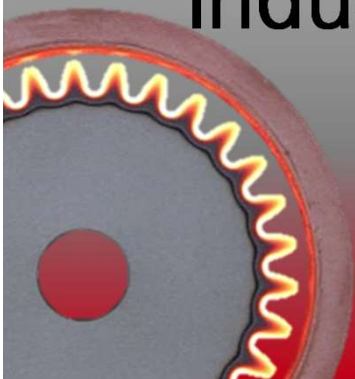


V1000 Hardening machine



Standardized + Flexible

UNIVERSAL
Induction hardening scanner
in **NEW** definition





Who we are IDEA

IDEA GmbH has been established in the industry for many years in the field of inductive heating.

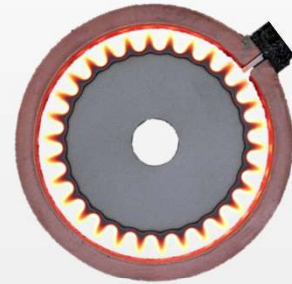
In addition to our core components, the frequency converters in the medium, high and dual frequency range which are produced in Boesingen in the Black Forest, we supply systems for inductive heat treatment from our subsidiary in Sinsheim.

Our team will be pleased to assist you in the design of your inductive application. The specific selection of the induction energy, process, system concept as well as tools and service are our focus.

With more than 1,100 delivered converters and systems, you will find IDEA to be a competent partner in inductive heat treatments.

We build converters for inductive heating with all necessary accessories from 2 to 3000 kW with medium and high frequency, in a spectrum from 3 to 500 kHz. The converters can be supplied with one or more outputs as well as with superimposed and switchable MF and HF as dual frequency converters. New is our matrix resonant circuit where up to 8 capacitor banks and 256 frequency ranges can be selected.

Coils and inductors in soldered and 3D printed design as well as showers are also available from IDEA.



In order to be able to offer innovative products, we are involved with partnership in various research and development projects.

Our customers come from the automotive industry, supplier industry, contract hardening shops, semi-finished products industry, aerospace, universities, etc.



V1000 Universal Hardening Machine

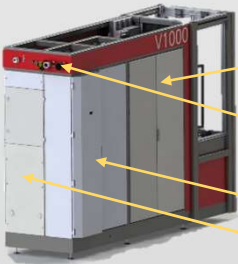
In the development of the IDEA V1000, we have taken UNIVERSAL not only literally but also as a guiding principle. High quality and operational reliability with cost-effective production is the measure of IDEA Systems. Our self-imposed specifications for the machine design are to cover a wide range of applications of induction heating and at the same time be cost-effective, flexible, retrofittable as well as easy to service and commission.



Machine characteristics

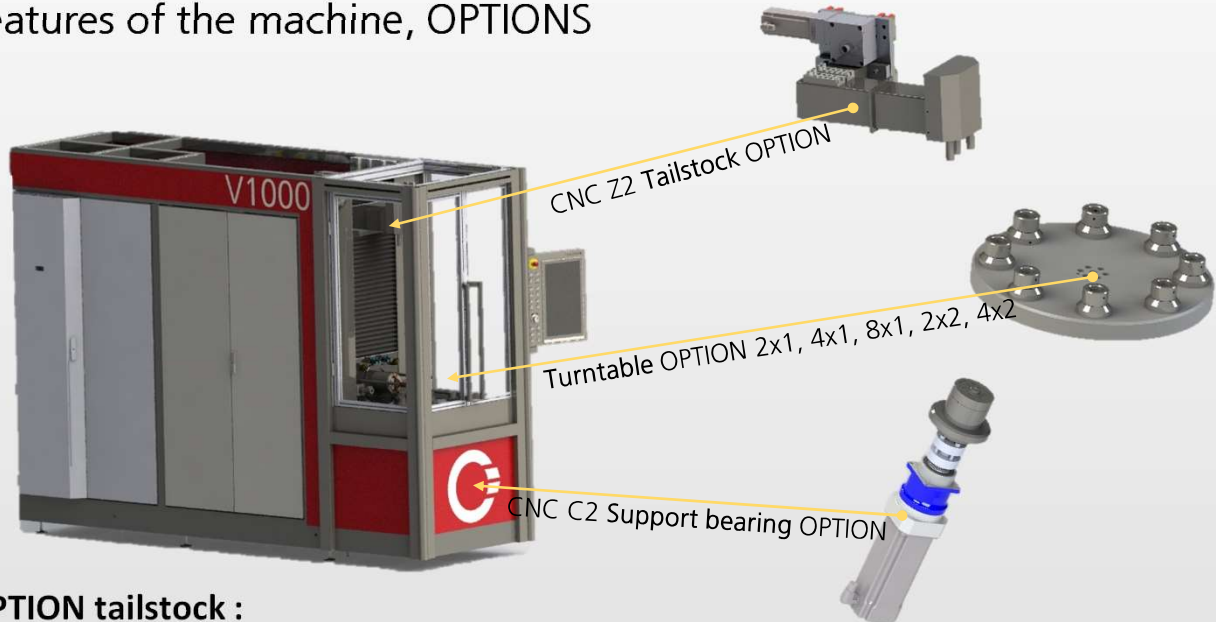
Basic machine ready for operation:

- CNC control Beckhoff, in the basic machine 6 axes prepared
- Fast retrofitting of options by preparation of all axes
- Options such as tailstock and rotary indexing table etc. see following pages
- Retrofitting of options also possible at the customer's site
- Control cabinet, converter and re-cooling units on one frame
- Compact dimensions, can be moved and positioned with forklift / crane
- After aligning the machine and connecting the media (energy, cooling water and air), the machine is ready for operation.
- Control cabinet conditioning is standard
- Converter 40kW high and 100kW medium frequency switchable (IDEA UIS 40/100) as standard on the machine for low and deeper heat-treatment and tempering function (option 80kW HF / 150kW MF)
- Status display integrated as RGB diode bar and programmable
- Working length basic machine up to 1.000mm
- Stainless materials in the wet area of the machine
- Bellows for the separation of the wet and dry areas of the machine
- Integrated recooling units for water and quenching medium
- Overflow weir in quench tank for water calming and solids separation
- Beckhoff CNC control with 21.5 inch full HD touch screen
- Process data storage and remote connection via Windows system, connection of machine via LAN prepared, possible via wireless LAN
- Inductor carrier CNC axis Z1 with manual horizontal adjustment for inductor positioning, horizontal inductor adjustment via CNC axis X1 and Y1 can be retrofitted at any time
- In Basic machine, 3 rotary spindles (CNC C1) for single and double workpiece operation and drive of the rotary table workpiece fixtures
- Workpiece positioning in the loading and working station is standard
- The fixture of the optional support bearing and rotary indexing table is prepared, the options can be retrofitted at any time
- Two separate quench lines with flow monitoring available
- High-pressure pump for the inductor circuit is standardly integrated





Features of the machine, OPTIONS



OPTION tailstock :

- counter center on separate CNC Z2 carrier
- Z2 carrier on the same rail guide as inductor carrier Z1, both Z-axes with rack and pinion drive, easy retrofitting
- Triple workpiece centers for holding up to three workpieces at the same time
- All counter tips are adjustable via pneumatic springs
- Actuating the centers pneumatically (with foot switch) or by CNC Z2 axis possible
- Rotation monitoring for all three counter tips
- An LED spotlight for work area illumination is integrated in the tailstock arm
- Cables, sensors and connector hubs are in the dry area in the machine (as far as possible)
- Double foot switch

OPTION Support bearings and rotary indexing table:

- CNC C2 support bearing axis with precision planetary gear
- CNC C2 support bearings can also be operated for large workpieces up to 500kg
- The C2 axis for support bearing and rotary indexing table operation is already integrated in the control system, a short and cost-effective retrofit is possible on site
- Rotary indexing table operation with 2x1 & 2x2 (180°), 8x1, 4x1 & 4x2 (90°) rotating fixtures
- The fixtures of the rotary indexing table are locked, thus a positioned insertion and removal and positioned heat treatment is possible
- Drive of the rotary fixtures on the indexing table via the 3 CNC C1 spindles of the basic machine, which can be converted to a rotary lifting quill
- With special fixtures on the rotary indexing table, it is also possible to lift the workpieces out of the fixtures and harden them completely lengthwise
- The machine can be changed at any time for operation without rotary indexing table
- The rotary mounts of the rotary indexing table and the standard spindles can also be equipped for three-jaw chuck operation with quick-action clamping ring
- The protection against tampering with the inductor and shower with use of the turntable is ensured by screens on the rotary indexing table and, if necessary, automated doors



Further options::

- Due to the design of the machine as a basic machine with an attached extension, many different machine variations are possible
- The machine can be extended by several stations. A linear or angular layout is possible.
- The CNC control allows up to 24 axes.
- Automation inside the machine or from outside via gantry loader or robot
- Workspace adaptation for options such as horizontal feed hardening, special hardening devices for large gears with single tooth hardening, etc.
- Preparation for hardening under inert gas

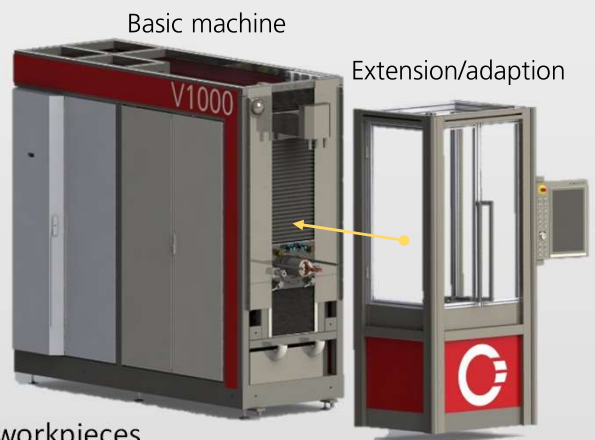
There are many more options for this machine. Give us a call!

V1000 Machine applications

Markets:

- Contract hardening shops
- Car
- Truck
- Engine
- Gears and gear-box
- Power generation and supply
- Construction machinery
- Aerospace
- Railroad
- Bearing industry
- Bike industry
- Agricultural equipment
- Mechanical engineering
- Textile industry
- Shipbuilding
- Lifting equipment
- Joining technology
- Wire industry
- Drive components
- Universities and institutes

for various workpieces
 driveline, transmission, engine...
 drivetrain, transmission, engine...
 starter rings, camshafts, rocker arms, valves, shafts,...
 gear wheels, hollow shafts, racks, sliding sleeves,...
 wind turbines, gear wheels, special parts high voltage,...
 drive shafts, cylinders, chain links, pins,...
 thread tempering , turbine blades, turbine wheels...
 engine parts, wagon bearings, bearing supports, axles,...
 large/small bearings, special bearings, rails, carriages,...
 hubs, shafts, electric motor parts, bottom brackets,...
 discs, parts for tractors, knives, tines, shafts,...
 ball cups and heads, shafts, gear wheels, piston rods,...
 spooling holders, rollers, knives, combs,...
 ship engine parts, special parts, valves, shafts, bolts...
 gear wheels, hooks, chains, pulleys,...
 screws, sleeves, bolts, rivets, anchors...
 wire coating, wire drawing,...
 ball screws and their nuts, piston rods,...
 testing machine for various applications





Machine data (data subject to change and approx. values) :

VT Pos.	Sub-assembly	Dimension	Value approx.	Unit
1001	Basic machine V1000	Width	1000	mm
1002	Basic machine V1000	Height	2500	mm
1003	Basic machine V1000	Length	3550	mm
1005	Basic machine weight with converter, recooling unit, rotary indexing table, tailstock, without media	Weight	2500	kg
1006	Basic machine with C 150 UIS converter, with recooling units, electrical connected load	Electric power	170	kW
1007	Basic machine with C 150 UIS converter, with recooling units, electrical connected load	Connected load	240	kVA
1008	Basic machine with C 150 UIS converter, with recooling units, electrical connected load	Main fuse	350	A
1009	Basic machine electrical mains voltage	Voltage	400V +- 10%	V
1010	Basic machine electrical mains frequency	Frequency	50	Hz
1011	Basic machine Compressed air supply System pressure	Pressure	6	bar
1012	Basic machine Compressed air supply air volume	Volume	100	L/min
1013	Basic machine cooling water supply volume	Volume	10	m³/h
1014	Basic machine cooling water supply pttressure	Pressure	4	bar
1015	Basic machine cooling water supply max. Temperature	Temperature	30	Grad °C
1016	Basic machine movement path Z1 Inductor carrier up/down without tailstock carrier	Movement path	1100	mm
1017	Basic machine movement path Z1 Inductor carrier up/down with tailstock carrier	Movement path	900	mm
1018	Basic machine movement path Y1 Inductor front/back	Movement path	250	mm
1019	Basic machine movement path X1 Inductor centering left/right	Movement path	+-15	mm
1020	Basic machine axis speeds all CNC axes max.	speed	300	mm/sec
1021	Basic machine positioning accuracy linear for all CNC axes min.	Positioning accuracy	0,05	mm
1022	Basic machine Workpiece weight on one rotary spindle max.	Weight	40	kg
1023	Basic machine speed rotary spindle CNC C1	Rotation speed	0-800	U/min
1024	Basic machine spindle fixture CNC C1	Diameter	20 H6	mm
1028	Basic machine maximum workpiece size (radius), free workpiece passage on rotary spindle	Radius workpiece	180	mm
1029	Basic machine control CNC	System supplier	Beckhoff	
1030	Basic machine control CNC number of axes	Axis name	Z1, C1	
1031	Basic machine control CNC number of axes prepared	Axis name	Z2, C2, X1, Y1	
1032	Basic machine control visualization (HMI)	Size	21,5" Full HD	
1033	Basic machine bus system	Bus	EtherCat, IO-Link	
1034	Basic machine frame colouring	Colour	7043 Traffic grey	RAL
1035	Basic machine control cabinets body and doors colouring	Colour	7035 Light grey	RAL
1036	Basic machine side doors colouring	Colour	7035 Light grey	RAL
1037	Basic machine cover plates colouring	Colour	3000 Fire red	RAL
1038	Basic machine tanks, trays, working room covers	Colour	brushed stainless steel	
1505	Basic machine movemet path Z2 tailstock carrier up/down	Movement path	900	mm
1506	Basic machine clamping / hardening length between centers	Length	900	mm
1507	Support bearing CNC C2	Load capacity	500	kg
1508	Support bearing CNC C2	Rotation speed	0-400	U/min
1509	Support bearing CNC C2	Position accuracy	0,017	Deg. °
1510	Support bearing maximum workpiece size (radius), free workpiece passage on support bearing	Radius workpiece	250	mm
1511	Turntable	Diameter	500	mm
1512	Turntable with tailstock max. workpiece length (Counter-tip and center length not considered)	Length	600	mm
1513	Turntable max. workpiece weight per station	Weight	5	kg
1514	Turntable max. workpiece diameter	Diameter	100	mm
1515	Turntable distance between fixtures for double spindle operation	Distance	153	mm
2001	Converter C 100 UIS high frequency (HF) continuous output power max., HF/MF switchable	Electric power	40	kW
2002	Converter C 100 UIS middle frequency (MF) continuous output power max., HF/MF switchable	Electric power	100	kW
2003	Converter C 150 UIS high frequency (HF) continuous output power max., HF/MF switchable	Electric power	80	kW
2004	Converter C 150 UIS middle frequency (MF) continuous output power max., HF/MF switchable	Electric power	150	kW
2005	Converter high frequency HF output	Frequency	50-500	kHz
2006	Converter middle frequency MF output	Frequency	6-50	kHz
2007	Earth fault control	Info	adjustable	
2008	Converter coaxial transformer Connection jaws Inductor (customer-specific adaptable 100x52mm, 60x42mm, ...)	Jaw-size	50x42	mm
2009	Converter control range	Range	1-100	%
5001	Cooling water recooling unit induction energy circuit	Temperature range	20-36	°C
5002	Cooling water recooling unit induction energy circuit	Water quality	see IDEA specification	
5003	Cooling water recooling unit induction energy tank quantity	Volume	100	Liter
5004	Cooling water recooling unit induction energy circuit high pressure	Pressure	12	bar
5501	Quenching medium circuit temperature	Temperature range	20-36	°C
5502	Quenching medium circuit total circulation volume	Volume	320	Liter
5503	Quenching medium circuit shower lines monitored	Pressure	2	Stück
5504	Quenching medium circuit shower volume monitored	Volume	60	L/min
5505	Quenching medium circuit shower pressure	Pressure	5,5	bar
5506	Quenching medium circuit filter	Fineness	200	µm



IDEA | SYSTEMS

Why choosing IDEA

- Many years of experience in the field of inductive heating
- Highly motivated team
- Fast service via remote connection to inverter and machine
- Cost-effective systems with high quality requirements and standards
- Sophisticated converters and machine concepts
- Short delivery times
- Converters, plants, processes and tools from one source
- Most modern converters, machine and control technology

The  IDEA for your success

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