



# Pusher *Furnaces*

High Volume Thermal Treatment System



# Pusher Furnace: High Volume Thermal Treatment System

Often imitated but never duplicated



AFC-Holcroft is the acknowledged leader in pusher furnace technology. Every AFC-Holcroft pusher furnace incorporates many unique and innovative features that were not only pioneered by AFC-Holcroft but are found exclusively on AFC-Holcroft equipment. Our pusher furnace design features are often imitated, but never duplicated.

AFC-Holcroft designs and builds pusher furnace systems that are recognized in the industry for ease of maintenance and up-time reliability. The many outstanding design and construction features of AFC-Holcroft furnaces add up to an exceptionally high degree of operating efficiency, coupled with precise control over the entire heat treat process. As a result,

you'll benefit from a consistently high standard of quality at maximum production rates and economy. AFC-Holcroft pusher furnaces are custom-designed to meet your precise needs using our proven standard building-block components and modular concepts.

AFC-Holcroft pusher furnace designs range from single to six row designs for high production volumes. Depending on the amount of process control desired, furnace chambers may be combined into a single unit or separated into a multi-chamber design to provide for independent and isolated chambers for maximum control over temperature and atmosphere.

Innovative features make the AFC-Holcroft difference

## *Floor plan arrangements*

- Due to AFC-Holcroft's modular design concepts, floor plan arrangements can be made as simple as straight-through in-line single-row units to multi-row units with side entrance and exit designs to fit your available floor space.

## *Tray hearth skid rails*

- Pioneer in the use of silicon carbide and high-alumina skid rail materials.
- Segmented rail design allows for easy, localized replacement.
- Alloy rail systems available for specific applications.

## *Entrance/exit vestibule*

- Industry-proven AFC-Holcroft exclusive "Alligator" outer door systems provide reliable operation and automatic resealing in the event of a pressure buildup.
- Our bottom-load design reduces atmosphere gas consumption and minimizes furnace atmosphere disruption.

## *Captive chain tray transfer mechanism*



- Horizontal or vertical arrangements available.
- Chain retracts into a sealed housing to prevent overheating and extend service life.
- Reduces floor space requirements alongside the furnace.

### Main pusher mechanism



- Exclusive AFC-Holcroft design features a recirculating ball nut and screw enclosed in a tubular assembly.
- Highly efficient unit designed specifically for heavy loads.
- The smooth motion of our ball-screw design is far superior to hydraulic cylinder pusher systems.
- Automatically retracts in the event of a jam or overload.

### Tray positioner

- Exclusive AFC-Holcroft design automatically adjusts the main pusher stroke to compensate for thermal expansion and permanent tray growth.

### Atmosphere circulation systems



- Roof and single-flow sidewall fan systems.
- AFC-Holcroft's patented dual-flow sidewall fan systems.
- Available with air, water, or oil cooling.

### Heating systems

- Single-ended and U-type radiant tube systems mounted horizontally or vertically are compatible with either fossil fuel burners or electric elements.
- Large-diameter radiant tubes increase physical strength and permit lower heat dissipation rates for longer service life.

- Piloted or spark ignited burner systems available.
- Internal and external recuperators can be added to reduce fuel consumption by as much as 30%.

### Quench circulators



- Agitation systems available for oil, water, polymer, or molten salt.
- Standard propeller-type systems are provided for medium density loads.
- Our exclusive submerged pump-style agitator is unrivaled for dense load quenching.

### Pioneering Technologies

#### Cold Chamber – High Pressure Gas Quenching



- "Cold Chamber" gas quenching technology is not reserved for vacuum treatment systems. High Pressure Gas Quenching is also compatible with atmosphere treatment systems.
- Quench pressure range of 10 - 20 bar nitrogen.
- Available new or as a retrofit to your existing atmosphere pusher system.
- Delivers clean parts without post-washing.
- Reversed gas flow option is available to further reduce distortion and improve uniformity.

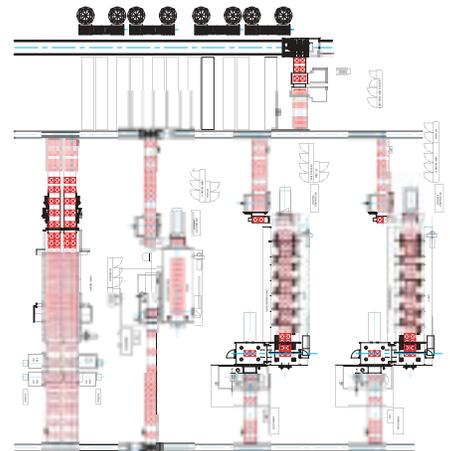
#### RapidGAS™ atmosphere system

- Eliminates the necessity of a separate atmosphere gas generator.
- Reduces cycle times by as much as 50%.
- Superior metallurgical properties.
- Lower atmosphere gas flows.
- Less floor space required.

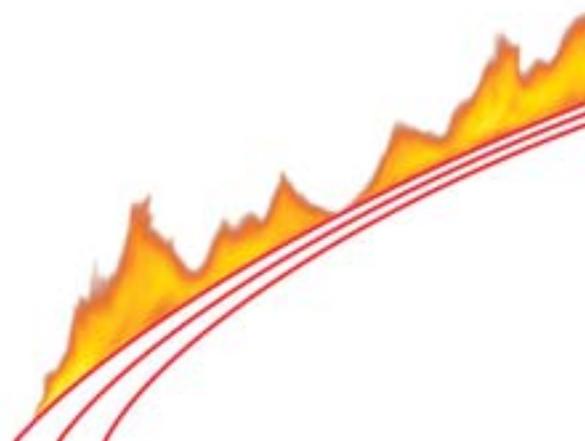
### Pyro-Kleen® preheat/pre-oxidizer

- Increased production rates due to preheating.
- Preoxidation of the work surface allows for faster and more uniform carbon absorption.
- Thermally cleans the work entering the furnace.

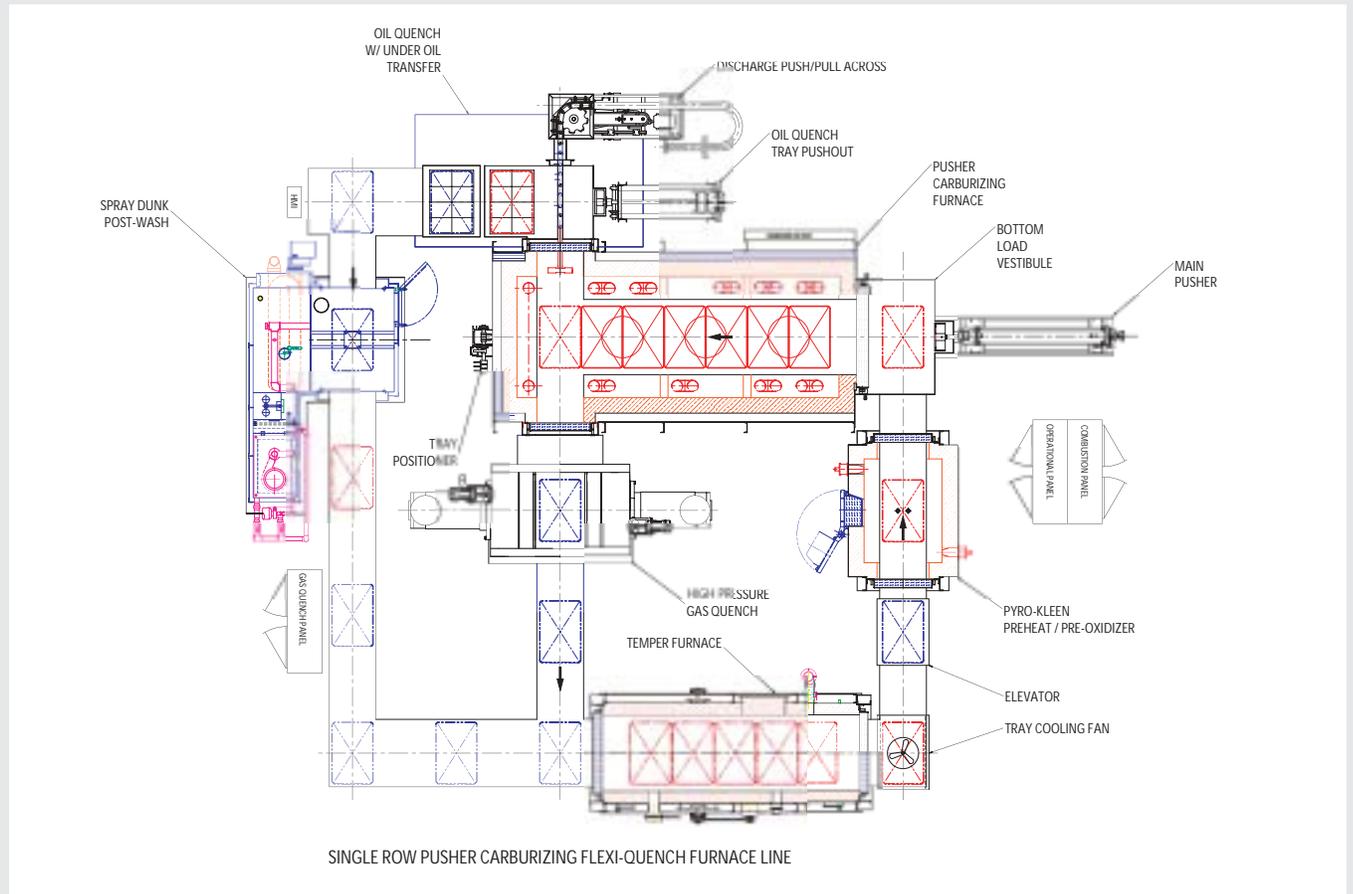
### Flexible heat treat systems



- Manageable from a single point.
- Ability to handle variable production rates and simultaneously process large numbers of different parts.
- Simultaneously perform various metallurgical operations.
- Provide consistent quality and productivity.
- Total data monitoring, controlling, acquisition, and tracking capability.
- Modular design for flexibility and ease of maintenance.
- Optimal investment.



## Flexible Quenching Systems



Multiple quench systems can be provided on a single pusher furnace for increased processing flexibility.

- High pressure gas quench.
- Hot or cold oil quench.
- Austemper molten salt quench.
- Intensive water quench.
- Water, polymer, or caustic quench.

### Technology of tomorrow, available today

AFC-Holcroft is the pioneer and innovator of the flexible heat treat cell, designed to enhance thermal efficiencies while keeping operating costs down. Our engineers have developed these cells by combining AFC-Holcroft's state-of-the-art pusher, rotary hearth, universal batch, and mesh belt systems. Using PLC and PC systems, AFC-Holcroft's production-proven equipment is integrated with the most reliable transportation systems and furnace controls available in today's market.



[www.afc-holcroft.com](http://www.afc-holcroft.com)

AFC-HOLCROFT

49630 Pontiac Trail  
 Wixom, MI 48393 USA  
 Phone: 248.624.8191  
 Fax: 248.624.3710  
[sales@afc-holcroft.com](mailto:sales@afc-holcroft.com)

Pyro-Kleen is a registered trademark of AFC-Holcroft.  
 Bulletin No. PSH-0604