

# **HARDLINE**<sup>®</sup> CP 600

## INDUSTRIAL HEAT TREATMENT SYSTEM



The HardLine Centerless Pusher (CP) is a hardening system specially designed for high-volume hardening of plain bars and shafts. Widely used by some of the world's most demanding manufacturers, the HardLine CP delivers the speed, reproducibility and ease-of-use needed when mass producing steel bars. Some of the HardLine CP's main benefits are:

### **High throughput**

Short heating and quenching cycles, quick loading/unloading systems, and tried-and-tested components work together to ensure high throughput rates.

### **Easy in-line integration**

The HardLine CP is, like all HardLine machines, ideal for integrating into existing or planned production lines.

### **Lower capital costs**

A single HardLine CP system can handle a wide spectrum of workpiece dimensions, reducing your need for dedicated machines.

### **Improved operator productivity**

Smart ergonomic design and easy-to-use control interfaces help maximize operator productivity.



PUTTING THE SMARTER  
HEAT TO SMARTER USE

\* \* The system shown is for illustrative purposes only.

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## PRODUCT FEATURES

### Advanced CNC controls

All HardLine CP systems feature an advanced CNC system. Functionality can be expanded by adding options such as network connections, printing protocols and database capabilities. All EFD Induction HardLine CP systems use absolute encoders, eliminating the time-consuming system referencing otherwise needed on start-up.

### Proven power supply

The HardLine CP is powered by an EFD Induction Sinac power source, which is available in parallel or serial compensated versions. A benchmark for energy efficiency, the Sinac features a diode rectifier with a constant power factor of 0.95 at all power levels. Also featured are an efficiency factor of 85-87% from input at the rectifier to output at the coil, and automatic load matching to help ensure full output power. A Sinac can also offer programmable multiple-frequency switching. This means the Sinac will automatically switch between frequencies in order to achieve differing heat penetration depths in a single workpiece.

### Best-in-class coils

The coils and tooling in HardLine CPs are custom-built for specific materials and applications. We also offer comprehensive after sales support to maximize coil lifetime.

### Range of options

The HardLine CP can be fitted with various options to meet different process requirements. Horizontally moving coils, for example, can be fitted for groove hardening and edge hardening with pre-heating. Different loading solutions are also available. And the system can be paired with an integrated or separate tempering station.



*Full automation means maximum productivity—an automatic loading magazine on a HardLine CP 600 system.*

## TECHNICAL DATA

### CP 600

Dimensions incl. loading magazine: 2,700 x 2,000 x 2,750 mm

With outlet conveyor: 4,400 x 2,000 x 2,750 mm

### Workpiece

Diameter: 6-30 mm

Length: 60-600 mm

### Cycle time

5 s, incl. loading, for  $\varnothing$  8 mm l. 70 mm

Stroke

Y-axis (horizontal pusher action)

Z-axis (lifting of pusher for faster loading)

### Power source

Sinac 25 (25 kW / 100-400 kHz)

### Sensors

Energy monitoring system

Quench medium flow meter

Sensor for correct loading from inlet magazine

Coil protection with ground fault detection plate

Rotation monitoring

Subject to modification

## APPLICATIONS AREAS

The HardLine CP is designed for high-throughput hardening of drive shafts, torsion bars, control rods, shock absorber piston rods, and armature and output shafts.