

Company Introduction:



Shiyan Heatking Technology Co., Ltd., a high-tech enterprise specializing in the development, production, market and maintenance of induction heating equipment of high and medium frequency, has complete sets of equipment and senior technical experts in process design and experts designing the complete induction-type heat treatment equipment.

Our company is specialized in producing, manufacturing and marketing heat treatment equipment, mainly including: 1. IGBT transistor medium frequency and supersonic frequency integral power supplies; 2. KGPS system thyristor MF power supplies; 3. HKFL system soft water circulation systems; 4. HKSL Integrated cooling systems; 5. HK-ACR energy monitors; 6. HK system quenching transformers; 7. HK series universal and various non-standard CNC hardening machines: crankshaft hardening machines, gantry type one-shot hardening machines, slewing ring hardening machines, linear guide way quenching machines, roller quenching machines, shaft hardening machines and the like; 8. Special production line equipment for manufacturing pedrails and various production line equipment for non-standard products.

In the early nineties, our company developed high and medium frequency induction heating power supplies of three large series approximately one hundred varieties of the KGPS series thyristor MF power supply, HKTP series IGBT transistor medium frequency and supersonic power supply, HKSP series MOSFET field-effect transistor HF power supply, and the complete series products of HKVP series, HKVC series and HKHP series universal numerical control quenching machines, cooling circulation systems, energy monitors and the like. For years, the company had provided several hundreds sets of various induction heating complete equipment with excellent performances for many domestic super-size and large and medium-sized enterprises such as Dongfeng Automobile Company, Saic Group, China Yituo Group Co., Ltd., Shantui Construction Machinery Co.,Ltd. , Xuzhou Construction Machinery Science & Technology Co., Ltd. etc., and provided many sets of large-power supplies and induction heating complete equipment for joint venture enterprises, Taiwan enterprises, Japan-invested enterprises, German enterprises etc. If your products need to be heated by induction, Shiyan Heatking Technology Co., Ltd. will provide you with best solutions and excellent services.

Workshop Device Display:



Case Display:

与土耳其ERSEL公司洽谈业务



Two photographs showing a business meeting with the Turkish company ERSEL. The left photo shows three people sitting at a table discussing documents. The right photo shows a group of people standing together for a group photo.

三一集团 昆山生产基地 销轴淬火



A photograph of a large industrial shaft quenching machine in a factory setting.

德国工程师来我厂验收



Two photographs: the left one shows a German engineer inspecting a machine, and the right one shows the exterior of a factory building.

大连重工4米单齿淬机床



A photograph of a large industrial 4m single-tooth quenching machine.

三一集团 昆山生产基地 销套淬火



A photograph of a pin sleeve quenching machine in a factory.

出口泰国工厂设备



Two photographs showing industrial equipment and a factory interior, representing equipment exported to Thailand.

沈阳鼓风机集团公司
7米轴类淬火机床



A photograph of a 7m shaft quenching machine in a factory.

玉柴曲轴使用现场



A photograph of a crankshaft being used in a factory setting. A timestamp '2010/03/28 23:46' is visible at the bottom.

与美国ABP公司技术交流



Two photographs showing a technical exchange meeting with the American company ABP, including people at a table and a computer monitor.

三一集团 昆山生产基地 链轨节淬火



A photograph of a chain link quenching machine in a factory.

与外资企业技术交流



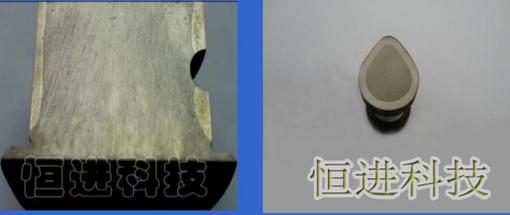
A photograph of a technical exchange meeting with a foreign company, showing people sitting around a table.

汽车球笼切样: 汽车轮毂切样:



Two photographs showing cross-sections of automotive parts: a ball joint and a wheel hub.

进排气轴淬火切样: 凸轮轴淬火切样:



Two photographs showing cross-sections of engine parts: an intake/exhaust shaft and a camshaft. The text '恒进科技' is visible at the bottom of each image.

引导轮淬火切样: 回转支撑沟道切样:



Two photographs showing cross-sections of mechanical parts: a guide wheel and a roller support groove.

The HKTP series transistor medium-frequency、 high-frequency and supersonic frequency induction heating power supply



It is a novel induction heating product produced by our company with the introduced German techniques. Adopts an IGBT transistor as the inversion device, the power supply can completely replace the electronic-tube type supersonic frequency power supply and the MF thyristor power supply, and can be fit for metal heat treatment, welding, melting, through heating and heat treatment in various industry domain.

THE CHARACTERISTICS ARE AS FOLLOWS

- High efficiency and energy saving The efficiency of the HKTP transistor power supply can reach more than 95%, can save the energy by more than 45% as compared with the electronic tube-type supersonic frequency power supply and by more than 15% as compared with the thyristor MF power supply and reduce the water consumption by about 50% as compared with other type power supplies. The power supply is high-efficiency and energy-saving, has low running cost, and belongs to an energy-saving and environment-friendly product.
- Wide frequency range The frequency range of the HKTP power supply can cover the medium frequency and the supersonic frequency, it can work under any frequency of the medium frequency and the supersonic frequency without any adjustment, and overcomes the shortcoming of poor adaptability of the traditional power, meet the requirements of various technologies, so it not only can fit for the large-scale automation operation, but also can fit for small-scale multi-variety production. Benefits created by multiple apparatuses can be created by this single equipment..
- Simple technological adjustment The power supply is provided with a frequency automatic scanning system, so that the matching with loading is simpler; the equipment can start oscillation within the whole working frequency range, so a user only needs to adjust the loading capacitor and transformer turn ratio when replaces spare parts.
- High starting success ratio The HKTP transistor power supply can be frequently started, and is safe and reliable; and the starting success ratio can reach 100%.
- Small volume The HKTP transistor power supply is 1/5 volume of an electronic tube, thereby saving the used space.
- long service life The HKTP transistor power supply has no limit on service life, and the maintenance cost is very low.
- Safe protection system The HKTP transistor power supply has about 20 reliable protection functions such as maximum and minimum protection of frequency, voltage, current and the like, monitoring during the working process of the equipment, water temperature monitoring and the like.
- simple and convenient operation and debug The power supply has foolproof operation and monitor modes, can remove various mis -operations and false actions. The user can self install and debug according to the instruction book without specialists from the manufacturer.

•long transmission distance The HKTP transistor power supply can be connected with load long-distance flexible cables, so that the user can flexibly select the installation sites, and the application range of the power supply is wider. The transmission distance can reach 20meters.

•Safe use the HKTP transistor power supply has no high voltage risk, so the operation and maintenance are safe.

•Convenient maintenance The total water channels and electricity adopt the connection of imported connectors, and the rectifier and inverter adopt modular structures. All the devices are left with enough repair spaces and are equipped with repair illuminators and sockets.

HKTP Series Transistor MF/SF Power Supply Technical Data

Type	Input voltage (V)	Output power (kW)	Oscillating frequency (KHz)	Cooling water low (L/min)	Cooling water pressure (Mpa)	Cooling water pressure (L×W×H)	weight (kg)
HKTP50kW/ 1-150kHz	3-380	50	1-150	30	0.2	850×850×2000	600
HKTP100kW /1-150kHz	3-380	100	1-150	70	0.2	850×850×2000	700
HKTP160kW /1-150kHz	3-380	160	1-150	90	0.2	850×850×2000	1000
HKTP200kW /1-150kHz	3-380	200	1-150	120	0.2	1700×850×2000	1050
HKTP250kW /1-150kHz	3-380	250	1-150	150	0.2	1700×850×2000	1100
HKTP350kW /1-100kHz	3-380	350	1-100	250	0.2	2550×850×2000	1450
HKTP400kW /1-100kHz	380-540	400	1-100	300	0.2	2550×850×2000	1550
HKTP500kW /1-100kHz	380-540	500	1-100	350	0.2	2550×850×2000	1650
HKTP800kW /1-100kHz	540-660	800	1-100	450	0.2	3400×850×2060	2000
HKTP1000k W/1-50kHz	540-660	1000	1-50	500	0.2	3400×850×2060	2500
HKTP1200k W/1-20kHz	540-660	1200	1-20	600	0.2	3400×850×2200	2800
HKTP1500k W/1-20kHz	660	1500	1-20	750	0.2	3400×850×2200	3200

Remark: The cooling water quantity adopt the power supply cabinet's water quantity, the transformer and the capacitor's cooling water quantity not include.



KGPS Series Thyristor Power Supply

Adopting Germany advanced technology, our company has developed thyristor medium frequency power supply into international leading induction heating equipment. It uses SCR(Silicon-controlled rectifier) as the main inverter devices, changes the three-phase AC power frequency to Single MF AC through rectification, smoothing, invention and other steps. The power supply can be fit for rough through heating, metal smelting and surface quenching, tempering, braze welding. Power range of this series products covers 100-3000KW, and frequency range 0.5-8KHz.

THE CHARACTERISTICS ARE AS FOLLOWS:

- The product adopts fully-integrated control circuits with the digital degree of more than 90%.
- The whole system adopts double closed-loop adjustment, can adopt constant voltage working mode and constant current working mode, and has the functions of overpressure protection, over-current protection, MF phase change protection, inversion failure protection, insufficient water pressure protection and the like.
- The equipment startup adopts the way of firstly discharging and then tracking natural frequency, thereby guaranteeing the 100% starting success.
- The equipment sequential logic adopts PLC control, the running state of the equipment can be found out through display at any time to provide failure indications.
- The inversion trigger system of the equipment adopts the constant counter pressure time control mode to guarantee the running of the power supply under high power factors.
- An inversion circuit is equipped with a special current-limiting inductor and a pulse trigger module to ensure the long-time reliability of the equipment.
- The cooling water pipeline of the equipment totally adopts the loose joint of brass water faucets, and the assembly and disassembly is convenient and rapid.
- An optional water temperature monitoring system can carry out the monitor and protection to the temperature of each water channel; and once the water is in over temperature, the equipment will automatically stop running.

KGPS Series Thyristor MF Power Supply Technical Data

Type	Input voltage (V)	Output power (kW)	Oscillating frequency (KHz)	Cooling water low (L/min)	Cooling water pressure (Mpa)	Cooling water pressure (L×W×H)	weight (kg)
KGPS160K W/1-8KHZ	3-380	160	1-8	100	0.2	850×850×2100	600
KGPS200K W/1-8KHZ	3-380	200	1-8	150	0.2	850×850×2100	700
KGPS250K W/1-8KHZ	3-380	250	1-8	180	0.2	850×850×2100	1000
KGPS400K W/1-8KHZ	3-380	400	1-8	350	0.2	1700×850×2100	1250
KGPS500K W/1-8KHZ	3-380	500	1-8	400	0.2	1700×850×2100	1300
KGPS800K W/1-6KHZ	3-380	750	1-6	500	0.2	2550×850×2100	1750
KGPS1000K W/1-6KHZ	3-540	1000	1-6	700	0.2	2550×850×2100	2000
KGPS1500K W/1-4KHZ	3-650	1500	1-4	1200	0.2	3400×850×2100	2500
KGPS2000K W/1-2.5KHZ	3-650	200	1-2.5	1600	0.2	3400×850×2100	3000

Remark: The cooling water quantity adopt the power supply cabinet's water quantity, the transformer and the capacitor's cooling water quantity not include.



4m gantry slewing bearing /single tooth hardening machine

Function:

- ① This machine suitable for slewing bearing series(annular)parts raceway、 bearing continuous scanning quenching.
- ② Rotating table adopts automatic clamping/centering structure,servo motor driven turbine pair to achieve precise indexing /rotary.
- ③ Induction up and down,front and back,right and left and workpiece rotary/indexing all adopts SIEMENS servo motor driven.
- ④ Inductor has the function of automatic alignment,you just need set the space between inductor and workpiece,each shaft to achieve the space between the inductor and the workpiece centering by automatic control system.
- ⑤ Adopt imported precision displacement sensor,to achieve the automatic tracking of automatic quenching in Engineering,ensure the space between inductor and workpiece identical.
- ⑥ Inductor,sprayer adopts water /electric quick change interface,change、 adjust only need a short time.
- ⑦ Annular workpiece raceway process can achieve 2 inductor heating at the same time(one is preheating,the other quenching);straight teeth or skew teeth processing can process 2 tooth at the same time.
- ⑧ Adopts SIEMENS 840D control system,all device processing parameters(frequency、 time、 flow、 speed、 temperature etc..)can according to the special picture to input,and storing a plurality of process.
- ⑨ The control system has the energy monitoring and recording function.

The machine technical Data:

Equipment model	Workpiece diameter (mm)	Workpiece height (mm)	Workpiece weight (kg)	Hardening speed(mm)
HKHC160	∅ 1600	200	2000	0-60
HKHC200	∅ 2000	200	2000	0-60
HKHC250	∅ 2500	250	3000	0-60
HKHC350	∅ 3500	250	4000	0-60
HKHC400	∅ 4000	300	5000	0-60
HKHC500	∅ 5000	300	5000	0-60
HKHC600	∅ 6000	350	6000	0-60
HKHC800	∅ 8000	350	8000	0-60

Main Customer:

Shanghai Shangdian; Dalian Hurui Heavy Industry Group; Maanshan Fangyuan slewing ring; SANY Heavy Industry Co.,Ltd;



Chain link hardening/tempering machine

Function:

- ①It suitable for engineering machinery chain link/master node quenching、tempering.
- ②The machine adopts horizontal structure of assembly line processing method, can achieve continuous automatic processing.
- ③The device loading adopts manipulator loading automatically.
- ④The new quenching transformer can effectively reduce the load loss.
- ⑤The device cooling water、quenching liquid temperature also automatical control.
- ⑥All the high-grade stainless steel panel package,toughened glass observation window,beautiful appearance and convenient repair and adjustment.
- ⑦Fault tolerant perfect protection function ,effectively improve the reliability, high tempo run equipment has the advantages of convenient operation, only one person can operate it.
- ⑧Control system has the function of energy monitoring, record.

The machine technical data:

Equipment model	Workpiece length (mm)	Workpiece Height (mm)	Workpiece weight(kg)	Processing time(s/couple)
HKHP20	200	120	20	20-26S/couple
HKHP30	350	150	30	25-35S/couple

Main Customer:

BERCO Shanghai、SANY Heavy Industry Co.,Ltd、SDLG、Shantui Construction Machinery co.,Ltd、Lonking (Jiangxi) Mechanical CO.,LTD



Double station wheel shaft hardening machine

Function:

- ① This series hardening machine are applied continuous scanning hardening/tempering.
- ② Inductor moving adopts servo motor driven.
- ③ The device loading adopts manipulator loading automatically.
- ④ The workpiece rotation adopts frequency conversion and speed control.
- ⑤ Full imported stainless ball screw.
- ⑥ Inductor and sprayer all adopts water and electric fast change interface,change or adjust only need a short time.
- ⑦ The new quenching transformer can effectively reduce the load loss.
- ⑧ The machine adopts SIEMENS S7200/300 control system,all processing parameters(time、flow、speed、temperature and so on)can input by a special picture,and also can save several technics.

The machine technical

Equipment model	Workpiece diameter(mm)	Workpiece height(mm)	Workpiece weight(kg)	Scanning speed(mm)
HKVC30	∅ 100	300	50	0-60
HKVC50	∅ 120	500	100	0-60
HKVC80	∅ 150	800	150	0-60
HKVC100	∅ 150	1000	200	0-60
HKVC120	∅ 200	1200	300	0-60

Main Customer:

Xugong Group、SANY Heavy Industry Co.,Ltd、SDLG



The pin sleeve hole /outwall hardening machine

This machine suitable for the parts in/outwall gantry or scanning quenching, tempering ,it adopts horizontal pipeline design structure,can line production with cold working device,this machine has some function as bellow:automatically loading and unloading,filter out the defective,quenching/tempering and so on.it adopts SIMENS/MITSUBISHI control system,it can achieve the device's total automatically producing,precess technology and the parameter can be saved.It has improvement of the electrical and mechanical protection.It adopts aluminum and stainless steel panel package,which has good appearance and durability.

The machine technical data:

Equipment model	Workpiece diameter(mm)	Workpiece length(mm)	Workpiece weight(kg)	Scanning speed(mm)
HKHP30	∅ 20--100	50--300	50	0-60

Main Customer:

SANY Heavy Industry Co.,Ltd、 Shandong Gaoqiang、 Shantui Construction

Machinery co.,Ltd、 SDLG



Pin shaft hardening/tempering machine

This machine suitable for the shaft parts gantry or scanning quenching, tempering ,it adopts horizontal pipeline design structure,can line production with cold working device,this machine has some function as bellow:automatically loading and unloading,filter out the defective products,quenching/tempering and so on.it adopts SIMENS/MITSUBISHI control system,it can achieve the device's total automatically producing,precess technology and the parameter can be saved.It has improvement of the electrical and mechanical protection.It adopts aluminum and stainless steel panel package,it has the characteristics of fast processing time, high degree of automation, saving labor and floor area.

The machine technical data:

Equipment model	Workpiece diameter(mm)	Workpiece length(mm)	Workpiece weight(kg)	Quenching speed(s/pc)
HKHP30	φ 20--80	100--300	60	10-20S/pc

Main Customer:

Xugong Group、 SANY Heavy Industry Co.,Ltd、 SDLG、 Shantui Construction Machinery co.,Ltd



Supporting wheel hardening/tempering machine

It is suitable for supporting wheel/riding wheel parts gantry quenching/tempering, and it adopts automatic loading and unloading, inductor moving, workpiece rotary, adopts 2 sets heating power supply, can achieve 2 parts of the supporting quenching and tempering at the same time. Inductor moving adopts servo motor driven, which adopts SIEMENS/MITSUBISHI control system, to achieve the device's auto control and parameter input and monitor, etc. It adopts aluminum and stainless steel panel package, it has the characteristics of fast processing time, high degree of automation, saving labor and floor area.

The machine technical data:

Equipment data	Workpiece diameter(mm)	Workpiece height(mm)	Workpiece weight(kg)	Quenching speed(s/pc)
HKHC30	∅ 100--300	50--350	100	60—90S/pc

Main Customer:

Shantui Construction Machinery co.,Ltd、 SANY Heavy Industry Co.,Ltd、 Valuepart(Italy)、 Jihua Engineering Machinery Co., Ltd



Supporting wheel /riding wheel waste heat hardening machine
(Zegapain 6-stations hardening machine)

Function:

- ①It's suitable for supporting wheel /riding wheel single-shot hardening.
- ②The machine workpiece which need to quenching loading and unloading all adopts Zegapain automatically.
- ③The machine has 6 quenching stations,workpiece rotary adopts AC servo motor driven.
- ④Sprayer and fixture all adopts quick change interface,change the workpiece in a short time.
- ⑤The machine has the function of screening the unqualified products.
- ⑥Quenching workpiece can monitor the processing parameters,record system,the data can save it or build EXCEL table to print out it.
- ⑦It has the function such as flow display and flow monitoring.
- ⑧It adopts SIEMENS control system,the device all processing parameters(time 、 flow、 speed、 temperature and so on)can input by a special picture,and also can save several technology.

The machine technical data:

Equipment model	Workpiece diameter(mm)	Workpiece height(mm)	Workpiece weight(kg)
HKHP10	Φ 200	100	20
HKHP20	Φ 250	200	40
HKHP30	Φ 250	300	40
HKHP40	Φ 250	400	60
HKHP50	Φ 300	500	80

Main Customer:

Shantui Construction Machinery co.,Ltd



HKVC500 CNC vertical shaft hardening machine

- Structural Form :vertical
- Max Rotation Diameter:800mm
- Quenching type:inductor moving
- Rotation speed:10-110r/min Adjustable continuously
- Max Length:5000mm
- loading speed:0-30mm/s Adjustable continuously
- Min Length:100mm
- Max Weight:5000kg

This series of hardening machine are applied in continuous hardening, concurrent hardening, sectional hardening and sectional concurrent hardening of various mechanical parts, such as gear, bush, shaft. And it's available for surface heat treatment of mechanical parts and surface induction hardening of heavy type shaft parts. It can be fit for single parts and wholesale parts working. The machine owns rational construction, complete-function, and be convenient for operating. And the machine guide way adopt the rectangle linear guide.

HKVC series CNC vertical hardening machine for shaft

This series hardening machines are applied to continuous scanning heating hardening, concurrent heating hardening, sectional scanning heating hardening and sectional concurrent heating hardening of various shaft parts. The machine is made up of a machine bed, a base, a work-piece rotating chuck, a machine head, a tailstock, ball screws, and a load moving guide and so on. They adopt CNC system or frequency and speed control system to realize the positioning and scanning control of the induction coil, meanwhile the link of electric control system and the heating power realizes the automatic hardening.

■CONFIGURATION

- Humanized design
- High strength welded bed
- Stainless steel (aerodynamic/manual, double/single) spring centre

- Adjustable turn ratio HKM series energy-saving hardening transformer
- Fully imported stainless ball screw
- Electrical interface hydraulic protection
- Rotary operation cabinet
- Work-piece clamping length electrical adjustment
- Acoustic/optical fault alarm
- Waterway adopts hydraulic quick coupler
- Machine structure: Welding/casting
- Rotation control mode: Inverter/stepping motor/AC servo motor
- Electrical control method: PLC/touch screen+PLC/802D/simple CNC/840D
- Transformer slipway adjustment: Hand wheel+ round guide/hand wheel+linear guide/motor+ linear guide
- Work-piece/transformer moving motor: Speed reduction motor/stepping motor/ AC servo motor
- Work-piece moving or induction coil moving guide rail: Steel plated guide way/rectangular linear guide
- Work station number: 1-3

HKVC Series CNC Vertical Hardening Machine Technical Data

Type/project	Work-piece length	Work-piece diameter	Work-piece weight (kg)	Scanning length	Scanning speed	External size mm(L*W*H)
HKVC250	2520	Φ500	1000	2500	0-50	1700x1800x3700
HKVC300	3020	Φ500	1000	3000		1700x1800x4200
HKVC400	4020	Φ500	3000	4000		1700x1800x5200
HKVC500	5020	Φ800	5000	5000		2400x2400x6500
HKVC600	6020	Φ800	8000	6000		2400x2400x7800

Main Customer:

Shenyang Jichuang Group、 Yantai Shougang、 Guangxi Liugong、 Taiyuan Guidao、 Dongfeng Motor Company LIMITED



HKVC Series Vertical Type Universal Hardening Machine

■FUNCTION

- With the functions of scanning hardening, concurrent hardening, sectional scanning and sectional concurrent hardening.
- Inductor/Work-piece moving type O Inductor position can be adjusted manually on X-Y axis.
- Electric adjustment of upper center position(clamping length)
- Stepless frequency adjustment of lower center rotation.
- CNC control, driven by AC servo motor, and the temperature, pressure and flow of cooling water and quenching are monitored.
- Upper center adopts manual clamping mechanism or pneumatic clamping mechanism;
- Form a complete set with IGBT power supply or thyristor medium-frequency power supply.

■CONFIGURATION

- Single-axis and single-station, double-axis and single-station, double-axis and double-axis;

■SCOPE OF APPLICATION

- Surface induction hardening and tempering of shaft parts, and dish parts.

HKVC Series Vertical Type Inductor moving Universal Hardening Machine

Type/project	Work-piece length (mm)	Work-piece diameter (mm)	Work-piece weight (kg)	Scanning length (mm)	Scanning speed (mm/s)	Exterior size mm(L*W*H)
HKVC50	520	Φ400	50	500	0-50	1500*1400*1800
HKVC100	1020	Φ400	150	1000		1700*1800*2100
HKVC120	1220	Φ400	150	1200		1700*1800*2300
HKVC150	1520	Φ400	300	1500		1700*1800*2700
HKVC200	2020	Φ500	500	2000		1700*1800*3200
HKVC250	2520	Φ500	1000	2500		1700*1800*3700
HKVC300	3020	Φ500	1000	3000		1700*1800*4200
HKVC400	4020	Φ500	3000	4000		1700*1800*5200
HKVC500	5020	Φ800	5000	5000		2400*2400*6500

■ SINGLE TOOTH HARDENING MACHINE CONFIGURATION

- Humanized design
 - High strength welded bed, stable structure, and adopt aging treatment.
 - Stainless steel (aerodynamic/manual, double/single) spring centre
 - Work-piece/induction coil moving guide: stainless steel guide/ rectangular linear guide
 - Work-piece/transformer moving motor: Speed reduction motor/stepping motor/ alternating current servo motor
 - Transformer slipway adjustment:Hand wheel+ round guide/hand wheel+ linear guide/motor+ linear guide
 - Adjustable tum ratio HKM series energy-saving quenching transformer
 - Rotation control mode:Inverter/stepping motor/ alternating current servo motor
 - Electrical interface hydraulic protection
 - Rotary operation cabinet
 - Electrical adjustment of work-piece clamping length
 - Acoustic/optical fault alarm
 - Waterway adopts hydraulic quick coupler
 - Machine body:Welding/casting
 - Electrical control method:PLC/touch screen+PLC/802D/simple CNC/840D
 - Work station number: 1-3
 - External package: stainless steel sliding door and door with aluminum bracket
- Automatic load and unload mechanism are optional according to different work-pieces.

Main Customer:

**ZHEJIANG HUAYE、YANTAI DONGXING、ZHENGZHOU YUTONG、
LiuGong Machinery 、SANY Heavy Industry Co.,Ltd、DONGFENG MOTOR
COMPANY LIMITED、NINGBO HAITIAN PRECISION**



HKCR Series Crankshaft Hardening Machine Technical Data

ITEM	Unit	Semi-automatic		Fully-Automatic		
		HKCR-A	HKCR-B	HKCR-1/5-18	HKCR-2/5-18	HKCR-3/5-18
Maximum swing diameter of crankshaft	mm	500	1000	300		
Maximum radius of crankshaft	mm	200	500	80		
Maximum length of crankshaft	mm	3000	10000	1200		
Maximum weight of crankshaft	Kg	5000	10000	150		
Power of heating power supply	Kw	750	1500	200x1	200x2	200x3
Frequency of heating power supply	KHz	4-15				
Work-pieces hardening type		Immersion	Spray			
Thin type crankshaft hardening transformer	set	1-3	3-7	5-15		
Crankshaft hardening inductor	set	1-3	3-7	5-15		
Heating induction coil cooling		High pressure strong cooling				
Cooling and internal circulation of heating power supply		Closed-type soft water cooling				
Internal circulation and cooling of quenching liquid		Closed-type PAG quenching liquid cooling				
External circulation cooling		Industrial chiller				
Energy monitoring system		optional				

CRANKSHAFT HARDENING MACHINE CONFIGURATION

•This equipment mainly includes a crankshaft hardening machine, an IGBT MF power supply, a quenching liquid circulation cooling system, purified water cooling circulation system (including a low-pressure cooling system and a 0.1-0.2Mpa, 0.6-0.8Mpa high-pressure cooling system), an electric control system, a chiller and the like. The equipment can carry out the shaft journal hardening and fillet hardening for various four-cylinder and six-cylinder crankshafts with the lengths of 500-1200mm, and the automatic monitoring protection of the

temperature, pressure and flow rate of quenching liquid and cooling water.

- The control system has the function of failure protection, indication and alarming.
- The driving mechanisms of the power chuck, tailstock and transformer lifting driving mechanism of the hardening machine are in air-operated type; the loader and un-loader adopts a reciprocating type double-position trolley driven by a motor to synchronously drive; and the lifting force for parts is from an air cylinder.
- The machine head and the machine tail: are tightly clamped by the power chuck of a rotation air cylinder and driven by a servo motor to rotate; the tailstock position can be electrically adjusted to fit for the crankshafts with different lengths.
- The crankshaft moving system: the servo motor and ball screw are adopted to drive the crankshaft transversely move; and the guide way adopts a rectangular linear guide.
- Load feeding: the ascending and descending of loads uses the air cylinder as the power
- The machine is equipped with six to fifteen sets of load systems (including a quenching transformer, a capacitor, an inductor and the like); each set of load systems can work independently by sequentially switching; the distance between transformers can be manually adjusted by 0-100mm; and the technological parameters of load working can be independently set.
- The holding of the crankshaft adopts a center hole and an end surface for positioning; the machine head and the tailstock adopts a pneumatic self-centering power chuck; the holding of the crank is automatically completed; the tailstock can automatically expand and contract according to the extension amount of the crankshaft; and the holding length is electrically adjusted by a screw.
- The control system of the machine adopts a Mitsubishi PLC, data acquisition and data processing units, a touch screen and the like; and the actions of the machine have the interlocking protection, and the technological parameters of the equipment (including voltage, current, heating time, cooling time and the like) can be displayed and set on the touch screen; and the Siemens 840D system can be selected as the electric control system.
- Besides the functions of overpressure protection, over-current protection, phase failure protection and water pressure failure protection, the power supply further has the functions of voltage-limit protection, current-limit protection, minimum protection, over-high inlet voltage protection, over-high starting current protection and water temperature protection. And it has interlocking protection with the matched machine, the power supply can't start until machine be prepared.
- The energy monitor can control the constant energy of each heating position. The maximum holding length of the equipment is 1200mm, the slewing diameter is 300mm, the swing radius of the crank is 80mm, and the holding weight is 150kg; and the requirements of shaft journal and fillet hardening can be met.

■OPERATION AND TECHNICAL

- It's easy to operate, in manual picture it's convenient to automatically position the axle diameter of crankshaft with induction coil, and adjustment is convenient and precise.
- In manual picture, it's possible to freely set power value of heating power supply, moving speed of slipway, and rotating speed of work-piece.
- The reference coordinate in processing can be freely set, and the system can supply real-time display for the slip table coordinate.

•The flexible process

1)Crankshaft parameter and set the processing steps: input the size of crankshaft and position coordinate of induction coil in technical parameter setting picture, and the input parameter owns password protection. The processing steps can be freely set according to induction coil configuration by technologists. In the past, the processing steps change must be operated by professional person by adjusting PLC or CNC program, now this equipment ensure flexibility of adjusting processing technic for customers, and ensure the overall adapting range of the crankshaft hardening machine.

2)The machine is universal, so it not need professional or assistance from manufacturer, the customer can change the processing work-piece conveniently.

3)The hardening parameter of every processing area of crankshaft can be set respectively: Rotating speed of work-piece, heating energy, heating time, cooling time, and heating power.

•Comprehensive control:

1)Through operating on touch screen, it can start or stall the quenching liquid, high-pressure cooling, and equipment cooling simultaneously, so the equipment owns performance of good visibility and convenient operation.

2)Operation picture is located in machine operation area, it's convenient for operation and observation.

3)The monitoring system can freely set energy of every processing area, it's convenient for technic adjustment and ensure the technical stability. Meanwhile, the record function of monitor can record processing technic, just as traceability.

Main Customer:

BAODING GREATWALL, GUANGXI YUCHAI, DEUTZ(Dalian) Engine Co., Limited



Vertical Type CRANKSHAFT Hardening Machine

Supply the double location of ball cage quenching machine tool USES and features:

Patterned constant speed universal joint in the channel with the valve stem of the quenching and tempering at once processing is complete.

Automatic positioning system.

Double CNC system, control separately for each location.

Tail rod quenching workshop mechanical system (includes inductor, transformer, capacitor)

Three disc type of raceway position system.

Inner raceway tempering workshop mechanical system (includes inductor, transformer, capacitor).

Petals quenching workshop mechanical system (includes inductor, transformer, capacitor)

Quenching liquid, cooling water, soften water) system.

CNC control, cooling water and the temperature of the quenching liquid pressure flow monitoring.

Within the scope of application: all kinds of constant velocity universal joint channel and the rod of quenching and tempering.

Patterned constant speed universal joint in quenching process, according to the different models to replace parts location positioning fixture, sensors, invoke the corresponding control program, set the corresponding process parameters, equipment automation can be realized after validation page quality qualified.

Main Customer:

**DALIAN WAZHOU、JIANGSU TAILONG、ZHEJIANG ODM
TRANSMISSION TECHNOLOGY CO.,LTD、CHONGQING XIEMA MACHANICAL
CRANKSHAFT**



Guide roller quenching machine tool

Machine adopts PLC + HMI control and have the energy monitoring and control system configuration, machine adopts the automatic loading system, realized the guide wheel clamping at a time to complete both the front and the quenching requirements; Machine configuration with international leading level of IGBT transistor power source, according to the workpiece size configuration power range of 600-800 kw, machine reasonable design, convenient operation and use, has been in the domestic well-known large enterprises into 12 sets, and stable operation for more than 5 years.

Processed products range is: $\varnothing 300 - \varnothing 1000$ mm.

Main Customer:

**SANY Heavy Industry Co.,Ltd、 SHANTUI OUYATUO、 JINING JIHUA、
LONKING (JIANG XI) MECHANICS CO.,LTD**



2m vertical quenching machine

This series of quenching machine tool suitable for various continuous scanning of shaft parts quenching, quenching, section scanning heating quenching, quenching at the same time. Machine tool lathe bed, base workpiece rotating chuck, the head of a bed, bed end, ball screw pair, load moving guide rail and so on, adopts CNC system or frequency adjust the positioning of the induction coil, system implementation and scan control, electric control system and the heating power on line implementation of quench of automation.

Performance characteristics:

Humanized design

High strength welding lathe bed, aging treatment, the structure stability

Stainless steel (gas/manual, double/single) spring top

All imports of stainless steel ball screw

Artifacts and mobile guide: induction coil, stainless steel guide rail/rectangular linear guide

Artifacts/transformer mobile motor, gear motor/step motor, ac servo motor

Transformer slider adjustment: handwheel + circle rail/wheel + + linear guide linear guide/motor

Adjustable HKM series energy-saving quenching transformer turns ratio

Rotation control mode: inverter/step motor, ac servo motor

Electric contact pressure protection

Rotary operation box

Workpiece clamping length electric adjustment

Sound/light fault alarm

Water use quick change connectors

Machine structure: welding/casting

Electric control mode: PLC touch screen + PLC / 802 c / 802 d/simple CNC

Outer packaging aluminum alloy stent/stainless steel sliding door

Location: 1-3

According to the different artifacts, can match the automatic up-down material device

Main Customer:

YANTAI DONGXING、ZHENGZHOU YUTONG、SANY Heavy Industry Co.,Ltd、DONGFENG MOTOR COMPANY LIMITED、DALIAN HUARUI HEAVY

INDUSTRY GROUP CO.,LTD**HKVC Single—shot Type Gantry Hardening Machine**

This machine fit for all gear hardening at one time, can greatly improve work efficiency. This type of machine adopts gantry type and rotating work table. The machine body is welded structure with aging treatment, has good ability in structural stability. The rotating work table uses AC servo to drive. The transformer movement almost uses rectangle linear guide. The machine can finish the whole tooth hardening at one time. The inductor can move in any direction, and AC servo control makes positioning precision.

■ SINGLE-SHOT TYPE HARDENING MACHINE

- Machine structure: gantry and horizontal rotating table
- rotating mode: rotating table rotates
- working mode: support horizontally
- Fixture: manual alignment (or automatically align, automatically clamp/unclamp)
- Hardening parameter :set on touch screen (Siemens 802C/802D/840Dare optional)
- Electric control: touch screen and PLC (Siemens 802C/802D/840Dare optional)
- Big/ small work-piece adjustment: adjust position of claw
- Display: hardening speed, cooling water temperature, quenching liquid temperature and the protection of the short circuit induced by work-piece and transformer.
- Driving motor: AC servo motor
- Axis station: 3
- Work station: 1 (Another option: one station hardening while another loading and unloading.)
- The consistency of the hardening quality: good

Single-shot Type Hardening Machine Technical Data

Project	Units	Equipment Model
		HKVP160
Maximum outer diameter of work-piece	mm	Φ1600
Maximum weight of work-piece	Kg	1500
Hardening height	mm	≤200
Inductor moving speed	mm/min	0-500
Power of heating power supply	KW	1200
Cooling water system of equipment	set	HKFL—500
Quenching liquid cooling and circulating system	set	HKFL-1500/(including back-liquid pump)
Machine power	KW	10.
Power supply capacity	KVA	13
External dimension (length * width * height)	mm	6500x2600x3500

Main Customer:

Luoyang Bearing Co.,Ltd、 SANY Heavy Industry Co.,Ltd、 Maanshan Fangyuan slewing ring、 Shantui Construction Machinery co.,Ltd、 SHENYANG JICHUANG



Horizontal Type Slewing Bearing Single tooth / Track Hardening Machine

This machine adopts the working mode of a transverse beam plus a rotating table, and the bed adopts plate welding and aging treatment. This machine has a good rigid performance. And the transformer can move left and right and up and down. The rotating is driven by an AC servo motor, and the guide way adopts a rectangular linear guide way. The rotating table can automatically separate teeth. Manual adjustment is unnecessary during hardening, and the equipment can automatically finish the hardening. This machine can be used to ring type work-piece for single tooth or track hardening.

■ SINGLE TOOTH HARDENING MACHINE CONFIGURATION

- Machine structure: Upright columns plus a horizontal rotating table (The planer type is optional)
- Rotation mode: separate teeth automatically in autorotation
- Working mode: Horizontal supporting type
- Fixture: manual alignment (option: automatically align, automatically clamp/unclamp)
- Hardening speed: set on touch screen (Siemens 802C/802D/840D optionally)
- Induction coil and working clearance: Positioning by a floating positioning device
- Electric control: Touch screen and PLC (Siemens 802C/802D/840D are optional)
- Big/small work-piece adjustment: Adjust transformer sliding table
- Display: hardening speed, cooling water temperature, quenching fluid temperature
- Driving motor: AC servo motor
- Number of axis: 3
- Work station: 1 (2 are optional: one station hardening while another loading and unloading.)
Can be choose double gear hardening at the same time, more efficiency.
- Adaptability: both adapt track hardening and single tooth local hardening
- Space between tracks: including two tracking modes—electronic track and mechanical track. In electronic track, the tracking space is within 0.1mm
- The consistency of the hardening quality: good

Type/Item	Unit	Equipment type				
		HKVP160	HKVP250	HKVP350	HKVP400	HKVP500
Maximum outer diameter of work-piece	mm	Φ1600	Φ2500	Φ3500	Φ4000	Φ5000
Minimum inner diameter of work-piece	mm	Φ200	Φ500	Φ800	Φ800	Φ1200
Maximum weight of work-piece	Kg	1000	1500	2000	5000	8000
Hardening height of work-piece	mm	Hardening surface height ≤400				
Hardening speed of work-piece	mm/min	0-500	0-500	0-500	0-500	0-500
Power of heating power supply	KW	100/160/200	100/160/200	100/160/200	100/160/200	100/160/200
Cooling water system of equipment	set	HKFL-250	HKFL-250	HKFL-250	HKFL-250	HKFL-250
Quenching liquid cooling and circulating system	set	HKFL-250/ (including back-liquid pump)				
Machine power	KW	8	10	15	20	25
Power supply capacity	KVA	10	13	20	25	30
External dimension (length * width * height)	mm	2800*2500*2400	3500*3500*2400	5500*4500*3500	8000*5000*4500	9000*6000*4500

Horizontal Type Slewing Bearing Single tooth Hardening Machine Technical Data

Main Customer:

SANY Heavy Industry Co.,Ltd、 TANTAO HAOYANG、 Maanshan Fangyuan slewing ring、 DALIAN HUARUI HEAVY INDUSTRY GROUP CO.,LTD、 TAIYUAN HEAVY MACHANICAL



SLEWING BEARING RACEWAY HARDENING MACHINE

The machine is obliquely vertical type, has an included angle of 70 degrees with the horizontal plane ; steel frame welded structure ; Work-pieces adopt the support way of four-point positioning with transverse beam structures, two roller wheels of the lower transverse beam are driving wheels and adopt the working mode of supported type; Positioning of slewing rings: the lower transverse beam of the machine has two identical carrier rollers which are synchronously driven through a servo motor at the right side of the transverse beam; and the two carrier rollers are driven to move by a carrier roller moving motor at the right side of the machine to meet the requirements of adjusting slewing rings with different diameters. The upper transverse beam and lower transverse beam can be electrically driven to move up and down to adjust the circle center of the slewing rings to be on the same horizontal line with hardening induction coils ;

The working mode of the hardening machine: an inductor is positioned at the outer side of a work-piece track when an outer raceway is machined, and is positioned at the inner side of a work-piece track when an inner raceway is machined; the right roller wheels on the upper transverse beam and lower transverse beam are respectively driven by one servo motor, and the splined shaft drive is adopted between the two roller wheels; the roller wheels drive the workpiece to rotate when in working, the work-piece is heated continuously, and the inductor enables a crisscross sliding table to automatically track to and fro, left and right by a PLC through a floating mechanism.Can be adopt SIMMENS 840D system to driven the AC servo motor to achieve the two-dimentional tracking.

RACEWAY HARDENING MACHINE CONFIGUR.ATION

- Machine structure: obliquely vertical type
- Rotation mode: Four-roller drive
- Working mode : Suspensible type or supported type
- Hardening speed: Touch screen/CNC setting
- Induction coil and working clearance: Bidirectional automatic tracking, and the tracking accuracy is 0.1mm, (It also can adopt the mechanical tracking method.)
- Electric control:Touch screen and PLC/802C/802D/840D (Select according to the

requirements of the users.)

- Big/small work-piece adjustment: Adjusting roller and transformer slipway
- Display: hardening speed, cooling water temperature, quenching fluid temperature, tracking deviation value.
- Heating power: thyristor /transistor
- Driving motor:Speed reduction motor/AC servo motor
- Number of shafts: 5 (small size is 3) Auto-feed,Auto-quit
- Work station: Double power supplies are offered,one is preheating,the other is quenching
- Machine adaptability: only fit for raceway hardening
- The consistency of the hardening quality: good

Slewing Bearing Track Hardening Machine technical data

Project	Units	Equipment Model							
		HKVP80	HKVP100	HKVP160	HKVP250	HKVP350	HKVP400	HKVP500	
Maximum outer diameter of work-piece	mm	Φ800	Φ1000	Φ1600	Φ2500	Φ3500	Φ4000	Φ5000	
Minimum inner diameter of work-piece	mm	Φ200	Φ300	Φ400	Φ600	Φ800	Φ1000	Φ1000	
Maximum weight of work-piece	Kg	1000	1000	2000	2500	2500	3000	5000	
Hardening speed of work-piece	mm/min	0-500	0-500	0-500	0-500	0-500	0-500	0-500	
Gap tracking precision between induction coil and hardening surface	mm	≤0.1	≤0.1	≤0.1	≤0.1	≤0.1	≤0.1	≤0.1	
Power of heating power supply	KW	100/160	100/160	100/160	100/160	100/160	100/160	100/160	
Cooling water system of equipment	set	HKFL-250							
Quenching liquid cooling and circulating system	set	HKFL-250/(including back-liquid pump)							
Machine power	KW	3.5	3.5	8	10	10	12	15	
Power supply capacity	KVA	5	5	10	13	13	15	20	

Main Customer:

SANY Heavy Industry Co.,Ltd、 Maanshan Fangyuan、 HUAFANG TECHNOLOGY、 Maanshan Huanqiu、 Xuzhou Rothe Erde Slewing Bearing Co.,Ltd、 Luoyang Bearing Co.,Ltd



Vertical Type Guide Hardening Machine

This machine is special for various types of machine bed guide induction hardening. Servo control technique is applied in axial movement. After work-piece being fixed on the worktable, the machine can accurately locate high frequency induction hardening area, then heating and cooling the hardening surface automatically. Two-dimensional Induction floating tracking mechanism ensures the constant space between inductor and two hardening sides of the guide.

■HKHC Series Guide Hardening Machine

This series of hardening machines are applied to continuous scanning heating hardening of machine body. The machine is made up of a machine bed, a base, an upright column, ball screws, and transformer slipway. They adopt CNC system or frequency and speed control system to realize the positioning and scanning control of the inductor, and the link between electric control system and the heating power to realize the automatic work-piece hardening.

■HKHC Series Guide Hardening Machine configuration

- Humanized design
- High strength welded bed
- Imported ball screw
- Bidirectional automatic floating mechanism,the space of inductor and hardening face are not change
- Adjustable turn ratio HKM series energy-saving hardening transformer
- Inductor moving guide: stainless steel guide / rectangular linear guide
- Transformer moving motor:Speed reduction motor/stepping motor/ AC servo motor
- Transformer slipway adjustment:Hand wheel+ round guide/hand wheel+ linear guide/motor+ linear guide
- Moving mode of working table: AC servo motor drives gear
- Electrical interface hydraulic protection
- Rotary operation cabinet
- Acoustic/optical fault alarm
- waterway adopts hydraulic quick coupler

- Machine structure: Welding/casting
- Electrical control method: PLC/touch screen+PLC/802C/802D/simple CNC
- Work station number: 1
- Cooling mode: Air cooling system
 - Water-water cooling system+water tower
 - Water-water cooling system+water chiller

HKHC Series Guide Hardening Machine Technical Data

Type/project	Work-piece length (mm)	Work-piece weight (kg)	Scanning length (mm)	Scanning speed (mm/s)	External dimension mm(L*W*H)
HKHC250	2500	5000	2600	0—50	4000*4600*2700
HKHC300	3000	5000	3100		4500*4600*2700
HKHC400	4000	10000	4100		5000*4600*2700
HKHC500	5000	15000	5100		5500*4600*2700
HKHC600	6000	15000	6100		6500*4600*2700
HKHC700	7000	15000	7100		8000*4600*2700
HKHC800	8000	20000	8100		9500*4600*2700
HKHC1000	10000	20500	10100		11000*6600*2700
HKHC1400	14000	30000	14100		16000*6600*2700

Main Customer:

SHENYANG JICHUANG、YICHANG CHANGJI MACHINE TECHNOLOGY CO.,LTD、NINGBO HAITIAN PRECISION、NINGXIA XINGRUI GREATWALL JICHUANG、QIQIHAR HEAVY CNC EQUIPMENT CO.,LTD、DALIAN JICHUANG GROUP



Multi-station automatic quenching machine tool

Functions and features:

The quenching machine tool series is suitable for all kinds of shaft parts quenching, particularly in view of the stepped shaft, axle shaft of quenching (such as the audi engine exhaust balance axis), quenching parts of different diameter at different effect on the location of the three stations can automatic processing at the same time, also can using simplex

auto or manual processing. Feeding, cutting, and location between the delivery done automatically by the stepping feeding device, without manual operation. Replace the varieties, only input the corresponding parameters, change into the corresponding sensors. Work status real-time monitoring and the processing parameters, processing parameters and the energy real-time recording, may at any time for future reference. Electronic control system and heating power on line communication realization of quenching process is fully automated.

Lathe bed by welding, after aging, good rigidity, stability and shock resistance.

Machine tool has the function of automatic up-down material loading or discharge, sensors' up-down material and equipment are completed automatically.

Sensors with quick change, machinery fast positioning structure, simple operation, replacing maintenance convenient and quick replacement just loosen the screw, plug in water flux sensors, electric flux and positioning.

Aluminum alloy pneumatic self-centering jaw. Replacement product oil-gas claw without manual adjustment, and ending with positive pressure gas inside air claw, ensure that water, and other miscellaneous pieces of dust into the air claw, ensure that air claw span.

Replacement of different products, the length direction of the two location need to adjust the top position, 3 Labour according to workpiece length, scale regulation power head. Mechanical adjustment fast, replacing products machinery has rapid adjusting mechanism, convenient and quick operation, simply select the corresponding electrical

All high-grade aluminum sheet enclosed, hinges, sliding door, toughened glass observation window; Modeling beautiful and easy, convenient maintenance.

Quenching machine tool load driven by servo motor, imported linear guide and precision ball screw drive, high repeat positioning accuracy.

Quenching liquid cooling system and the equipment cooling water temperature using automatic constant temperature control, water temperature can be set in a artificial digital set.

Adopt new energy-saving transformers, small volume high energy conversion efficiency, has the characteristics of water-saving, node.

Main Customer:

DALIAN MEITE JIECHENG



Double station Roller hardening/tempering machine

This machine suitable for textile machinery Roller rod quenching/tempering process, and adopts step feeding type to load and unload the workpiece, the device loading adopts manipulator loading automatically, it adopts SIMENS control system to achieve the device's process automatically, also the workpiece moving and rotary speed can digital set, inductor and sprayer all adopts water and electric fast change interface, it adopts aluminum and stainless steel panel package, it has the characteristics of fast processing time, quenching/tempering consistency is good.

The machine technical data:

Equipment model	Workpiece diameter(mm)	Workpiece length(mm)	Workpiece weight(kg)	Processing speed(s/pcs)
HKHP100	∅ 15—40	300--1000	10	30—40S/pcs

Main Customer:

SHANXI JINGWEI TEXTILE MACHINERY, ZHEJIANG TIANXI



INDUSTRY AIR CHILLER(CUBE TYPE)

Our chiller is special for cooling industry equipment. It takes heat away through water cycle, which can make equipment run stably and reduce fault rate and prolong equipment, s service life. And it owns the well outline and compact structure. Adopting the closed type cooling water loop, the chiller can not only supply needed cooling water with constant flow and temperature for industrial equipment, but can also choose cooling method according to climate. Meanwhile, it's environment-friendly, energy-saving, water consumption-saving and maintenance free. Thus, our chiller can widely used in the various industries such as refining, casting, heat treatment, chemistry, electricity, plastic, medicines, and so on.

The circulation in the chiller is full-closed, thus it can ensures induction heating equipment cooling well while saving energy in its highest possibility. This chiller completely solved the problems of traditional open circulating water cooling system, such as scaling, microbial growth, larger water consumption, large environmental effect, bad cooling efficiency, sensible to frost and complex maintaining. And owns the advantages of no scaling, no corrosion, no water consumption, free maintenance and anti-freezing. The fact shows that after choosing our air chiller, the equipment system will not scale or be corroded, the thyristor and capacitor will never be damaged in high temperature, and the resistivity of copper conductor will greatly decline because of the low cooling water temperature.

The importance of cooling water system of the induction heating equipment

When induction heating power supply working normally, the working current always reach hundreds and thousands of ampere, the devices as thyristor and capacitor will generate heat because of working loss. At that time, if the cooling is not timely or the cooling efficiency is low, the electric components will be damaged because their temperature dramatically rise to ultimate temperature, and the capacitor will suffer short circuit of thermal breakdown because of over heat. And the fact also proves that 90% of fault in induction heating equipment are caused by the problem of cooling water.

If choose well water, running water and river water to cool the induction heating equipment, the service life of equipment will be shortened by 30%-50%. The key element who case cooling water problem are water scale and electrical conductivity of water. Scale is caused by water hardness. The calcium and magnesium ion separate on the heating surface, which will lead to the overheat damage of electrical components because their heat can't be transferred into cooling water effectively. Another serious problem is from water electrical conductivity, because water in cooling system of induction heating system is charged, which lead to severe electrolysis and corruption due to high electrical conductivity. Thus the sediment left in pipe makes the water flow reduce and influence cooling, finally lead production stop because of overheat damage of electrical components.

If the water system problem need to be solved completely, the closed circulation must be adopted. Pour in the system with pure water, distilled water or water with some additive agent, meanwhile, reduce the temperature. Because the temperature greatly influences the electrical conductivity, but the temperature can't also be too low, if it lower than dew point temperature, the component surface will condense dew and lead to short circuit. So the most suitable water temperature is between 20°C-40°C。

Our chiller is special for cooling industry equipment, and we adopt various new technology. This chiller has conquered all the weak points of traditional cooling method of induction heating equipment and also kept the traditional advantages. Your equipment can run stably and reliably with this chiller.

■ HKSL closed circulate type water cooling system



This system adopt high performance plate type heat exchanger as main parts. Material of inner circulating water tank is stainless steel. The cooling medium can be the purify water, quench liquid, oil and so on. And the stainless steel pipe way is durable, the new type stainless steel joint has good seal performance, which is convenient to install or maintain.

One option of the external circulating system is composed of cooling tower, saving tank and the like. These equipments are usually be installed outside workshop, which can efficiently avoid the bad cooling performance caused by high inner temperature of workshop.

Another option of the external circulating system is industry cooling unit. This unit always be designed with process machine together to ensure its rational layout. The cooling system is composed with high-efficiency compressor, condenser and evaporator. It owns strong cooling performance, The water temperature can not be affected by the ambient temperature..

Automatic control system precisely controls the temperature of cooling medium. In special environment, if the medium need to be heated, the electrical heating function will be startup automatically, and stop when the temperature reaches the set value.

These two external circulating system both are optional system.

This system is small in volume, high in efficient, it doesn't need big land area and owns extensive use.

Quench Load And Accessories: Tank Circuit Compensation Capacitor



The domestic techniques all adopt the oil-immersed film capacitors, which will cause problems of overheating under high frequency (heating of capacitor shell, heating of lead terminal), and if it works in a long period, the capacitor will be damaged early. The foreign super-small volume capacitor recommended by our company will greatly increase the reliability of the machine, and meanwhile reduce the difficulty of field installation

and maintenance. If there is size limitation in the loaded installation site of the users, our company can package the hardening transformer and the capacitor together, which will not only reduce the demanded installing space and is convenient to connect lines, but also will reduce the line loss of the resonance tank circuit.

Technical parameters:

- Working Voltage: 650V
- Working Frequency: 10KHz-150KHz
- Capacity: 1000KVAR-2500KVAR

Hardening Inductor:



HK—ACR Energy Monitor



Considering the national condition that Chinese domestic power supply quality is bad, our company develops the energy monitor, which can ensure the hardening quality (especially when the hardening parts are single heating) when the power network voltage is fluctuating.

It monitors and controls the energy output from the medium frequency power supply by adopting the industrial control computer and the signal collecting system. When the equipment is working, it obtains the power after synthesizing the collected voltage and current signals through the system, and obtain the kilowatt second —energy, by integrating the heating time. The system can not only monitor whether the hardening parts obtain the needed energy, judge whether the parts are qualified or not, but also can feedback control medium power to have the quenching parts obtain the needed energy by setting the kilowatt second. So as to ensure that the equipment can get the qualified hardening quality under different working conditions.

The energy controller can also be operated by the standard keyboard, can separately set time, power or energy to carry out the feedback control and monitoring, and meanwhile display the heating curves and the related data.

Power Switcher



In order to improve the utilization ratio of the equipment and carry out the purpose of one power driving several hardening machines, our company develops a high-power switcher. The switcher overcomes the traditional shortcomings of easy to be burnt out, and really realizes that high power switching has no limitation on service time.

The switcher can be divided into the specifications of one-driving-two, one-driving-three, and one-driving-four and the like, which is customized to the needs of the customers.

HKM Series New Type Hardening Transformer



Hardening transformer is an important component of induction heating equipment. The HKM series MF and SF hardening transformer researched and designed by our company is developed from the 70' TZR transformer, now it can replace the traditional silicon steel sheet transformer. Our new type transformers have been used in automobiles, tractors, machines and other industry, and get users' welcome. Based on our 20

years experience in producing, applying and maintaining the transformers, the HKM ferrite MF transformer has owned wider working frequency and outstanding energy-saving efficiency, which make it become the replacement of traditional silicon steel sheet hardening transformer and original TZR MF transformer, and be fit for various MF and SF induction heating(hardening, welding and the like)

■THE CHARACTERISTICS ARE AS FOLLOWS

- The product is small in volume,, light in weight, low in electricity consumption and high in efficiency, and the electricity consumption is 30% or so lower than the traditional transformer.
- The product uses the ferrite magnetic materials to replace the silicon steel sheet to produce the magnetic circuit, and it throw off the complicated water cooling system, which makes the magnetic circuit effective area increase, the winding length be less (which can greatly reduce the primary turns by 1/2 or so), and reduces the copper consumption and short circuit impedance. Because the magnetic circuit is not provided with the cooling system, compared with the products of the same kinds, it can save water by 40% (magnetic circuit is not provided with cooling and primary turns greatly reduce).
- Because the product is small in volume and light in weight, its weight is about 1/2 of the products of the same kinds, and it is easy to change the type, convenient to adjust and maintain, advanced and stable in performance and reliable in use. And all these provide the necessary conditions for the miniaturization and automation of the quenching machine, and especially they will greatly promote the application of the scanning quenching of the quenching machine inductor.
- The product is simple in structure and beautiful in modeling.
- The turns ratio adjustment adopts the stainless hexagon socket head bolts, which makes it convenient and rapid to adjust, firm and reliable to link, as well as convenient and simple to use and so on..
- According to the request of the users, the waterway can provide the connection mode of the hydraulic quick coupler.
- According to the request of the users, our company can provide the horizontal and vertical installing type quenching transformer or have a special



transformer made to order of the users.

- It can suit continuous heating application.
- It is moisture and humidity resistant.

HKM Series New Type Hardening Transformer Technical Data

Type	working voltage (V)	capacity (KVA)	frequency (KHz)	external size (mm)	inflow pressure (Mpa)	weight (kg)
HKM-300	650-750	300	2-10/10-50/50-100	300x310x330	0.2-0.4	40
HKM-500	650-750	500	2-10/10-50/50-100	300x360x360	0.2-0.4	55
HKM-1000	650-750	1000	2-10/10-50/50-100	350x420x390	0.2-0.4	70
HKM-1500	650-750	1500	2-10/10-50/50-100	400x460x420	0.2-0.4	100
HKM-2000	650-750	2000	2-10/10-50/50-100	450x510x450	0.2-0.4	130
HKM-3150	650-750	3150	2-10/10-50/50-100	550x560x480	0.2-0.4	170
HKM-4000	650-750	4000	2-10/10-50/50-100	600x600x520	0.2-0.4	200
HKM- 000	650-750	5000	2-10/10-50/50-100	670x660x570	0.2-0.4	210
HKM-6000	650-750	6000	2-10/10-50/50-100	730x730x610	0.2-0.4	240
HKM-7000	650-750	7500	2-10/10-50/50-100	800x790x660	0.2-0.4	260
HKM-750	650-750	750	4-15	510x310x65	0.4-0.6	23

Company certificate:

