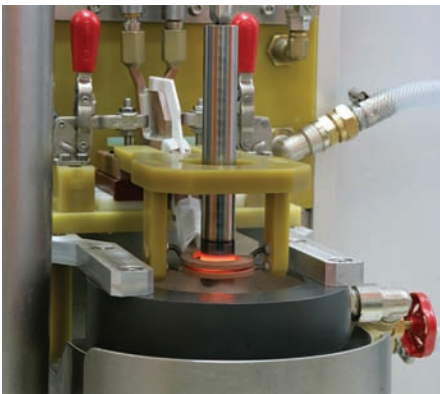


Compact vertical machine for induction applications

TVK-S350



ADVANTAGES

MAXIMUM FLEXIBILITY

- Wide workpieces range in the same machine.
- Adaptable to different applications as hardening, tempering, annealing and brazing.
- A huge number of options for meeting requirements as regards workpiece processing and production volumes.
- Different supply possibilities, ranging from just the machine (In-Box machine) to turnkey projects.

INVESTMENT OPTIMIZATION

- Standardized design engineering and cost-optimized manufacturing process.
- Extraordinary modularity to select only the options for the production needs.

EASY INSTALLATION, MAINTENANCE & OPERATION

- Minimum layout, easy transport and commissioning.
- Comfort and total access to all machine components.
- Proven standard components.
- Configuration of different part programs; process and installation monitoring.

TVK-S350 machine is the smallest version of the TVK family of compact vertical machines. The process zone, control components, power and cooling systems are combined in a unique product that minimized the required layout with enough space for a comfortable operation and maintenance.

Workpiece types

Maximum height 13.78 inches
 Maximum diameter 5.91 inches
 Maximum weight 22 lb.

Production range

The TVK-S350 machine is able to treat parts with maximum dimensions: 5.91 inches diameter, 13.78 inches length and 22 lb. weight. The machine is adaptable to different applications as hardening, tempering, annealing and brazing. The nominal power is 50 kW (10 kHz, 150 and 300 kHz) and 100 kW (10 kHz and 150 kHz).



The machine can be equipped up to two heating stations with manual or automatized loading; and diverse mechanical options for positioning and rotation of the workpiece; and inductor adjustment. There are many other options as the attached table shows.

Operation and maintenance

The structure that supports all the components is unique and made of aluminium and it is independent of the selected options with accessibility for the maintenance. The process zone is a welded steel bedframe that accommodates the mechanical system and separates the quenching zone from the elements that must be protected from wet conditions.

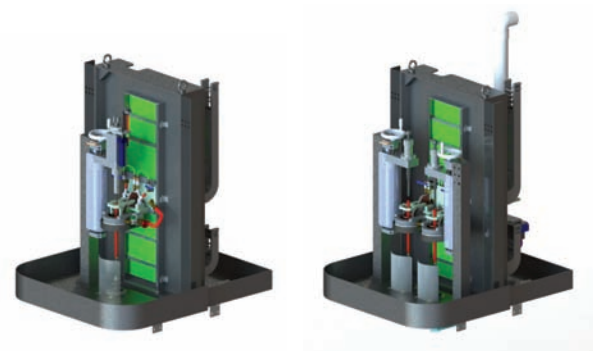
- **Workpiece load area** with light curtain in the basic configuration up to automatic doors.
- **Easy access** from sides for inspection and maintenance of cooling and quenching systems as well as electrical system and power supply
- **Rear access** to the hydraulic, pneumatic and lubrication panel. It improves the access to the cooling elements.



Multiple configurations

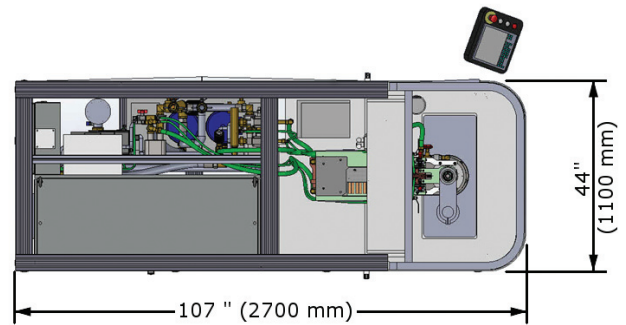
The machine design allows to select and to combine basic and optional modules performing from very simple and manual machines up to complete automatic configurations.











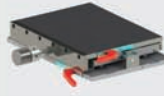


Single or double spindle configurations with manual or pneumatic tailstock.



Build your machine

Technical data



Features	Basic	Options			
Maximum workpiece dimensions	5.91 inches diameter, 13.78 inches length and 22 lb. weight				
Inductor movement on Z axis (Vertical)	Servo-driven, up to 9.84 inches/second				
Simultaneous treated workpieces	1 workpiece	2 workpieces			
Workpiece rotation (Z axis)	Fixed frequency (200 rpm) 	Variable frequency (150-350 rpm) 	Variable freq. servo-driven (0 - 1000 rpm) 		
Indexing table			With workpiece rotation 180°, 1+1 	With workpiece rotation 180°, 2+2 	With workpiece rotation 90°, 4 positions 
Tailstock Tailstock adjustment (Z axis)	Manual 	Pneumatic 	Motor-driven 		
Inductor adjustment (X, Y axis)	Manual 	Manual Cross-slide 	Servo-driven Cross-slide 	Electrical Cross-slide 	
Workpiece load/unload	Manual	Different options: pneumatic manipulator, robot, chain conveyor, others			
Type of control	Siemens PLC S7-1200	Siemens Sinamics S110, CU 305	CNC Fanuc	CNC Siemens	
Control functionalities	Installation monitoring Workpiece programs Process monitoring system	Datalogger Remote assistance Profinet field bus			
Control user interface	5" handheld PRO-FACE			Mobile panel Siemens MP177 PN	
Safety devices	Light curtain	Manual doors	Automatic doors		
Cooling systems	Passive power supply cooling	Booster pump	Non-condensing system		Active cooling system (chiller)
	Quench medium cooling 7.93 gal/min per heating station	Double filter	Medium quench filter control		
Main supply	3x380, 480 v 50 or 60 Hz				
Power supply	50SM20 50 kW max. power [10, 20] kHz	100SM20 100 kW max. power [10, 20] kHz	50SM150 50 kW max. power [30, 150] kHz	100SM150 100 kW max. power [30, 150] kHz	50SH300 50 kW max. power [150, 300] kHz
Other options	Fixtures, inductor and application development Collecting tray Mist collecting system				

GH scope of supply

Depending on the requirements and capabilities of the customer, the scope of supply can be:

1. "In-box machine". The supply is only the TVK-S350 machine with the selected power supply and cooling systems by the customer.
2. Turnkey solution. From the customer's workpieces treatment and production requirements, GH designs and manufactures the proper system offering the services for a successful machine setting up in the customer facilities.

A solution to meet each particular need

In-Box machine or turnkey project

Customer Services

Advising Services

Application development service, computer heating simulation and laboratory tests for evaluating induction application technical viability and developing specific processes.



Care Services

Installing, commissioning, on-site support, training and spares and repairs and maintaining the system during its whole production life.



Inductor Shop

Traditional inductor

Design, manufacturing and repairing of copper inductor; and easy-change systems for the inductors.



Manufactured coil by an advanced process

Exclusive coil manufacturing process that allows extremely complex designs without weldings and maximum repeatability.



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