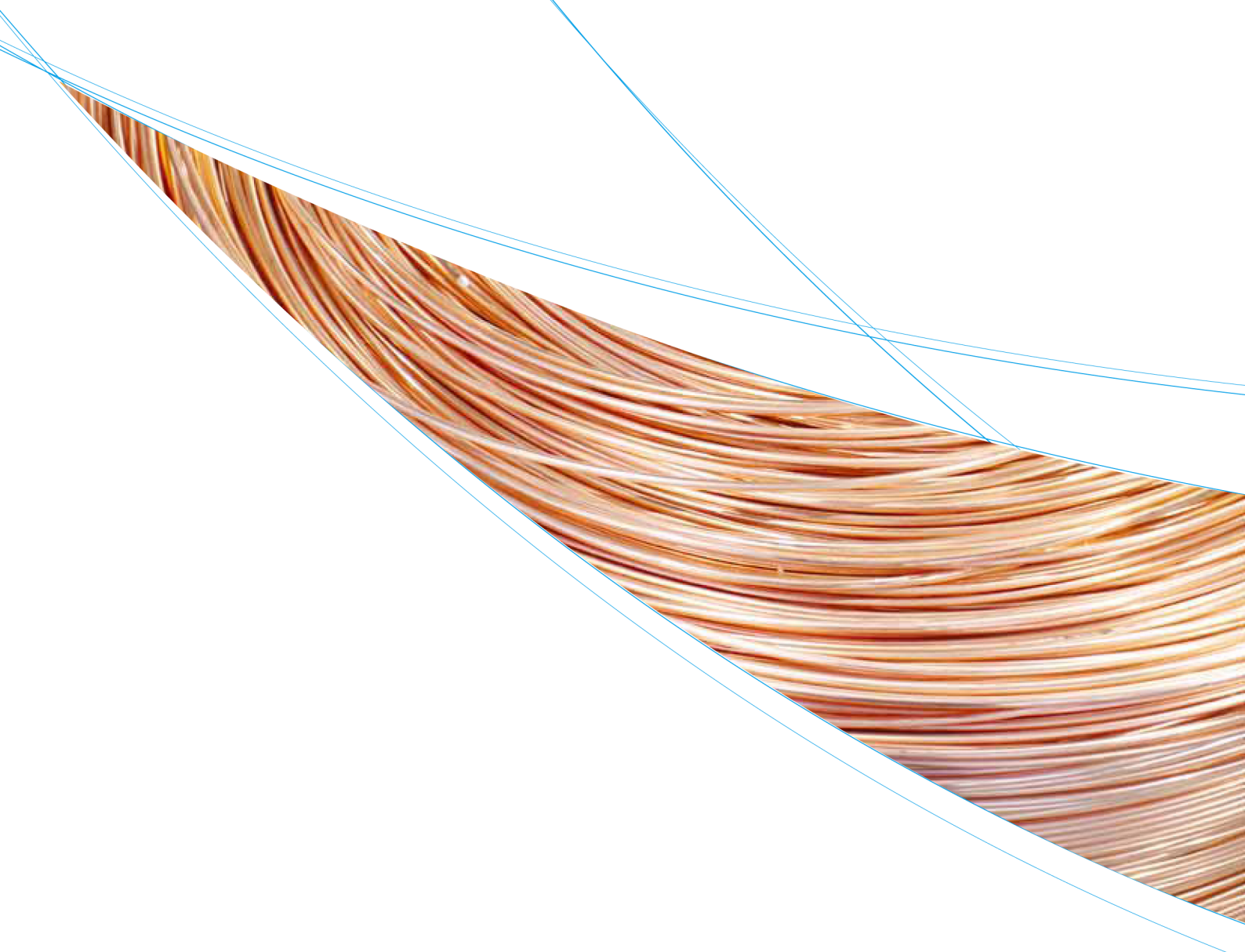


COPPER ROD



Global Leading Company

TAIHAN is committed to providing the best value for customers in the energy and communication industries.



TAIHAN's Copper Rod Plant in Dangjin

TAIHAN is treading a path that leads in the direction to the future of Energy, Information and Communication in Korea. TAIHAN will do its best efforts to become a leading global company that provides the best customer value based on the technical capability and confidence that it has built up so far. TAIHAN will devote all its passion and energy to creating the future where TAIHAN stands tall at the center of the Energy, Information and Communication sectors while implementing customer-first philosophy through constant challenge and innovation.



TAIHAN Copper Rod History

1980 Opened the Anyang plant (Capacity 25tons/hr, 150,000tons/yr)

1980 Started export (3companies in Japan and Taiwan)

1981 Began to produce rod for trolley wire

1991 Upgraded facilities (Capacity 40tons/hr, 240,000tons/yr)

1993 Certification of Quality Assurance System; ISO9001

2001 Certification of Environment System; ISO14001

2006 Upgraded facilities (Digital driver, full automation, twin fork system and computerized line)

2007 Total accumulated production: 4million tons

2008 Certification of Safety & Health Management System; ISO18001

2011 Relocated to Dangjin plant and Upgraded new facilities (Capacity 40tons/hr, 260,000tons/yr, added automatic wrapping system, saved energy, early warning system)

2012 Awarded SCR Achievement which is Recognition of 30Years of successful operation of a SCR System from Southwire Awarded SCR producing Achievement which produced 912 tons on April 26, 2012

Core Competitiveness

TAIHAN produces and supplies high-quality copper rods based on the continuously developing technologies related to electric wire and the experience in operating first class factory facilities. With the recent digitalization of production lines and system were upgraded, the level of quality and cost management has been further improved.

With more than half century know-how and advance manufacturing system, TAIHAN guarantees not only excellent quality of copper rod product but also satisfaction.

Full automation lines and the process control from central computer to ensure top quality copper rod

- The most suitable for high speed drawing wire without disconnection
- Superior surface quality with luster

The largest casting bar area (10.2 sq. in.)

- Minimized surface defects
- Minimized copper oxide

Variety of coiling operation (Orbital and Dense - laid type)

- Compact packing
- Small area for storage
- Suitable for wire drawing





SHAFT FURNACE

- Auto Control Combustion System
- Thermal and production efficiency
- Auto control of oxygen contents
- Multiple fuel capacity
- Safety factors



HOLDING FURNACE

- Secure melting temperature
- Auto Metal Pouring System (AMPA)



CASTING MACHINE

- Auto Control Casting Level
- The largest casting bar area(10.2 sq. in.)
- Minimized surface defects
- Homogeneous cooling
- Auto free tension control of cast bar



MORGAN NO TWIST MILL

- Flexibility for rolling various finished rod size
- 12 stands
- Increased rolling effect
- Superior surface quality
- Maximum diameter 25mm
- Low copper dust by the high pressure descaler system



Manufacturing Facilities

In 2011, TAIHAN Copper rod manufacturing system was upgraded with new technology. TAIHAN fully equipped all-line automated and computerized manufacturing system also nation's the largest casting cross section size

- High speed cleaning
- No copper dust
- Bright surface luster

PICKLING AND COATING LINE



- Full line automation
- Auto weighing of coil
- Compact packing
- Auto coil handling
- Orbital or Dense-laid

COILER

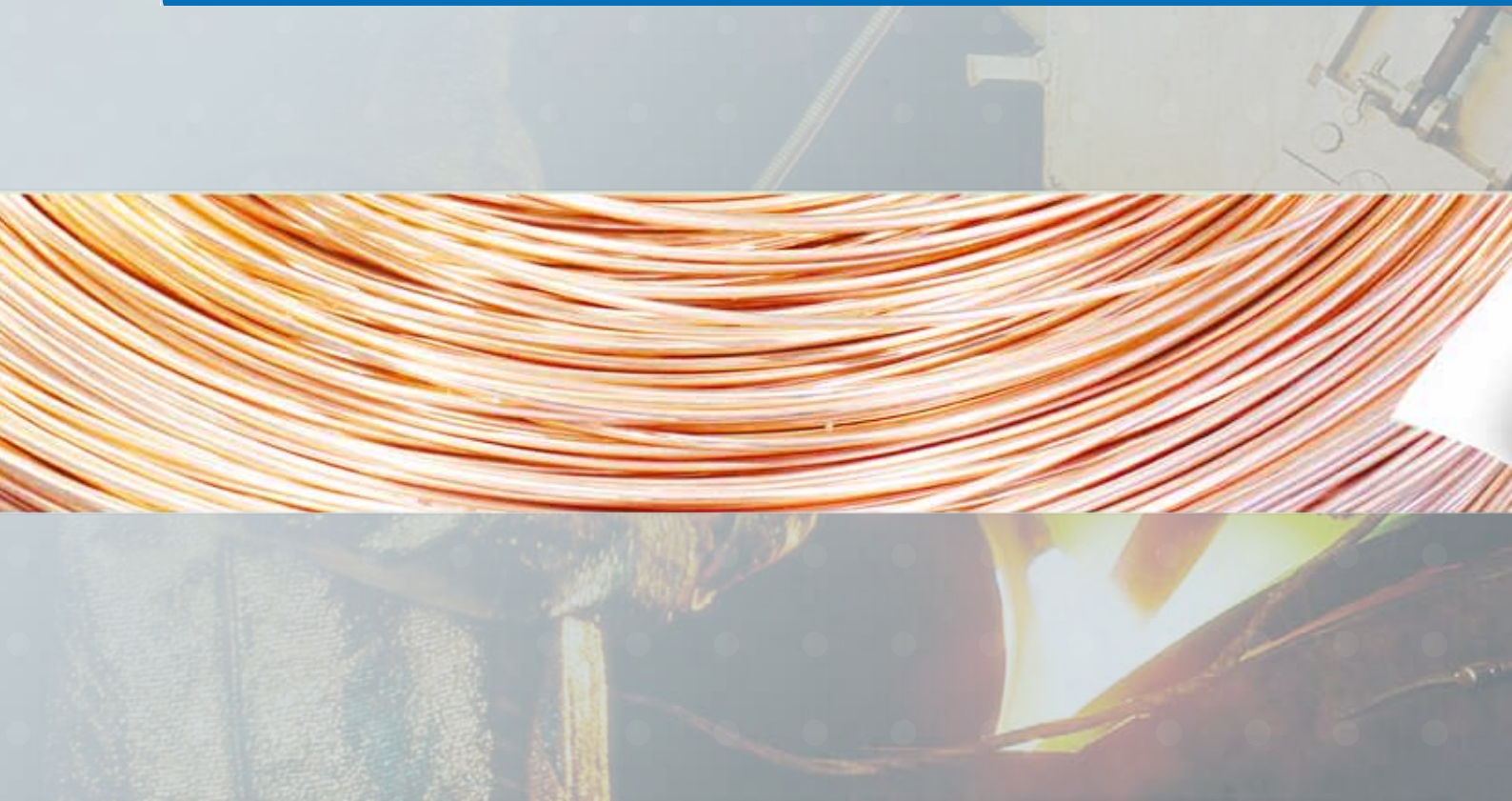
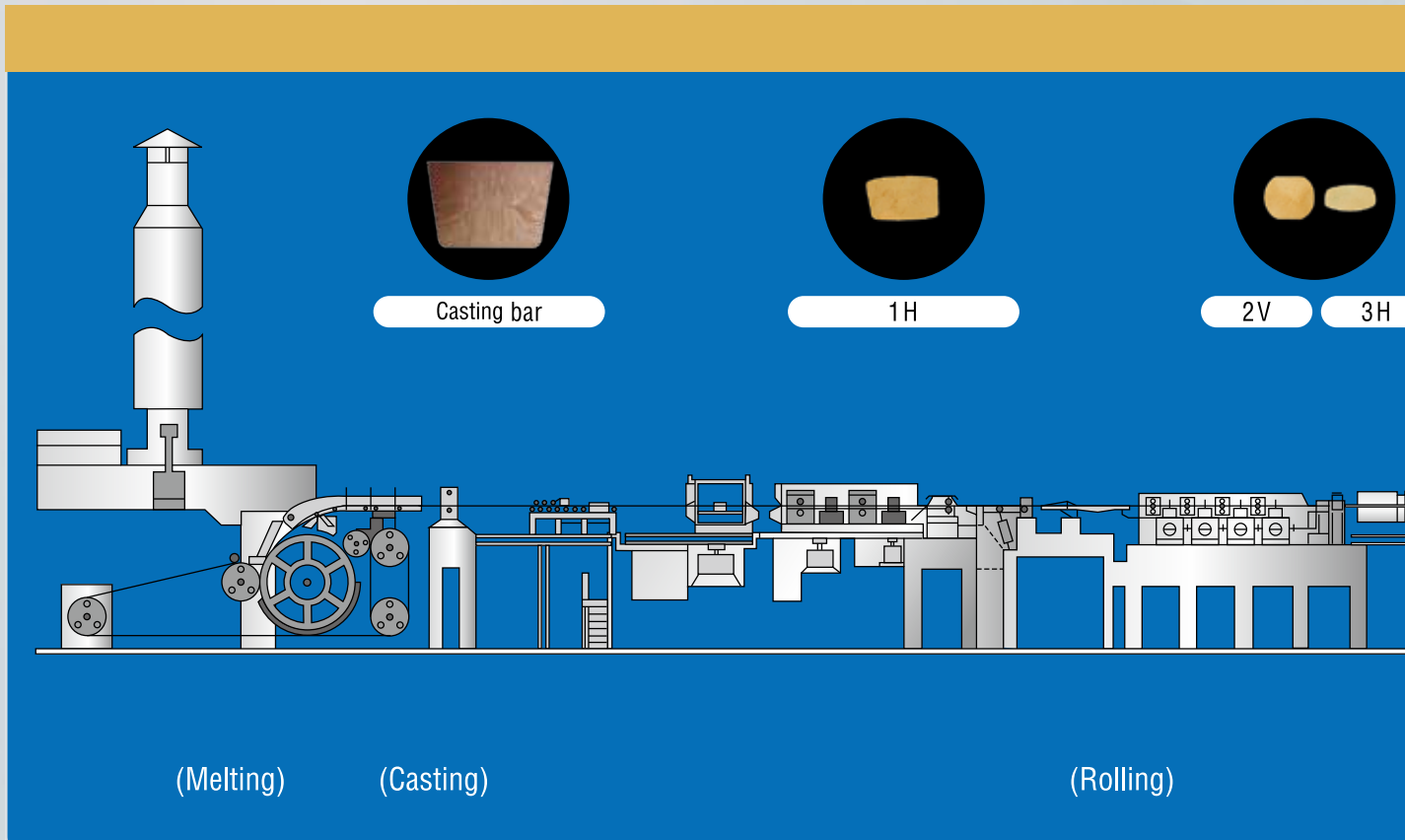


Automatic coil compacting & banding
Automatic top sheet feeder & intine.
Stretch wrap machine.

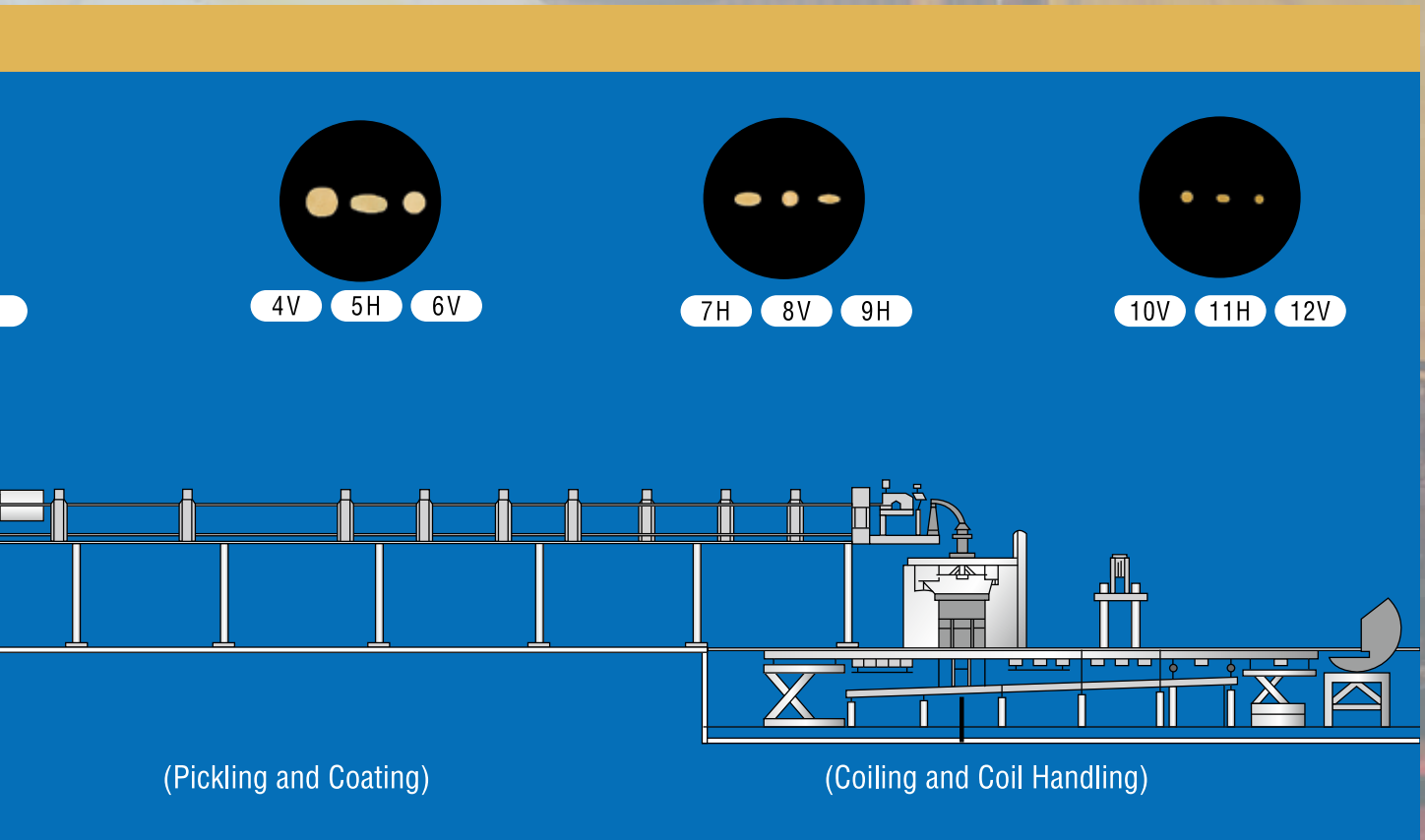
PACKING



Manufacturing Process



In 2011, TAIHAN Copper rod manufacturing system was upgraded with new technology. TAIHAN fully equipped all-line automated and computerized manufacturing system also nation's the largest casting cross section size

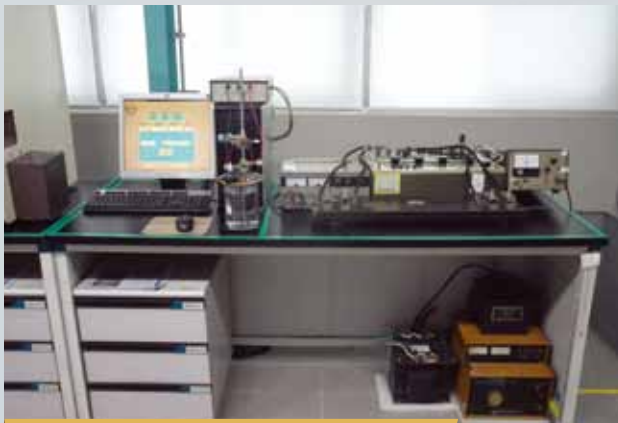




Oxygen Determinator



Emission Spectrometer



Oxide Determinator

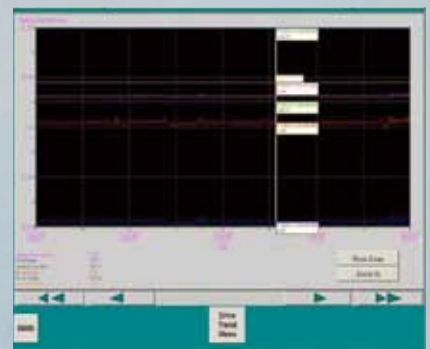
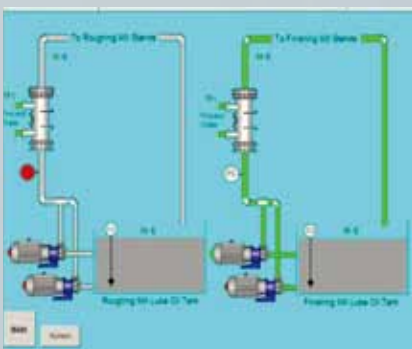
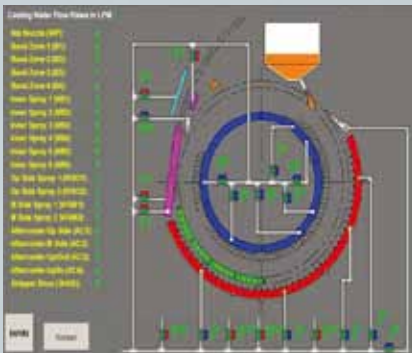
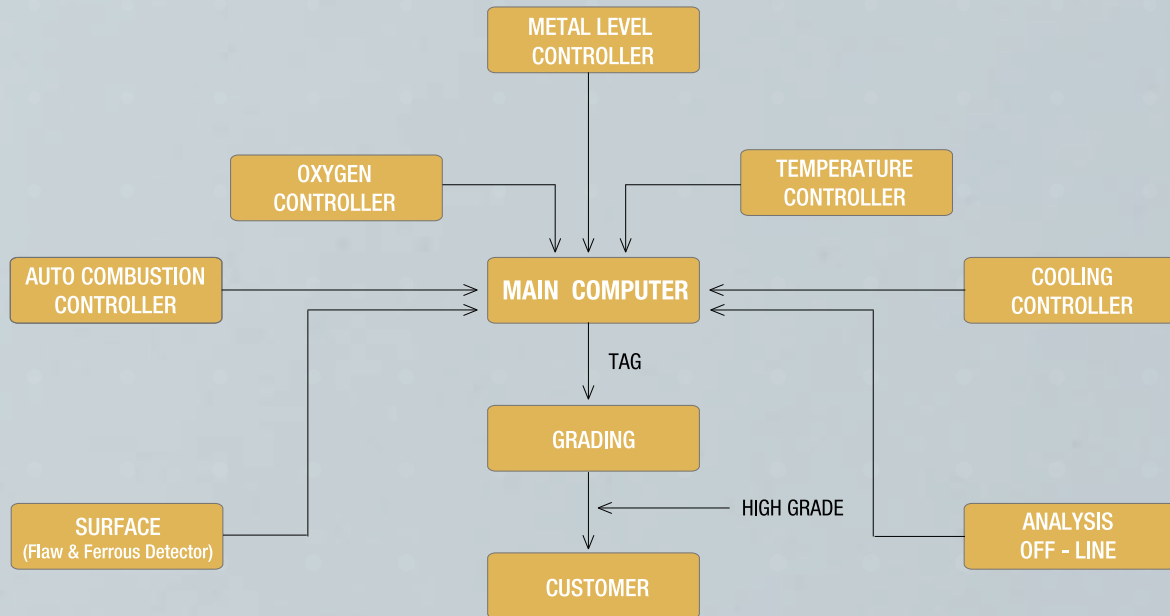


Conductivity Determinator

Quality Assurance

- Fully Automated and Computerized Manufacturing Line
- Impurity Analysis by Emission Spectrometer
- Oxygen Analysis by LECO Oxygen Determiner
- Sulfur Analysis by LECO Carbon/Sulfur Determiner
- Rod Grades by Process Data Gathering System
- Continuous Detection of Rod Surface Eddy Current

Data Gathering System



TAIHAN COPPER ROD Specification

Product type & Applicability

Size(mm)	Application
2.6	Magnet wire, Communication cable, Power cable, Strip flat wire
8.0	Magnet wire, Communication cable, Power cable, Strip flat wire
9.5	Strip flat wire
12.7	Strip flat wire
16.0	Strip flat wire
18.0	Strip flat wire, Trolley wire
23.0	Trolley wire
25.0	Strip flat wire , Trolley wire

Product Specification

Item	Unit	Specification	
		Taihan	ASTM B49
Copper Purity	%	Min.99.95	Min. 99.90
Outer Diameter	mm	8.0	8.0
Tolerance in Diameter	mm	±0.38	±0.38
Conductivity	%, 20°C	Min. 100	Min. 100
Elongation	%	Min. 35	Min. 30
Sur face Oxide	µA	Min. 1000	Min. 1000
Torsion Test	—	10 x 10 Torsion test, Reverse - to - failure , Twist - to - failure	
Annealability and Other Features	—	Meet ASTM B49	

* 2.6mm meet ASTM B3 / ASTM B1

Facilities Specification

Description	Unit	Capacity
Production Rate	MTPH	40
Melting Furnace	MTPH	50
Holding Furnace	MTPH	16
Casting Bar Area	sq. in.(sq.mm)	10.2(6580)
Casting Wheel Diameter	in.(mm)	120(3048)
Morgan No-Twist Rolling Mill -Roughing Mill -Finishing Mill	in. x ea	12 Stands 18x1, 16x1, 12x2, 8x8
Rod Diameters	mm	2, 6, 8, 9.5, 12.7, 16, 18, 23, 25(Flexibility for rolling various finished rod size)
Coiler	—	Laying head with a 16 station rod coil handling system
Coil	—	Compacted laid coils

Packing Information

8.0mm ~ 25.0mm

Outer Diameter(mm)	Inside Diameter(mm)
1550	850
1550	850
1550	850
1550	850
1550	850

Height(mm)	Weight(kg)
450	2500
500	3000
500	3500
600	4000
650	4500



2.6mm (Hard - drawn / Annealed)



Inner Box Size	500 X 500 X 1,370mm
Outer Box Size	1,060 X 1,060 X 1,370mm
Type	Octagon 2G
Net Weight: Max	2,000kg

Certification



ISO-14001



OHSAS-18001



ISO-9001



SCR Achievement Award



900 Ton Award

Contact



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TEL. 82,2,316,9346



Dangjin Plant

870, Daehoman-ro, Dangjin-si, Chungcheongnam-do, Korea
TEL. 82,41,360,9310
FAX. 82,41,360,9399



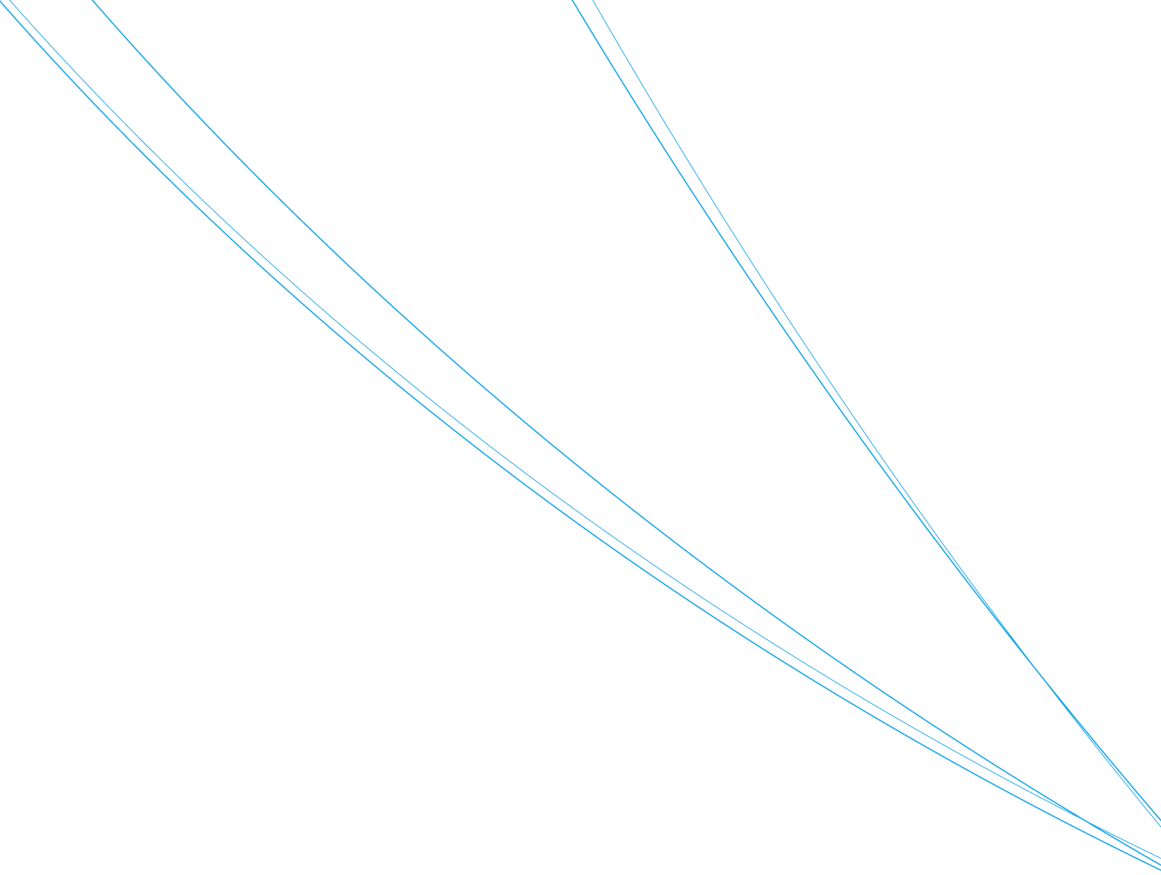
R&D Laboratory

49, Jangjagol-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Korea
TEL. 82,31,8035,9355



Dangjin Cable Accessory Plant

542, Bodeokpo-ro, Godae-myeon, Dangjin-si, Chungcheongnam-do, Korea
TEL. 82,41,359,9114
FAX. 82,41,359,9116



Total Solution to Wire & Cable

taihan

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