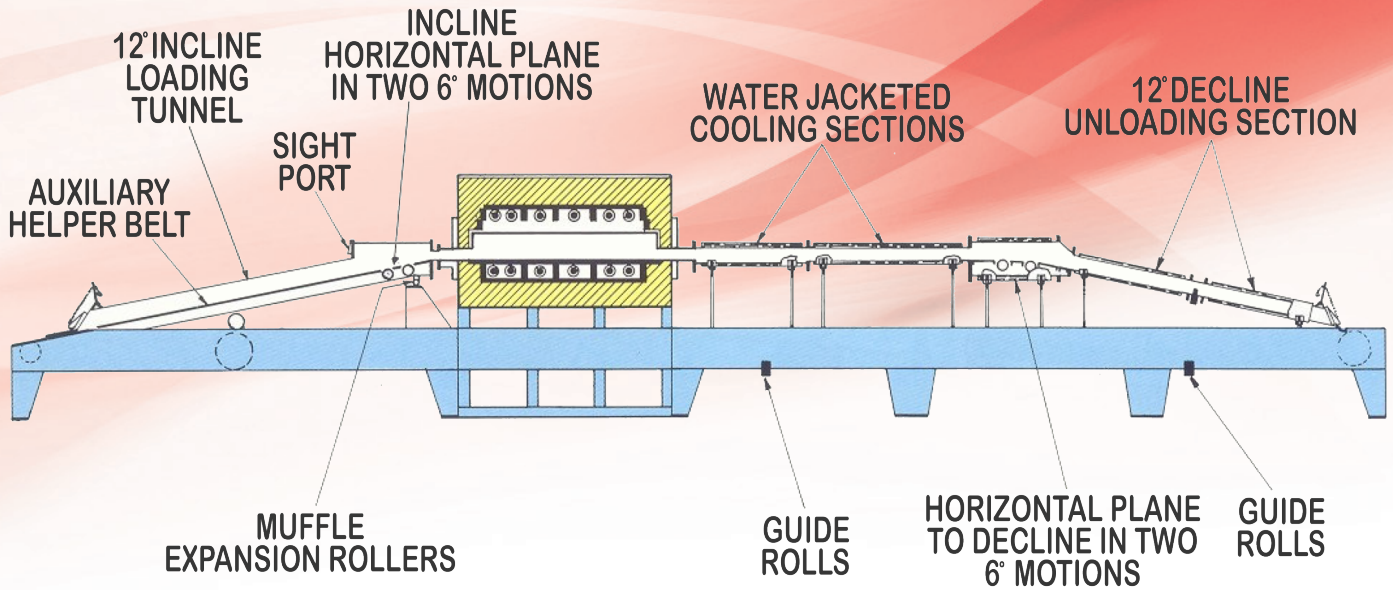
Controls

Temperature, atmosphere, belt speed and water flow controls are provided, tailored to meet process requirements. As hydrogen atmosphere is generally used within this furnace, necessary safety systems with interlocks are integral to the controls package. Such safeties include inert gas purge capabilities, burn off with igniters, temperature interlocks, flow and pressure switches.

Atmosphere Sampling and Remote Furnace Access

Atmosphere may be drawn from critical furnace points by a sampling system to provide dewpoint and oxygen analysis. Such a system is excellent for process verification and for basic troubleshooting. It is often provided with manual valves that allow the operator to select a sample from the desired furnace section. Data acquisition and remote furnace access are also possible. Such tools may involve a touchscreen operator interface, router and appropriate communication lines for internal or external purposes, including the ability for our technician to remotely troubleshoot.

The BAC-MH Humpback Furnace is available in a number of sizes to accommodate various part configurations and necessary production requirements. A few examples are listed on the reverse side.



Models:	BAC-MH-030648	BAC-MH-0309120	BAC-MH-102472-36PM
Working Dimensions:			
Height (Above Belt)	3" (76 mm)	3" (76 mm)	10" (254 mm)
Width (Across Belt)	6" (152 mm)	9" (228 mm)	24" (609 mm)
Length (Heating Chamber)	48" (1219 mm)	120" (3048 mm)	72" (1828 mm)
Length (Preheat Chamber)	-	-	36" (914 mm)
Maximum Operating Temperature:	2,100°F (1,148°C)	2,100°F (1,148°C)	2,100°F (1,148°C)
Furnace Heating Elements:	Silicon Carbide	Silicon Carbide	Silicon Carbide
Furnace Heating Elements (Preheat):	-	-	Metallic Ribbon
Connected Load:	45 KW	60 KW	120 KW
Connected Load (Preheat):	-	-	40 KW
Conveyor Belt Material:	314 Stainless Steel/Inconel	314 Stainless Steel/Inconel	314 Stainless Steel/Inconel
Maximum Belt Loading:	6 lb/ft ² (29.3 kg/m ²)	6 lb/ft ² (29.3 kg/m ²)	6 lb/ft ² (29.3 kg/m ²)
Conveyor Drive:	Variable (0-10"/min)	Variable (0-20"/min)	Variable (0-20"/min)
Muffle:	Inconel	Inconel	Inconel
Cool Section Water Flow:	10 GPM (2.6 LPM)	15 GPM (4 LPM)	30 GPM (7.9 GPM)
Maximum Backpressure:	5 PSIG	5 PSIG	5 PSIG
Atmosphere Composition (Typical):	H ₂ or DA with N ₂ Purge	H ₂ or DA with N ₂ Purge	H ₂ or DA with N ₂ Purge
Floor Space Requirements:	71" H x 48" W x 331" L (1.8 m x 1.2 m x 8.4 m)	88" H x 53" W x 568" L (2.2 m x 1.3 m x 14.4 m)	97" H x 69" W x 720" L (2.4 m x 1.7 m x 18.2 m)

	Sinterite	C.I. Hayes	J.L. Becker
Continuous Belt Furnaces			
Sintering Furnaces	A	A	A
Brazing Furnaces	A	A	A
Steam Treat Furnaces	A		A
Annealing Furnaces	A	A	A
Austempering Furnaces			A
Normalizing			A
Stress Relief Furnaces			A
Tempering Furnaces	A		A
Mesh Belt Furnaces			A
Solid Belt Furnaces	A		
Cast Link Furnaces			A
Humpback Conveyor Furnaces	A	A	A
Other Continuous Furnaces			
Pusher Furnaces (2000°-3000° F)	A	A	
Pusher Furnaces (below 2000° F)			A
Roller Hearth			A
Walking Beam		A	A
Vacuum Furnaces			
Continuous & Modular		V	
Batch		V	
Integral, Gas, Pressure & Oil Quench		V	
Batch Furnaces			
Sintering Furnaces	A	V	
Carburizing Furnaces		V	A
Carbonitriding Furnaces			A
Normalizing Furnaces			A
Spheroidize Annealing Furnaces			A
Stress Relieving Furnaces			A
Brazing Furnaces	A	V	A
Annealing Furnaces	A	V	A
Tempering Furnaces	A	V	A
Box & Slot Furnaces (above 2000° F)			A
Steam Treat Furnaces	A		
Bell (Carbon) Furnaces	A		
Quenching Furnaces			A
Tip-Up Furnaces			A
Atmosphere Tip-Up Furnaces			A
Tempering Pit Furnaces			A
Carburizing Pit Furnaces			A
Nitriding Pit Furnaces			A
Car Bottom Furnaces			A
Tool Room Furnaces	A	V	
Atmosphere Generators			
Exothermic Gas up to 3000 CFH		A	A
Exothermic Gas up to 20000 CFH			A
Endothermic Gas up to 12000 CFH			A
Ammonia Dissociators up to 10000 CFH		A	A
Atmosphere Dryers		A	A
Quench Systems		V	A
Parts Washers			•
Charge Cars	•		•
Fabrications	•		•
Automation	•		•
Vacuum Impregnators	•		
Accelerated Delubrication Units	•		
Sinter Hardening/Accelerated Cooling Units	•		
Powder Handling Equipment	•		
Powder Blenders	•		
500# Barrel Dumpers	•		
Bulk Pack Inverters	•		
Powder Bag Hangers	•		
Furnace Load/Unloaders	•	•	•
Rebuild Services	•	•	•
Spare Parts	•	•	•
Training	•	•	•
Field Service	•	•	•

KEY
A: Atmosphere
V: Vacuum