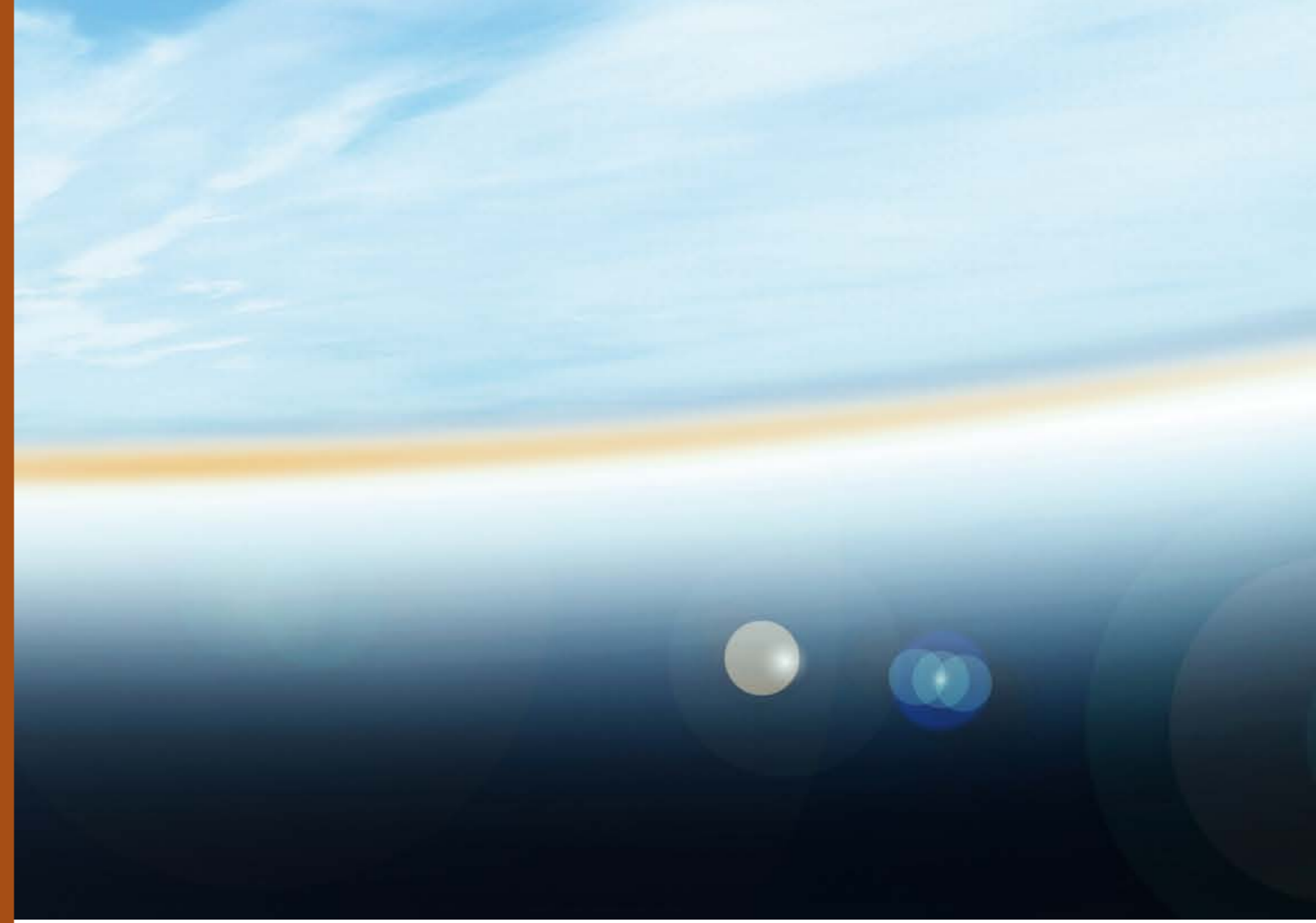


宁波金田电材有限公司  
NINGBO JINTIAN ELECTRIC MATERIAL CO.,LTD.

地址: 中国 浙江省 宁波市 江北区 慈城城西西路1号 315020  
ADD: No.1 ChengXi Road, Cicheng, Jiangbei, Ningbo, Zhejiang, China  
电话/Tel: 86-574-87597563 传真/Fax: 86-574-87574482  
[Http://www.jt-copper.com](http://www.jt-copper.com)

宁波金田电材有限公司  
NINGBO JINTIAN ELECTRIC MATERIAL CO.,LTD.



天天求变 永不自满  
勇于竞争 追求卓越

Seek change every day , never be self-satisfied,  
dare to compete , pursue excellence

真诚合作 同兴共荣

Operation concept: sincere corporation ,  
prospering and booming together





## 金田集团简介 ABOUT JINTIAN GROUP

宁波金田铜业（集团）股份有限公司是一家以铜冶炼加工为主的全国大型企业，创建于1986年，经过短短20多年的发展，形成了铜加工制造、高新材料、建筑材料、有色金属贸易产业并进及资本运营与实业经营良性互动的产业格局，成为中国最大规模的铜加工产业基地和全球最具竞争力和挑战力的铜加工企业之一。公司建立了国家级工程技术研发中心和博士后工作站。公司以“绿色金田”为环境目标，投入大量资金用于环境保护和生态建设，多次被评为省绿色企业（清洁生产先进企业），荣获“宁波市环境友好特别奖”，被列为“全国循环经济”试点单位、“全国工业旅游示范点”和全国首批7个“城市矿产”示范基地之一。

公司先后获得全国模范劳动关系和谐企业、中国优秀民营企业、全国“守合同，重信用”单位、浙江省百强企业、资信AAA级企业、浙商社会责任大奖、首届宁波市市长质量奖、全国实施卓越绩效模式先进企业等荣誉。

公司建有花园式的厂区，现代化的生产线，一流的管理水平和人才队伍，坚持科学发展观，走循环经济新型工业化和谐发展道路，引进德国、日本、美国等国家先进制造设备和检测仪器，拥有国际先进的生产线，雄厚的技术力量和齐全的检测设施。公司全面通过ISO9001:2008质量管理体系、ISO14001环境管理体系、OHSAS18001职业健康安全管理体系认证。

讲质量、守诚信、铸品牌。公司弘扬“天天求变、永不自满、勇于竞争、追求卓越”的金田精神，以市场为导向，强化内部管理，改革创新，不断进行结构调整并提升产品质量。公司致力于将金田铜线推向全世界，为我国的有色金属工业增光添彩。

公司本着“用户至上，质量第一”的宗旨，竭诚为海内外用户提供满意的产品和周到的服务。

欢迎海内外朋友前来参观、洽谈，携手合作，同兴共荣！

**Ningbo JINTIAN Copper (Group) Co., Ltd.**, founded in 1986, is a large enterprise specializing in copper processing. So far, the Group has structured an industrial pattern featuring a benign interaction of capital operation and industrial management to promote the healthy development of copper processing, new material, building material, metal trading and real estate. Being China's largest copper processing base and one of the world's most competitive, vigorous and dynamic copper processing enterprises. Jintian has set up a national-level enterprise technical center and a Post-Doctoral Research Center. Adhering to the environmental ideas of "Green JinTian", big funds had been invested in environmental protection and ecological construction. In return, Jintian is honored as Green Enterprise (Enterprise of clearing production) in Zhejiang province for several times, meanwhile, she is also regarded as a representative enterprise of energy-saving and ejection-decreasing, received the "Environmental-friendly special award of Ningbo", ranked in the line of experimental unit of "Chinese recycling economy", "National-level standardized place of industry". In 2010 she awarded as the first batch of "City mineral" demonstration base by the National Development and Reform Commission.

**JINTIAN** is honored as "Model harmonious enterprise in labor relationship" in China. Excellent Private Enterprises in China, one of the most respected enterprise in Zhejiang province, Enterprise of Observing Contract and Valuing Credit in China, Quality/Benefits-Oriented Enterprise in national foreign trade, top 100 enterprise in Zhejiang province, enterprise of grade AAA in capital standard, first batch of mayor quality award in Ningbo, enterprise as excellent performance made in China.

As one of the largest manufacturers of copper wire in China, we build up a garden-style factory and are equipped with advanced production equipments and excellent experienced staff. Sticking to scientific development view, the company takes the road of circulation economy and new industrialization and has imported advanced production and testing equipments from Germany and USA. Moreover, we attach great importance on strict product quality and customer centric solutions. As such, our quality control system is in conformance with ISO9001:2008, ISO14001, OHSAS18001 system on occupational health and safety management.

Emphasizing on quality, credit and brand, following the guideline of "Keep Changing, Never Satisfied, Brave in competition and Seek excellence", keeping reforming and innovation, adjusting products structure and improving the quality, we are striving hard to market our products all over the world.

We insist on the management idea of "customer primary, quality first", and warmly welcome all customers to visit our factory and cooperate with us.

## 金田电材简介 ABOUT JINTIAN ELECTRIC MATERIAL

宁波金田电材有限公司成立于1994年，是中国500强企业宁波金田铜业（集团）股份有限公司的全资子公司之一。占地5.8万平方米，固定资产5.8亿。年生产能力30万吨。拥有从美国南线公司全套引进的连铸连轧生产线，从德国尼霍夫公司引进的尼霍夫双头大拉机。公司专业生产各类电工圆铜线产品，产品主要应用于电磁线、高低压电缆、电线、电子、电气、通讯、网络、机械五金、建筑等产业。产品符合GB/T 3953—2009、GB/T 5585.1—2005、GB/T 2529—2012等国家标准，荣获“浙江省名牌产品”称号。

Established in 1994, **Jintian Electric Material Co., Ltd.** is a wholly owned sub-company of Jintian Group which is one of the 500 top enterprises in China, covers an area of 58000 square meters and over 580 million fixed assets as well as strong production with annual capacity of 300000 tons. We have imported the full continuous casting and rolling production line from the SOUTHWIRE of United States and the double large drawing machine from the NIEHOFF of Germany. We are specializing in all kinds of electrician round copper wire. Products mainly apply to electromagnetic wire, high and low voltage cable, electrical wiring, electronics, electrical, communications, networks, machinery hardware, and construction and so on. Products comply with relative national standards, such as GB/T 3953-2009, GB/T 5585.1-2005, GB/T 2529-2012 and etc. Furthermore, we have won the "China famous brand product" title.



# 15万吨连铸连轧生产线

## 150 THOUSAND TONS CASTING AND ROLLING PRODUCTION LINE

引进两条美国南方线材公司SCR3000连铸连轧生产线，每条生产线年生产能力达15万吨，每小时产能25吨，可连续性生产120多个小时不停机。该生产线由美国南方线材公司自1963年开始设计，通过几十年不断地改进，已成为世界上技术最成熟可靠的铜杆生产线之一，统计表明世界上50%的铜杆是采用南线SCR技术生产的，并受到了高标准国家的广泛青睐和采用。

We have introduced two SCR3000 continuous casting and rolling production lines from U.S. South Wire Company, with annual production capacity of 150 thousand tons and production capacity of 25 tons per hour for each line, which can produce more than 120 hours without stopping. This production line is designed by U.S. South Wire Company since 1963, through decades of continuous improvement, and it has become one of the world's most technologically advanced copper rod production lines. According to the statistics, it shows that 50% of the copper in the world is in the use of South Wire SCR technology and it proves to be widely favored and adopted by countries with high standards.

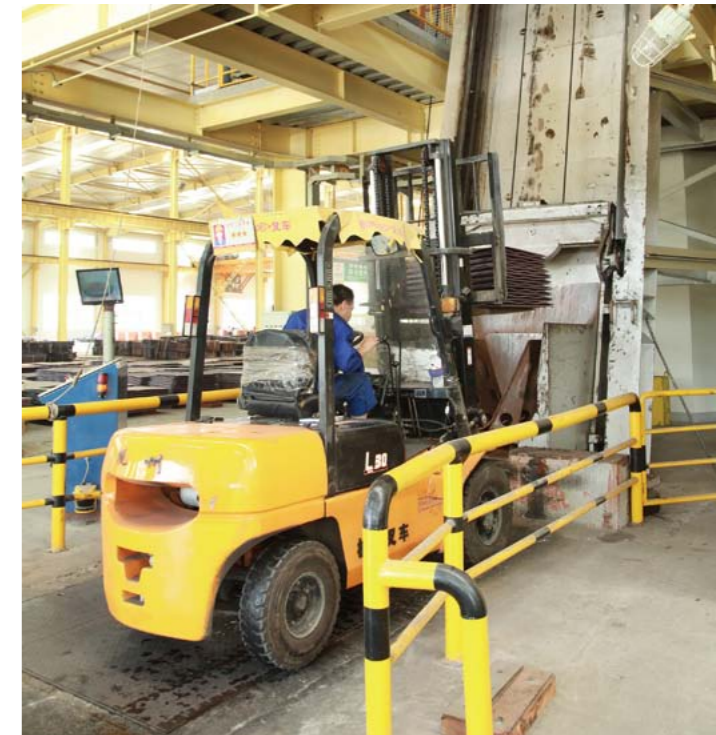


# 15万吨连铸连轧生产线

## 150 THOUSAND TONS CASTING AND ROLLING PRODUCTION LINE

该生产线用阴极铜为原料，经过加料系统、竖炉、保温炉、连铸连轧、无酸酸洗线以及收线等系统工艺，可生产出8-18mm光亮低氧铜杆。所生产的铜杆表面光亮无毛刺，性能质量优越，能满足拉丝厂家拉制细线、微细线、特种产品的技术要求。目前，主要生产Φ8mm低氧铜杆，广泛应用于换位导线、超高压电缆、漆包线、电线电缆、网络线、电子线及通讯线等行业。

The line uses the copper cathode as raw material, through feeding system, furnace, holding furnace, continuous casting and rolling, no acid wash lines and closing lines and so on, it can produce 8-18mm Bright oxygen copper rod. It has bright surface without burr, superior quality and can meet the drawing thin, fine lines, special technical requirements of the manufacturers. At present, the main production of Φ8mm oxygen copper rods are widely used in CTC, EHV cables, wire, cable, network cable, electronic wire and communications cable and so on.



# 15万吨连铸连轧生产线

## 150 THOUSAND TONS CASTING AND ROLLING PRODUCTION LINE

该生产线具有生产效率高、自动化程度密集且易于操作与维护等优点。主要特点:

- 1 竖炉容量大, 正常生产时炉内阴极铜约有60吨。开停机速度快, 从冷态开炉到出铜液仅需1小时, 而大约仅需3分钟就可以快速停止炉内铜料熔化。炉内没有熔池;
- 2 采用三排共19个烧嘴控制火力, 熔化前对阴极铜有较好的预热, 去除水分, 热效率利用高。烧嘴采用燃气-空气预混喷嘴设计, 火焰稳定, 并装有回火报警装置;
- 3 配套有一套一氧化碳分析仪和空燃比自动控制系统, 能精确、自动、快速控制竖炉、上下流槽、保温炉及中间包的空燃比, 从而精确控制铜液内的氧含量, 保证产品质量;
- 4 上流槽与保温炉之间设有渣箱, 可将杂质、氧化物等渣类去除, 避免进入保温炉, 同时下流槽和中间包内均设有挡渣砖, 可有效保证铜液洁净度;
- 5 配套有全自动金属浇注系统 (AMPS), 包括中间包塞棒流量控制单元、中间包在线重量及保温炉倾流量控制单元, 生产时通过铸造速度快慢来自动控制中间包流量, 通过中间包重量大小来自动调整保温炉倾流量大小;
- 6 轮式铸造方式。可精确控制铸造各区的冷却强度和温度, 获得理想的铸造结晶组织, 而且受重力影响在铜液凝固过程中可使更多的气体析出;
- 7 采用最成熟的十站机架轧机, 每个机架可单独交流变频驱动, 可以实现真正的无张力轧制;
- 8 一套在线探伤系统, 可实现铜杆的无损检测, 能方便工艺技术人员快速调整工艺和产品质量;
- 9 整条生产线搭载有一套工艺监控和数据探测系统, 可方便查询各个工艺点的实时数据和铜杆性能数据, 保证更精确稳定生产和始终如一的品质。

### 产品技术参数:

生产的Φ8mm低氧铜杆具有表面光亮无毛刺、拉细丝性能好、氧含量稳定等特点, 各项性能均高于国家标准GB/T3952-2008, 最小可拉制到0.08mm规格铜线。



The production line has the advantage of high production efficiency, intensive automation and easy operation and maintenance. Main features are as follows:

- 1 With the large capacity of the shaft furnace, there are about 60 tons of copper cathodes during the normal operation. with high off on speed, it only takes one hour from cold furnace to produce copper liquid and can quickly stop melting copper material in the furnace just with 3 minutes . There is no molten pool in the furnace.
- 2 Using three rows of 19 burner to control fire, before melting it has a good warm-up and remove of moisture with high thermal efficiency. Burners use gas - air mixture nozzle design with flame stability and is equipped with tempering alarm device.
- 3 With a set of carbon monoxide analyzers and automatic air-fuel ratio control system, it can automatically and accurately, quickly control furnace, upper and lower launder, holding furnace and air-fuel ratio of tundish, thereby it can accurately control the oxygen content of copper water and ensure product quality;
- 4 Providing slag vessel between upper launder and holder, it can remove impurities, oxides and others and avoid into the holder. With slag brick between lower launder and tundish, which can effectively ensure the cleanliness of the copper solution.
- 5 Supporting a fully automatic metal casting system (AMPS), including the tundish stopper rod flow control unit, tundish online weight and holding furnace dumping flow control unit, it can automatically control the tundish flow through the casting speed and adjust the holding furnace dumping flow through the tundish weight during operation.
- 6 Wheeled casting method. It can precisely control cooling intensity and temperature of casting areas and obtain the desired casting crystal structure, but with the influence of gravity during solidification of the copper solution it can get more gas precipitation.
- 7 Using the most sophisticated ten stands rolling mills, each stand can use AC drives alone that achieves real no-tension rolling;
- 8 It can achieve non-destructive testing of rods with an online flaw detectors system and it's easy for technicians to adjust processes and product quality quickly .
- 9 The whole production line is equipped with a set of monitoring and data acquisition systems, each process can easily check real-time data points and rods performance data and ensure more accurate and stable production and consistent quality.

### Technical Data:

Φ8mm oxygen copper rod has the feature of bright surface without burr, the good drawing performance and stable oxygen content. The performance is higher than the national standard GB/T3952-2008, minimum specifications can draw to 0.08mm copper wire.

产品性能 Product Performance		内控标准 Internal Control Standards	国家标准 National Standards
±10转 turns	铜刺 Copper spikes	无 None	—
	裂缝 Crack	合计3cm以下 Total less than 3cm	—
	剥离 Peel off	合计3cm以下 Total less than 3 cm	—
铜粉(mg) Copper powder		≤5mg	≤24mg
±25 转至扭断(转数) ±25 turns until torsion (turns)		≥30 没有不良喇叭口状或裂缝 Without any bell-shaped or cracks	≥20
含氧量(ppm) Oxygen content		200-250	≤500
探伤数 Flaw detectors No	大 (L)	0	—
	中 (M)	0	—
	小 (S)	<300	—
探铁数 Iron detectors No	大 (L)	0	—
	中 (M)	0	—
	小 (S)	0	—
伸长率(%) Elongation		≥40	≥35
线径 Diameter		8.0±0.2mm	8.0±0.4mm
电阻 Resistance		≤0.01724	≤0.01724
氧化层(埃) Oxide layers		<600	—
外观 Appearance		表面光滑, 无飞边、夹杂等缺陷 Smooth surface, no flash and inclusions and so on	表面光滑, 无飞边、夹杂等缺陷 Smooth surface, no flash and inclusions and so on
生产状况 Production condition	卡炉Stuck	无	—
	冷铜 Cold copper	无	—
	汤温稳定性 Stability of copper water	±5	—
	铸锭温度稳定性 Stability of ingot	±5	—
	浇注状况 Casting condition	液位无大幅度波动 Without significant fluctuations in the level	—
	其他Others	正常、稳定 Normal and Stable	—

# 尼霍夫拉丝生产线 NIEHOFF PRODUCTION LINE

宁波金田电材有限公司 NINGBO JINTIAN ELECTRIC MATERIAL CO.,LTD.



以美国南方线材公司SCR3000连铸连轧生产线生产的 $\Phi 8\text{mm}$ 低氧铜杆为原料，依托德国进口的尼霍夫拉丝机，专门为客户量身定制，适合中小拉的软、硬铜线，规格可从 $\Phi 1.8\text{mm}$ 直至 $\Phi 4.5\text{mm}$ ，收线方式为梅花收线或紧密收线，所生产的铜线表面光亮、无毛刺、无氧化，抗变色能力强，性能各项指标符合国家标准GB/T3953-2009。

This machine uses  $\Phi 8\text{mm}$  copper rod as raw materials, which is produced by SCR3000 continuous casting and rolling production line. With NIEHOFF drawing machine, we can customize for small and medium-sized hard and soft wires that range from  $\Phi 1.8\text{mm}$  to  $\Phi 4.5\text{mm}$ . Collection type has orbital coils and spooler coils. The copper wire produced by the machine has bright surface without burr, no oxidation and strong anti tarnishing capability. Besides, performance indicators are in line with national standards GB/T3953-2009.



# 尼霍夫拉丝生产线

## NIEHOFF PRODUCTION LINE

### 德国进口的尼霍夫拉丝机主要特点:

- 1 拉线机的机箱尼霍夫的拉线机是采用浇铸机箱，浇铸机箱坚固稳重，可以大大地降低振动，减少断线次数，改善导线表面质量；
- 2 快速换模系统和可编程逻辑控制器系统采用双电机驱动，可以实现快速换模系统。也就是说在改变出线直径时不需更换所有的模具，模具数量大大减少，操作大大简化。采用PLC先进的西门子控制技术，只需输入进线及出线直径，计算机即可回答生产中的各种参数，操作简便；
- 3 采用全浸没式拉线润滑油冷却。在拉线过程中，将拉丝鼓轮、拉丝模导线全部浸入到拉丝润滑油中，可以有效改善表面质量，导线冷却效果优良；
- 4 采用成熟可靠的交流退火装置，交流退火相对直流退火具有能耗低、导线表面质量高的特点。退火装置的每个退火轮及导轮均标准配置了独立的两片，这是为了避免双头生产时导线在电场作用下互相吸引造成碰擦而影响导线表面质量；
- 5 尼霍夫拉丝机的R 501 型卧式交流退火装置是能够生产出导线延伸率远超出德国DIN标准的成熟可靠的设备。目前已经广泛应用于国内外的电力电缆、漆包线和铜加工行业。特别是对超高压电缆生产尤为重要，因为高的延伸率直接影响到导线的导电率，并且非常有利于后道绞线工艺，使得绞线平服。与国产拉丝设备相比较，导线在退火后的导线延伸率相差5%，则导电率相差0.2%。在生产电缆时，这就意味着如果能够使得延伸率提高5%，则在相同导电率情况下可以节约0.2%的铜。这在长期生产时能够产生巨大的经济效益；
- 6 收线装置尼霍夫的拉线生产线采用二个独立的PLC（可编程逻辑控制器）。尼霍夫的S 630.D 型双盘收线装置是国际公认的可靠设备，导线切断和换盘操作运行稳定可靠。



材料类型 Material Types		低氧光亮铜线 (电工圆铜线) Low-oxygen bright wire (Electrician round copper wire)			
产品名称 Name of Commodity		TR2.6mm		TR 3mm	
产品状态Status		软态TR		软态TR	
包装方Packing		紧密收线 Spooler Coils	梅花收线 Orbital Coils	紧密收线 Spooler Coils	梅花收线 Orbital Coils
包装规格 Packing Specification		1000x1000x700	Φ1100x1750	1000x1000x700	Φ1100x1750
单重 each weight		≤2t	≤1.8t	≤2t	≤1.8t
标准产品 Standard product	公差 Tolerance	±0.026mm		±0.03mm	
	不圆度 Roundness	0.026mm		0.03mm	
	伸长度 Elongation	> 30%		> 30%	
	电阻率 Resistivity	≤0.017241		≤0.017241	
	表面质量 Surface quality	光洁、无毛刺 Smooth without fur		光洁、无毛刺 Smooth without fur	
材料类型 material types		低氧光亮铜线(电工圆铜线) Low-oxygen bright wire (Electrician round copper wire)			
产品名称 Name of Commodity		TY3mm			
产品状态 Status		硬态TY			
包装方式 Packing		梅花收线Orbital Coils			
包装规格 Packing Specification		Φ1100*1750			
单重 Each Weight		≤1.8t			
产品标准 Standard product	公差 Tolerance	±0.03mm			
	不圆度 Roundness	0.03mm			
	抗拉强度 Tensile Strength	≥389N/mm <sup>2</sup>			
	伸长度 Elongation	≥1%			
	电阻率 Resistivity	≤0.01777			
	表面质量 Surface Quality	光洁、无毛刺 Bright without fur			

### The main features of NIEHOFF machine:

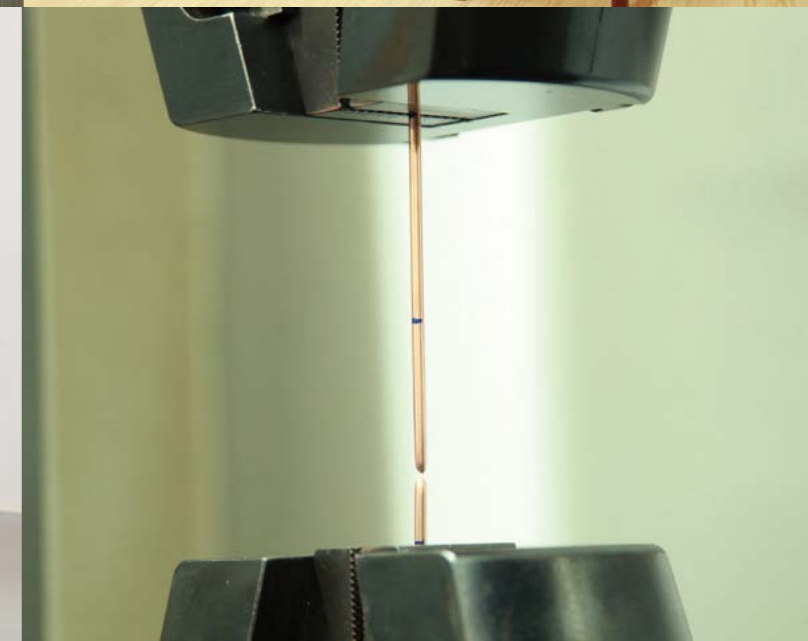
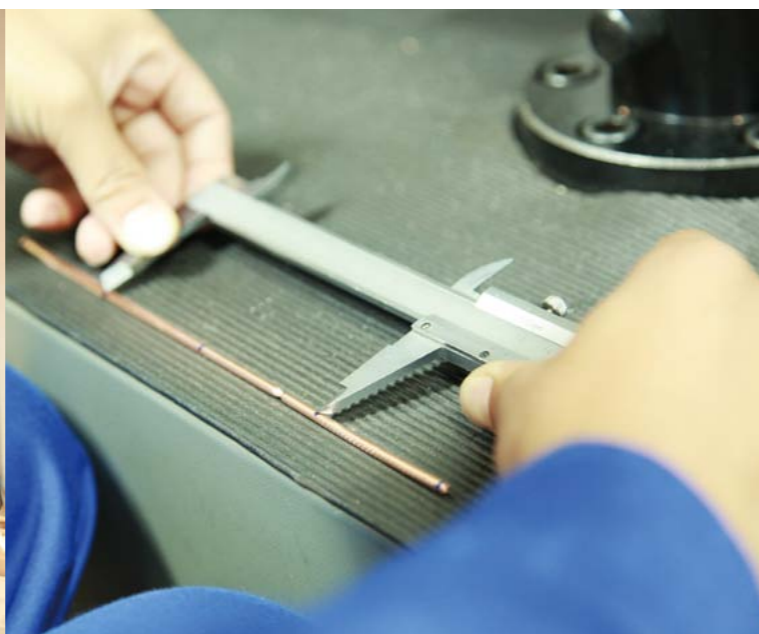
- 1 NIEHOFF drawing machine uses Casting chassis, which is solid and stable. It can greatly reduce vibration, dropped calls and improve the wire surface quality.
- 2 Quick die change systems and programmable logic controller system use a dual-motor drive, you can achieve quick mold change systems. That is changing the outlet diameter without the need to replace all of the dies. Mould quantity is greatly reduced, greatly simplifying the operation. Adopting advanced PLC Siemens control technology, simply enter into the inlet and outlet diameters, the computer can answer various parameters of production. It's easy to operate.
- 3 Adopt full immersion oil lubrication cooling. In the drawing process, the wire drawing drum, wire drawing die wire completely immersed into drawing lubricant, can effectively improve the surface quality of wire and cooling effect is excellent.
- 4 The AC annealing device is mature and reliable. Compared with DC annealing, AC annealing has the features of low energy consumption, high surface quality of wire. Each annealing device wheel and guide wheel are standard equipped with two independent pieces. This is to avoid influence wire surface quality by the friction under double wire production.
- 5 NIEHOFF R 501 type horizontal exchange annealing device is a mature and reliable equipment, which is able to produce wire elongation far more than Germany DIN standard . At present it has been widely used in power cable , enameled wire and copper processing industry at home and abroad. It is particularly important to EHV cable production, because the high elongation rate directly affects the electrical conductivity of the wires, and is beneficial to the subsequent wire technology. Compared with the domestic wire drawing equipment, if the lead wire's elongation is 5% after annealing, the conductive rate will be 0.2%. In the production of cable, it means that if you can make the elongation increased by 5%, then under the same conductivity cases can save 0.2% of copper. This can bring huge economic benefits in the long-term production.
- 6 For take-up device, NIEHOFF wire production line adopts two independent PLC (programmable controller). Type S630.D double disk take-up device is internationally recognized and reliable equipment, wire cutting and changing disk operation is stable and reliable.



# 质量管理 QUALITY MANAGEMENT

不断改进产品质量，推行质量第一理念。公司成立专业质检部门，建立专业检测中心，引进先进的检测设备，完善科学检测体系，为客户提供优质产品。

Constantly improve the quality of our products and adopt the concept of quality first. We set up a professional quality inspection department and professional examination center, bring in advanced testing equipment and perfect scientific detection system to provide customers with quality products.





## 售后服务 AFTER-SALE SERVICE

“为客户服务，对客户负责，让客户满意”是我们的服务宗旨。我们承诺：将按质、按量、按时完成所供产品的售后任务，满足客户需求。

客户在正常使用中出现性能质量问题时，在接到通知后，2小时内做出反应，并给予解决。如未能解决，会在24小时到达现场解决问题，至正常使用为止。

建立完整的客户档案，通过技术服务解决客户在产品使用过程中出现的问题，并通过定期电话回访服务，了解产品使用状况，提供技术咨询及指导。

" service for the customer, responsible for the customer,satisfy the customer" is our service tenet. We are committed to finish the after-sales task well and to meet customer demand.

If it has the quality & performance problems when customers in the normal use , after being notified, we will respond within 2 hours and give the solution. If it's fail to solve, we will be arriving in 24 hours to solve the problem until the normal use.

Establish a complete customer profiles, solve problems in the use through technical service and through the regular telephone return visit service to understand the product usage and provide technical advice and guidance.