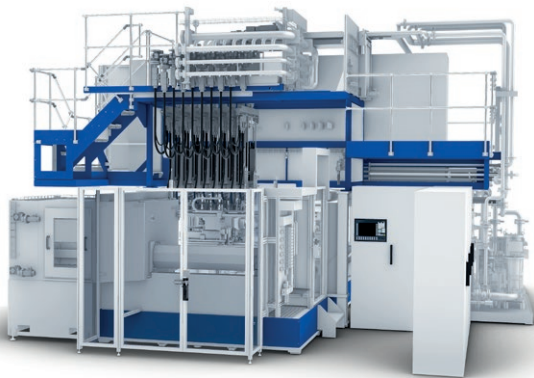


# FLEX 1.5

## Technical Data Sheet



<b>Type</b>	Multi-inductor hardening machine
<b>Number of hardening stations</b>	1 or 2 based on required cycle time
<b>Number of inductors</b>	Max. 9
<b>No. of inductors for end sections</b>	Max. 4
<b>Positioning of inductors</b>	NC drive
<b>Travel speed of inductors</b>	Max. 150 mm/s
<b>Positioning of inductors (pitch adjustment of inductors)</b>	Manual or NC drive
<b>Lowering/raising of inductors</b>	NC drive
<b>Lowering speed of inductors</b>	Max. 100 mm/s
<b>Raising speed of inductors</b>	Min. 150 mm/s
<b>Weight offset of inductors</b>	Pneumatic
<b>Adjustment of spindle units</b>	Manual or NC drive
<b>Rotary drive of component</b>	NC drive
<b>Rotation speed</b>	30-90 rpm
<b>Length compensation</b>	Spring system
<b>Standard MF output</b>	From 1 × 120 kW to 5 × 300 kW
<b>Control system</b>	Siemens 840D-SL Siemens S7-15xx PLC
<b>NC servo technology</b>	Siemens Sinamics S120/CU320
<b>HMI</b>	Siemens IPC427E/OP15-Black Siemens IPC477E
<b>Manual controller</b>	Siemens MPP483/MCP483/KP8
<b>Process monitoring</b>	Inverter central supply unit with monitoring in PLC or EME2020
<b>Monitoring of quenching medium</b>	Volume control with pump drive Flow monitoring with PLC or EME2020
<b>Safety technology</b>	Pilz safety relay or Siemens – Safety Integrated ET200SP/Profisafe
<b>Spray protection enclosure</b>	With safety door
<b>Steam extraction</b>	Integrated, centralised or decentralised, optionally with air filter
<b>Condensate recovery</b>	Integrated
<b>Dimensions (L × W × H)</b>	6,500 × 6,600 × 4,900 mm
<b>Total height</b>	4,900 mm
<b>Total weight</b>	Approx. 20 t

### Options

- › Tempering via residual heat
- › Process monitoring and data capture (EME)
- › Connection to automatic part handling systems
- › Washing machine with control via HM: separate
- › Water-to-water or water-to-air chiller
- › Total indicated runout (TIR): integrated or separate
- › Inductor recognition
- › Inductor database
- › Interfaces for data transfer
- › Hardening units for end sections
- › Automatic pitch setting
- › Automatic setting of clamping units
- › Detection system (e.g. for DMC)
- › Marking system (e.g. needle embosser)
- › Monitoring of quenching water quantity via EME
- › Maintenance reminder in machine control system
- › Monitoring of hardening result (lab equipment)

### Component handling

<b>Loading</b>	From front or from above
<b>Unloading</b>	From front or from above
<b>Loading height</b>	1,050 mm
<b>Loading/unloading</b>	e.g. gantry loader, indust. robot Optionally manual
<b>Manual loading (option)</b>	Shuttle system (Un)loading area secured via safety door and light barrier or 2 light barriers
<b>Manual unloading (option)</b>	Shuttle system (Un)loading area secured via safety door and light barrier or 2 light barriers

### Applications

<b>Crankshafts</b>	All types
<b>Max. length</b>	1,500 mm
<b>Max. swing diameter</b>	340 mm
<b>Max. weight</b>	250 kg
<b>No. of pin bearings</b>	Variable
<b>No. of main bearings</b>	Variable
<b>Cycle time</b>	Min. 60 s
<b>Machining orientation</b>	Horizontal
<b>Clamping technique</b>	Three-jaw chuck/tailstock centre
<b>Inductor design, main/pin bearing</b>	Half shell inductor
<b>Inductor design, end sections</b>	Half shell or ring inductor