Qingdao NPA Industry Co.,Ltd



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新力通

目录

Contents

- About NPA
- Main products
- Equipment capability
- Production process and quality control diagram
- Quality assurance
- R&D
- Customers and references
- Social responsibility

About NPA

Company profile

Heat-resistant alloys integrated solution provider for global industrial furnaces market

- Established in 2011 by shareholders with over 30 years experience in heat-resistant industry, a subsidiary of CISRI group, the leader of China's advanced material technology.
- Heat-resistant alloy products up to 1250℃ for steel, glass and petrochemical industry with 3 manufacture bases.
- 2 Subsidiaries, Qingdao NPA Thermal technology Co., Ltd & Yantai Chungtuo Alloy Steel Co.,Ltd

USD 111 million
The total investment

190,000m²
Plant Area

780+
Employee

2
Subsidiaries



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Company profile

Yantai Chungtuo Alloy Steel Co.,Ltd

- Established in 2004 by NPA biggest shareholder;
- Production base for glass industry products.
- LOR, LR, steel ring rollers, composite ring roller, asbestos free rollers…
- AGC,NSG, Pilkington,Fives Stein, Saint-Gobain,Fuyao,Kibin,Triumph,Ruixin,FGG etc.



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Main products

Main products



Glass Industry

Steel Industry

Petrochemical

Heat-resistant alloy products for industrial furnaces

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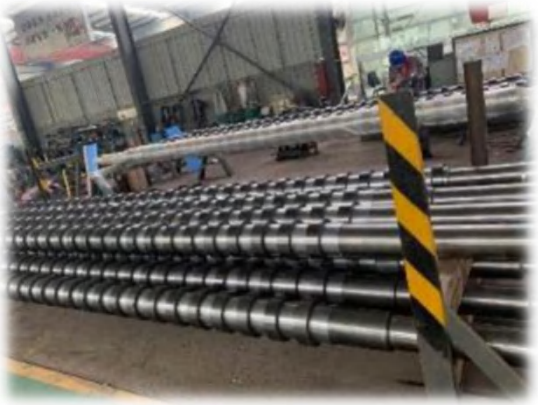
Main products - Glass industry

Application:
Float glass annealing lehr
Solar panel glass annealing lehr



LOR/LR

Steel donut roll





Composite ring donut roll

Asbestos-free roll (Tenmat FF800)



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Products of Glass industry

Steel roller (LOR/LR)







Products of Glass industry

Steel ring/Metal donut roller

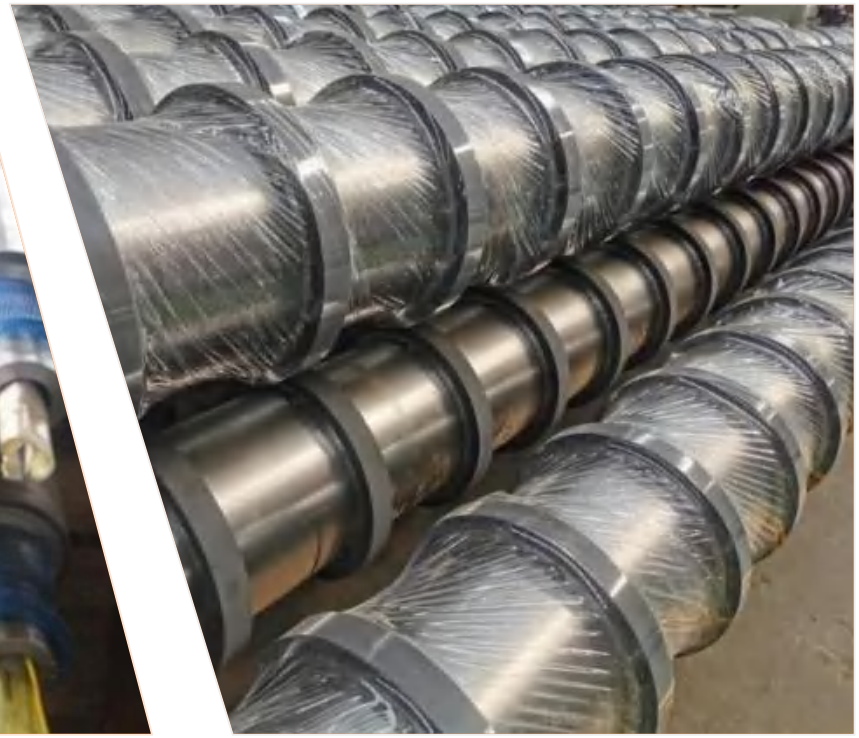


Products of Glass industry

Composite ring roller







Products of Glass industry

Asbestos-free roller





Products of Glass industry

Asbestos-free roller





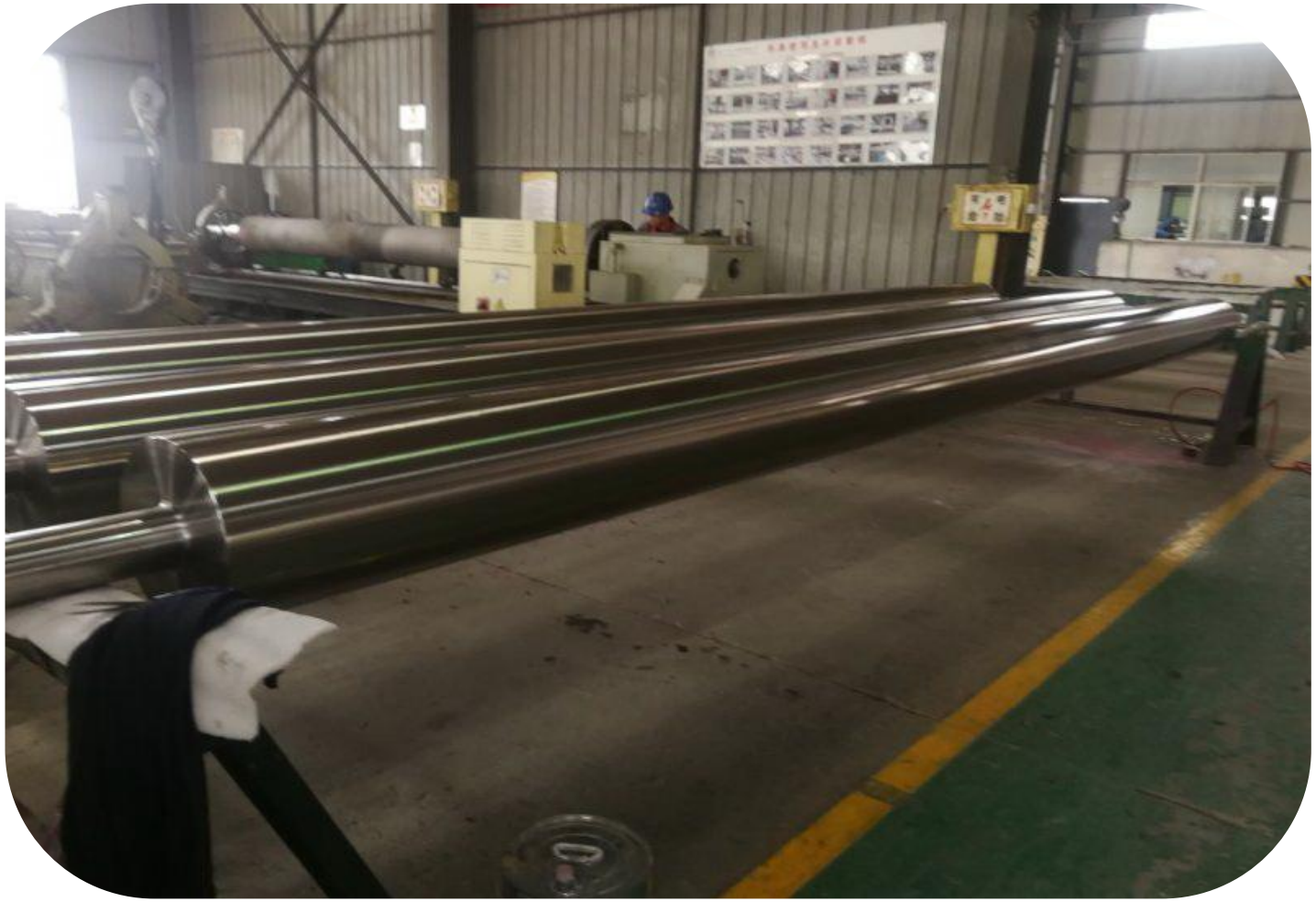
Products of Glass industry

Graphite ring roller





LOR过渡辊-出口AGC Export to AGC





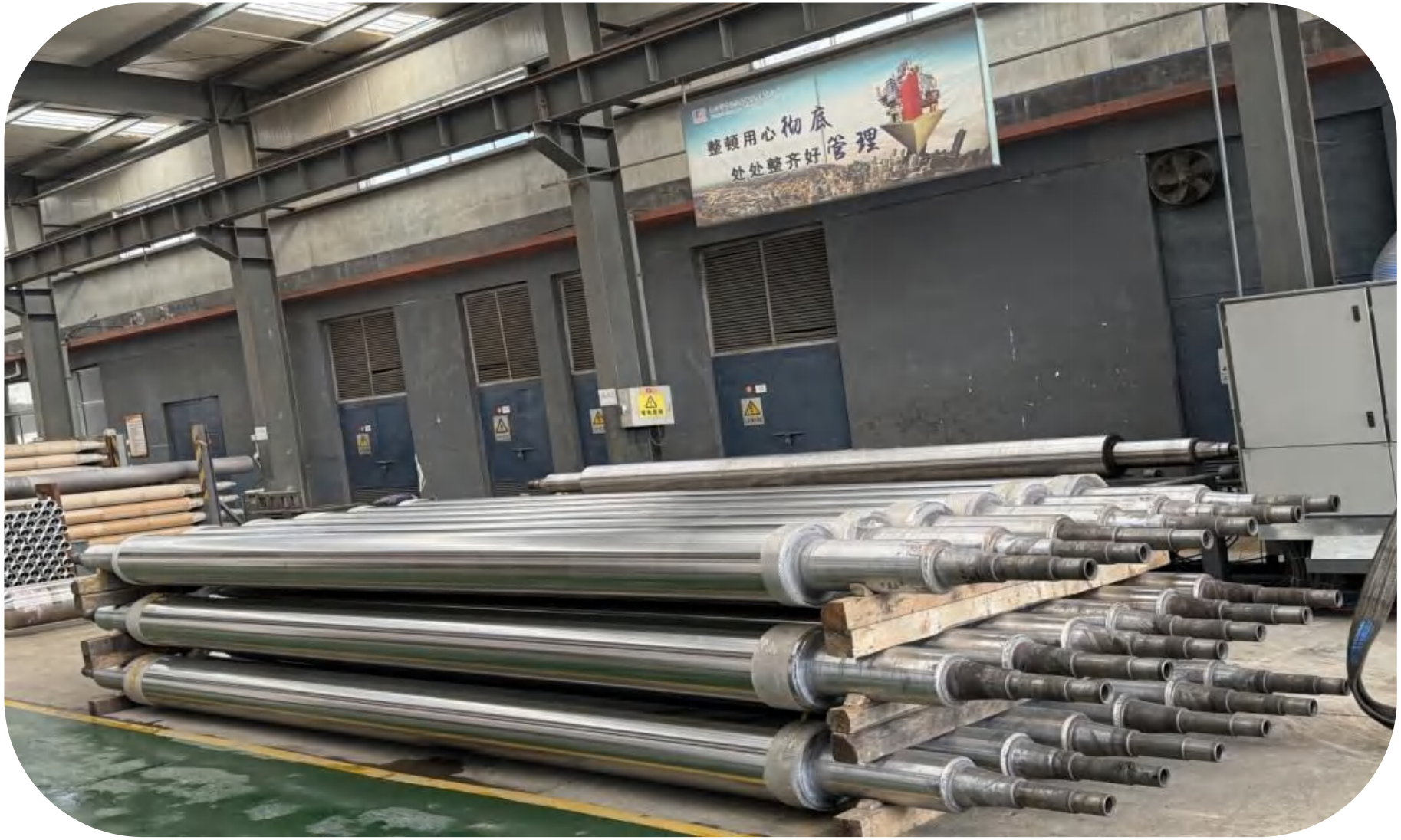
LR钢辊-出口板硝子Export to NSG/Pilkington



Metal Donut Roller
钢环辊出口欧洲比利时Export to AGC Europe



钢 辊 Lehr/Stell Roller-出口印度GP项目 Export to Indian GP



LOR过渡辊-出口AGC Export to AGC





Equipment capability

Equipment Capability 装备能力



Melting capacity 冶炼能力

- 22 intermediate frequency furnaces 22台中频炉 50/500/1000kg



Melting capacity 冶炼能力

- 2 electric arc furnaces 1500-5000kg 2台电弧炉
- 2 vacuum furnaces 50-150kg，2台真空炉



Centrifugal casting 离心铸造能力

- 25 horizontal casting machines 25台卧式离心机
- 2 vertical casting machines 2台立式离心机
- Over 800 sets of moulds 模具800余套



Static casting 静态铸造

- 2 complete, automatic, precision casting, production lines 2套精密铸造自动化生产线
- 2 complete sand casting production lines 2套砂型生产线

Main equipment: drying oven

Drying oven

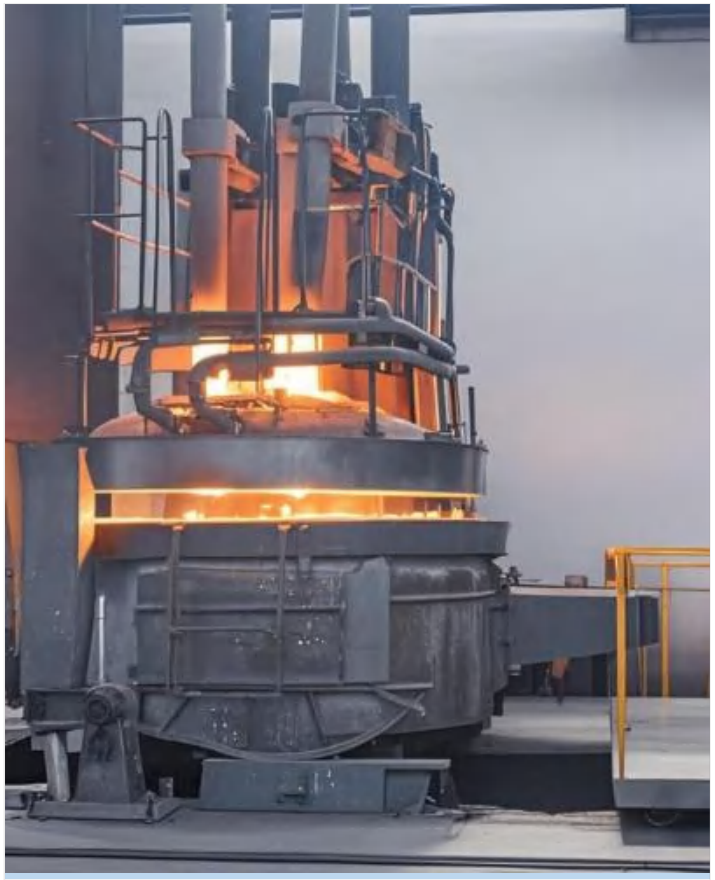
- Raw materials dried in the oven at 450 ℃;
- Removing harmful hydrogen and oxygen;
- Ensuring the purity of the molten steel.



Main equipment：centrifugal casting

Electric arc furnace

- Removes harmful impurities such as S(Sulfur), P(Phosphorus, and N(Nitrogen), blowing O2 into the furnace)
- Improving the purity of the molten steel







Main equipment：centrifugal casting

Intermediate frequency furnaces

- Argon gas protection
- Prevent reaction between molten steel and air (melting process)
- Purity of the molten steel.

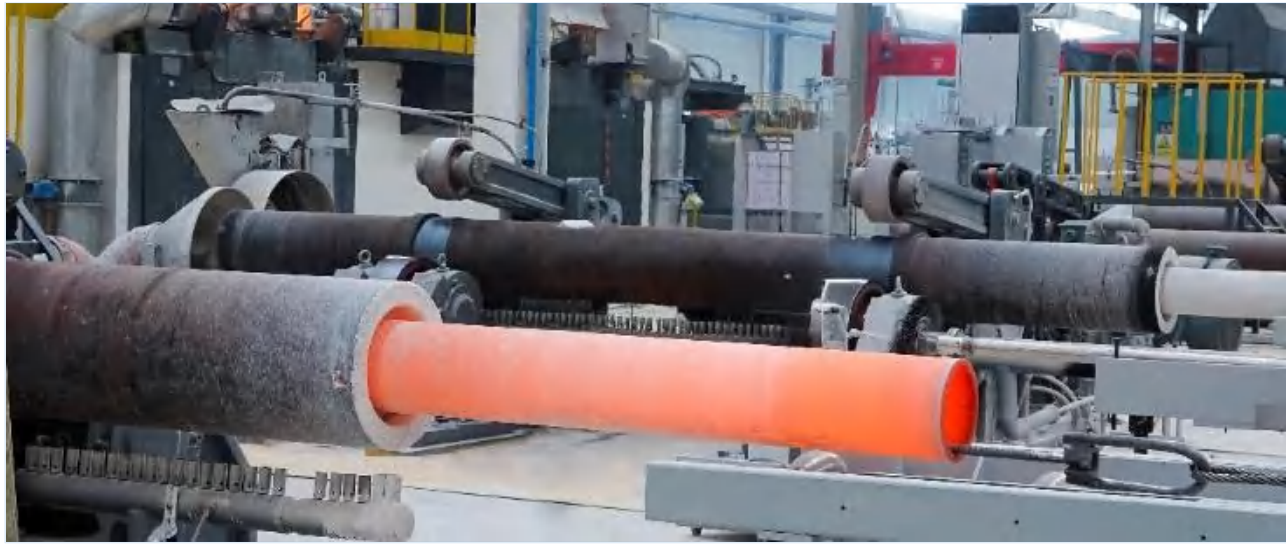




Main equipment：centrifugal casting

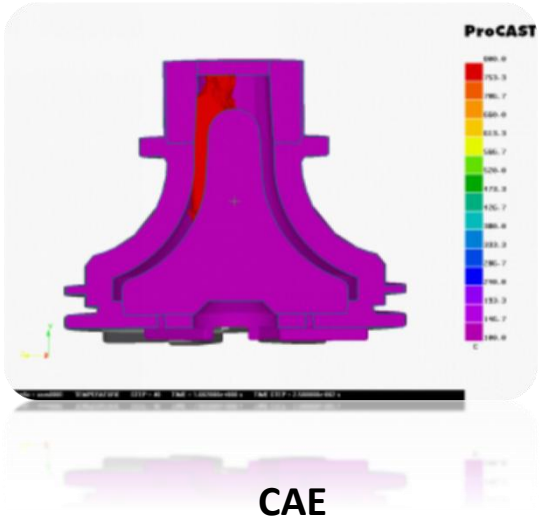
Horizontal casting machines

- Platform and centrifuge-"T" shape;
- Centrifuges PLC controlled with natural gas heating and water cooling;
- Metallographic structure both ends consistent;
- Ensuring the consistency of tubes;
- Improving the one-time pass rate;
- Competitive price.





Main equipment：static casting



CAE



Automated production line



Static casting



Sand casting

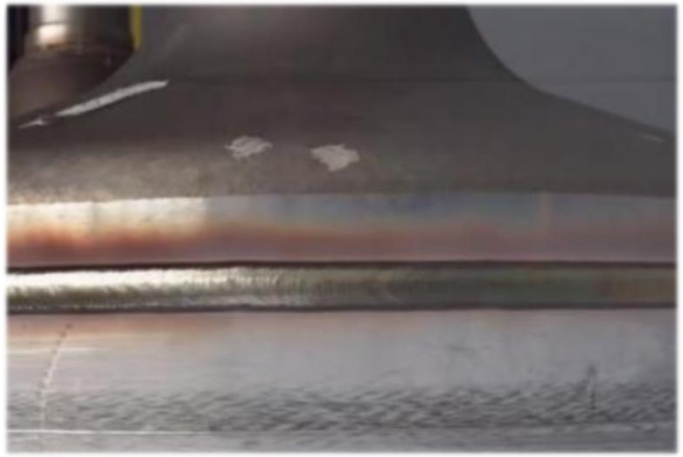
Main equipment：welding and processing



Robot welding-roll body



Robot welding-shaft and cones



Automatic welding seam



Cones CNC machining



CNC grinding machine



CNC polishing machine

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Main equipment：heat treatment

Heat treatment



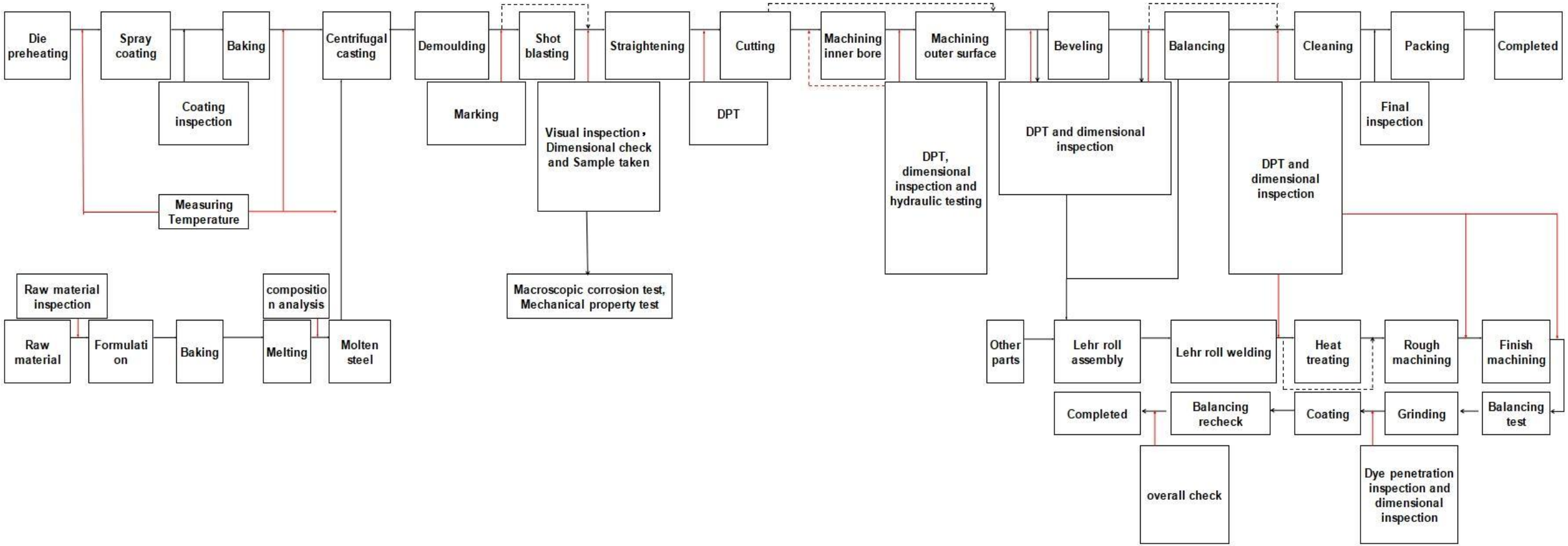




Production process and quality control diagram

Production process and quality control diagram

Lehr roll production process and quality control diagram



Quality assurance

Qualification & Certification

ISO 9001



ISO 14001



ISO 45001



ISO 3834-2



AD 2000-Merkblatt W 0



AD 2000-Merkblatt HP 0



CUTR Certificate



PED 4.3



ISO17025



Copyrigh

Quality assurance

Test during production

Spectrometer
PMI (Positive material identification)
DPT (Dye penetrant test)
ET (Eddy current test)
RT/DR (Radiographic test)
Air tightness test
Water pressure test
Endoscope
Ultrasonic test
Roughness check
Size and visual check
Dynamic balancing
Roll profile

Laboratory test

Spectrometer
Oxygen, nitrogen and hydrogen analysis
Wet analysis (race element content)
Carbon and sulphur analysis
Macro-corrosion test
Microscopic metallography
Chloride ion test
Material corrosion resistance test
Room temperature/high temperature short-term mechanical performance test
High temperature creep test
Hardness test



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Testing and inspection

Spectrum

Instrumen ensure that the chemical composition of the product is qualified









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Testing and inspection



Dimension Inspection



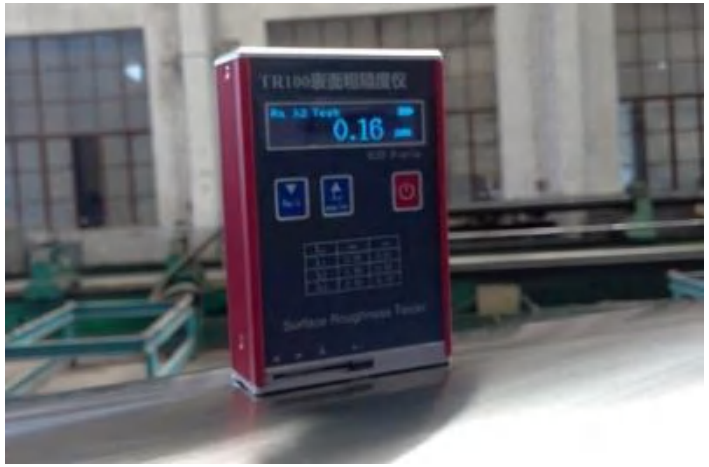
Wall Thickness Inspection



Run Out Inspection



Static Balancing Test



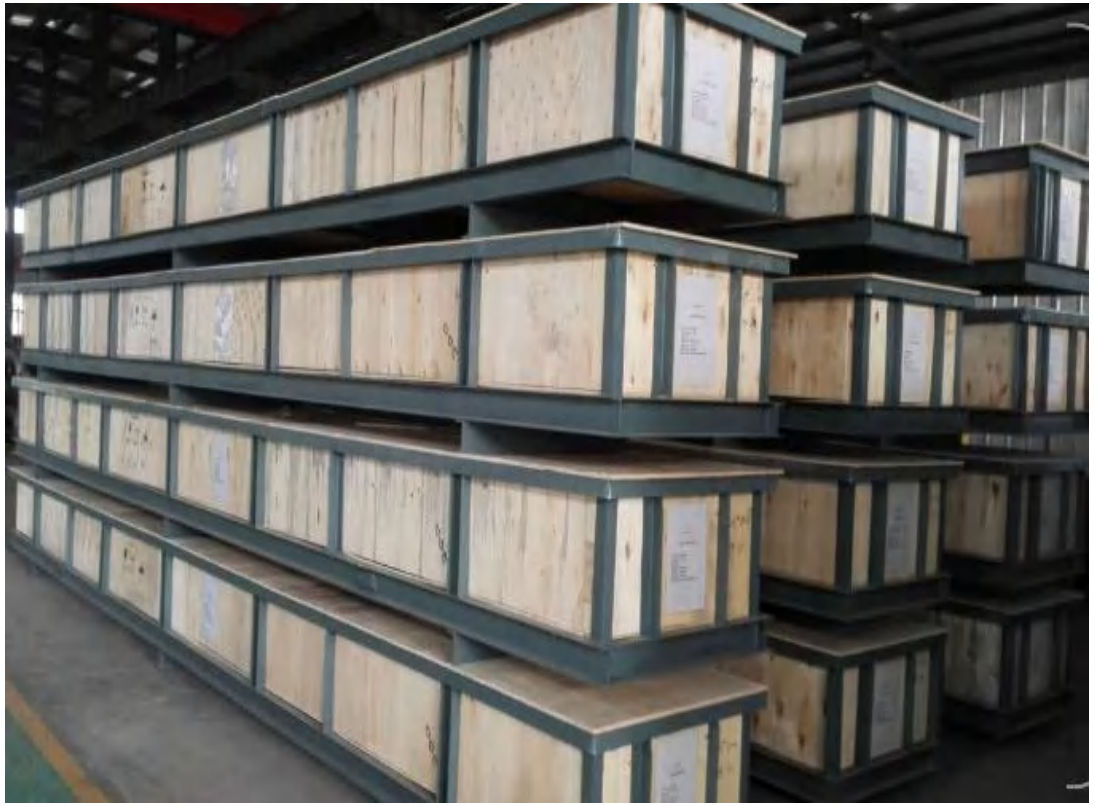
Roughness Inspection

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Quality assurance

Packing and shipping





R&D

R&D

- R&D investment > 4%
- R&D staff 170
- Patents 286 (including 161 patents for invention)
- 124 scientific research and development projects
- CNAS Certified National Laboratory



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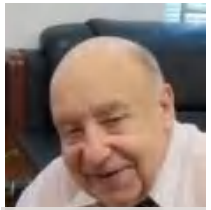
R&D



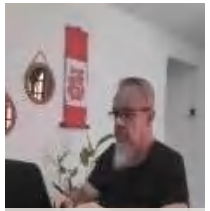


Industry university research cooperation

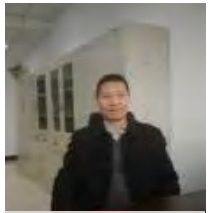
Dalian University of technology, General Institute of aerospace materials, Institute of metals, Chinese Academy of Sciences, Beijing Institute of steel and research, Beijing University of science and technology, Shandong University of science and technology, Yantai University, and international excellent enterprises carry out scientific research cooperation



David



Eric



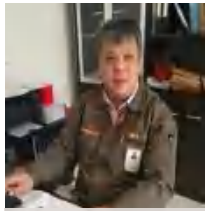
Luo Heli



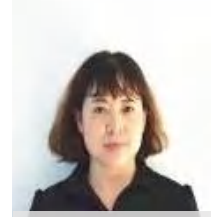
Li Shangping



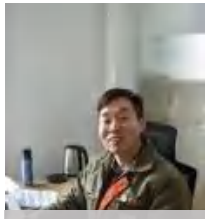
Wang Xinglei



Wang Zhenhua



Wei Lijuan



Wang Jiantao

Expert team

High temperature alloy industry expert

Professor level senior engineer in superalloy research





R&D facilities

The most complete R & D facilities, including the convectional testing equipment in NPA plant and SEM, TEM, EDS etc. in our parents company.

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CNAS-Certified Lab

China National Accreditation Service for Conformity Assessment

LABORATORY ACCREDITATION CERTIFICATE

(Registration No. CNAS L19023)

Qingdao NPA Industry Co., Ltd. Lab

(Legal Entity: Qingdao NPA Industry Co., Ltd.)

Middle Section of Tongda Road, Tonghe Street Office, Pingdu, Qingdao, Shandong, China

is accredited in accordance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories(CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence to undertake the service described in the schedule attached to this certificate.

The scope of accreditation is detailed in the attached schedule bearing the same registration number as above. The schedule forms an integral part of this certificate.

Effective Date：2023-09-08

Expiry Date：2029-09-07

Signed on behalf of China National Accreditation Service for Conformity Assessment 张朝华

China National Accreditation Service for Conformity Assessment (CNAS) is authorized by Certification and Accreditation Administration of the People's Republic of China (CNCA) to operate the national accreditation schemes for conformity assessment. CNAS is a signatory of the International Laboratory Accreditation Cooperation Mutual Recognition Arrangement (ILAC MRA) and the Asia Pacific Accreditation Cooperation Mutual Recognition Arrangement (APAC MRA).

The validity of the certificate can be checked on CNAS website at http://www.cnas.org.cn/english/findanaccreditedbody/index.shtml

ISO/IEC 17025 认可证书

Name: Qingdao NPA Industry Co., Ltd. Lab

Address: Middle Section of Tongda Road, Tonghe Street Office, Pingdu, Qingdao, Shandong, China

Registration No. CNAS L19023

Accreditation Criteria: ISO/IEC 17025:2017 and relevant requirements of CNAS

Effective Date: 2023-09-08 Expiry Date: 2029-09-07

SCHEDULE 3 ACCREDITED TESTING SCOPE

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
1	iron and steel;	1	C、Si、Mn、P、S、Cr、Ni、Mo、Al、Cu、V、As、Sn、Co	Carbon and low-alloy steel-Determination of multi-element contents-Spark discharge atomic emission spectrometric method (routine method) GB/T 4336-2016+Amendment No. 1（2017）	Accredited only for (%):C：0.1~0.5、Si：0.2~0.4、Mn：0.5~0.75、P：0.02~0.035、S：0.010~0.040、Cr：0.12~1.0、Ni：0.1~0.3、Mo：	2023-09-08

No. CNAS L19023 第 1 页 共 11 页

The scope of the accreditation in Chinese remains the definitive version.

ISO/IEC 17025 认可证书

№	Test Object	Item/Parameter		Standard or Method	Note	Effective Date
		№	Item/ Parameter			
		4		Bend test methods on welded joints GB/T 2653-2008	Accredited only for the circular pressure tip bending, force<200kN	2023-09-08
				Standard Test Methods for Bend Testing of Material for Ductility ASTM E290-22	Accredited only for the guide bending of no mould, force<200kN	2023-09-08
		5		Metallic materials-Brinell hardness test-Part 1:Test method GB/T 231.1-2018	Accredited only for HBW2.5/187.5	2023-09-08
				Metallic materials - Brinell hardness test - Part 1: Test method ISO 6506-1：2014（E）	Accredited only for HBW2.5/187.5	2023-09-08
		6		Standard Test Methods for Determining Average Grain Size ASTM E112-13（2021）	Accredited only for comparison and intercept method	2023-09-08
				Determination of estimating the average grain size of metal GB/T 6394-2017	Accredited only for	2023-09-08

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The scope of the accreditation in Chinese remains the definitive version.

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NPA 新力通

CNAS Certified Lab











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New Research Achievements 科研新成果

NH2829 (Steel) 冶金行业

- ✓ Resisting 1200 ℃ 耐温1200度
- ✓ Better physical property to replace 2.4879(Cr28Ni48W5) with competitive costs. 更优的物理性能，以高性价比替代2.4879

Anti-bending Alloy - NH2909 (Steel) 冶金行业

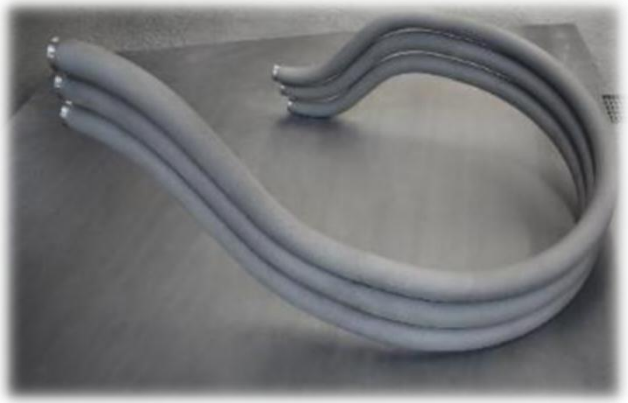
- ✓ Resisting 1200 ℃ 耐温1200度
- ✓ Better physical property to replace Cr33Ni50W16 alloy with lower costs. 更优的物理性能，以高性价比替代Cr33Ni50W16

Anti-pickup New Alloy-NH2589 (Steel) 冶金行业

- ✓ Resisting 1050 ℃ 耐温1050度
- ✓ Better physical property to replace ZG45Ni35Cr25Nb alloy with lower costs. 更优的物理性能，以高性价比替代ZG45Ni35Cr25Nb。

NH2749(DRI) DRI行业

- ✓ Resisting 1250℃, strength better than 60HTD (Schmit+Clemens) 耐温1250度，强于德国S+C的加铝材料60HTD。
- ✓ Excellent oxidation resistance and thermal corrosion resistance at high temperature 优异的抗氧化性能和高温热腐蚀性能



Three-dimensional tube bending machine
3D弯管设备

NPA design/patent
新力通设计专利

Super long furnace roll centrifugal casting patented technology
超长炉辊离心铸造专利技术

longest roll in the world-for AGC
为日本AGC生产的世界最长的炉辊
OD外径: φ355
Length of roll body 辊身长度: 8000mm
Overall length 总长: 9375mm.



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NPA 新力通

New research achievements

Special technology for super-long glass roller for AGC





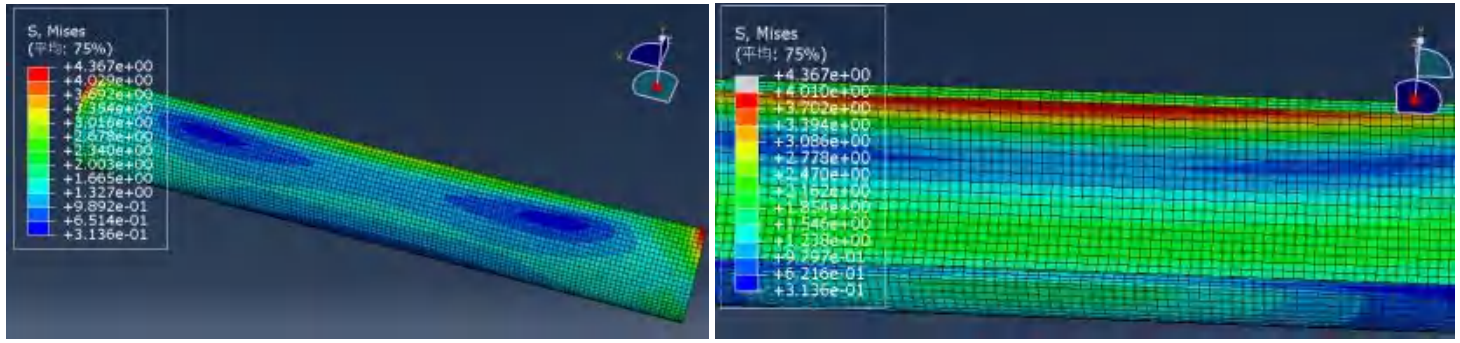


R&D-offer design recommendations to customers

Abaqus Demonstration of Simulation Preprocessing-example for Danieli rollers

Material	Temperature	Stress
NH28-29	1100℃	5.2MPa
	1150℃	3.3MPa
NH2749	1150℃	6.85MPa
	1200℃	5.12MPa

Assuming a durability of 2 years, the minimum allowable stress at different temperatures is as follows.



Using the material parameters of NH2749 at 1200℃, and with the roller body dimensions of Φ460mm and d30mm, the calculation is carried out.
The maximum stress occurs at the end and is 4.367 MPa. The end meets the stress requirements.
The stress in most areas of the roller body ranges from 0.31 MPa to 2.34 MPa.
The inner wall of the roller body of this component also experiences considerable stress, ranging from 4.01 MPa to 5.12 MPa, which is lower than the endurance stress at 1200°C and meets the requirements.
Given that the temperature in this area reaches 1200℃, it is recommended that the roll body of temperature zone 6 be made of NH2749 material, with a size of Φ460mm and d30mm

Customers and References

Customers-Glass 客户-建材行业

Meeting customer’s requirements is our basic line goal.

Exceeding customer’s expectations is our mission. 以满足客户需求为底线，以超出客户预期为目标

AGC

PILKINGTON

SAINT-GOBAIN

NSG GROUP

RUIXIN

CENTRAL GLASS

Joinme

fives
Industry can do it

TAIWANGLASS

DGRDI

凯盛集团 Triumph Group

FGC 福莱特集团

南玻集团

旗滨集团 KIBING

新福兴玻璃

XYG 信义玻璃

セントラル硝子

AIS

福耀集团 FUYAO GROUP

Central Glass, Inc.

中国建材

南玻集团

GOLD PLUS
GLASS FOR SUSTAINABLE FUTURE

PIONEER GLASS
PIONEER FLOAT GLASS MANUFACTURING INC.

迎新集团

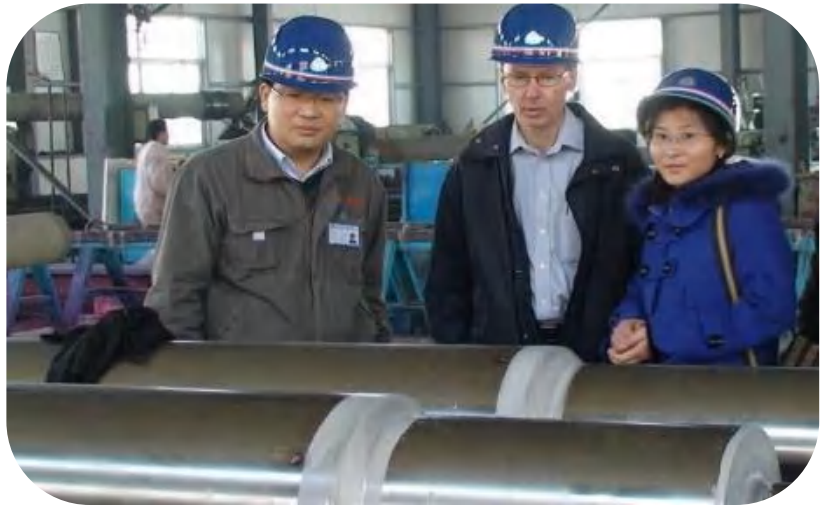
台玻集团

On-site inspections













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Major references - Glass industry

#	Year	Customer and Project
1		**AGC**
	2026	129 pieces of Lehr roller and metal donut roller for AGC Inc. Taiwan JF4 repair project
	2025	775 pcs LOR+LR for AGC Europe
	2024	650 pcs steel rings for AGC Europe+10 LOR+LR for AGC Europe
	2023	123 pcs LOR and LR for whole float line of Asahi India Glass Ltd.
	2022	6 pcs LOR and 66 pcs LR for AGC Europe and Russia
	2021	100 pcs composite ring rollers, 159 pcs lehr rollers & steel rollers for AGC Europe
	2020-2013	145 pcs lehr rollers, 325 pcs steel rollers, 11 pcs LOR, and 18 pcs lehr rollers
2		**NSG/PILKINGTON**
	2026	7 pcs LOR, 40 pcs lehr rollers
	2025	43 pcs LR
	2020-2024	38 pcs lehr rollers, 232pcs LOR
	2020-2016	228 pcs stainless steel rollers, 112 steel donut rollers, 96 pcs lehr rollers, 17 pcs LOR, 5 pcs sponge rollers for NSG Vietnam/Argentina/Japan

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Major references - Glass industry

#	Year	Customer and Project
3		**SAINT-GOBAIN**
	2026	3 pcs Lehr rollers
	2025	200 pcs Rings for SG Poland
	2017	5 sets metal donut rollers, 5 sets composite ring rollers, 5 sets steel rollers for SG Polland
	2016	3 sets annealing lehr rollers, 10 sets composite ring rollers, 5 sets steel rollers for SG India
4		**Pioneer Float Glass Manufacturing, Inc. (Philippines)**
	2025	30pcs Asbestos-free Lehr Roller
5		**TAIWAN GLASS**
	2022	111 pcs lehr rollers
6		**Triumph Engineering Technology Co. , Ltd.**
	2026	251 pcs steel rollers, 7 pcs lift out rollers, 256 pcs asbestos rollers
	2025	251 pcs steel rollers, 7 pcs lift out rollers, 256 pcs asbestos rollers
	2024	1268 pcs steel rolls, 508 pcs asbestos rollers, 290 pcs steel donut rollers, 200 pcs resin ring rollers, 8 pcs non-asbestos rollers
	2023	2882 pcs non-asbestos rollers, 204 pcs asbestos rollers, 53 pcs steel rollers, 252 pcs steel rollers, 3 sets lift out rollers, and 158 pcs FF800 rollers.
	2022-2021	4742 pcs lehr rollers, 2180 pcs steel rollers, 2183 pcs asbestos rollers, 146 pcs fiber rollers

Major references - Glass industry

#	Year	Customer and Project
7		**Five Stain**
	2020	LOR, Brazil market
8		**Xinyi Glass**
	2026	485 pcs steel rollers, 223 pcs steel ring rollers
	2025	101 pcs steel rollers, 93 pcs graphite ring rollers
	2024	50 pcs lehr rollers
	2023	1192 pcs steel rollers and 1224 pcs asbestos rollers
9		**Bengbu Chemical Machinery Manufacturing Co. , Ltd.**
	2023	1248 pcs steel rollers, 951 pcs asbestos rollers and 147 pcs FF800 rollers
	2022	656 pcs steel rollers, 412 pcs asbestos rollers, 3 pcs LOR, 16 pcs adjustable rollers and 138 pcs non-asbestos rollers
10		**Anhui Flat Solar Glass Co., Ltd.**
	2025	258 pcs steel rollers, 190 pcs asbestos rollers
	2024	2224 pcs steel rollers, 1104 asbestos rollers
	2023	3558 pcs steel rollers, 1920 asbestos rollers
	2022	2300 pcs steel rollers, 1467 asbestos rollers

Major references - Glass industry

#	Year	Customer and Project
11		**Guangzhou Senda Trade Co. , Ltd.**
	2023	105 pcs steel rollers, 4 pcs lift out rollers and 97 pcs asbestos rollers
12		**Heyuan Qibin Silicon Industry Co. , Ltd.**
	2023	178 pcs steel rollers, 3 pcs lift out rollers, 12 pcs adjustable rollers and 133 pcs asbestos rollers
13		**Ningbo Qibin Photovoltaic Technology Co. , Ltd.**
	2022	825 pcs steel rollers, 210 pcs steel donut rolls, 12 pcs lift out rolls, 138 pcs adjustable rollers and 432 non-asbestos rollers
14		**Shanghai Rui Xin Glass Technology Equipment Engineering Co. , Ltd.**
	2023	526 pcs steel rollers, 116 pcs lift out rollers and 231 pcs asbestos rollers
15		**Kibing Group**
	2023	553 pcs steel rollers (Changxing), 326 pcs steel rollers (Heyuan),3397 pcs steel rollers (Ningbo)
16		**CSG Holding Co., Ltd.**
	2025	97 pcs steel rollers, 120 pcs asbestos rollers
	2023	4 pcs lift out rollers, 19 pcs steel rollers

Major references - Glass industry

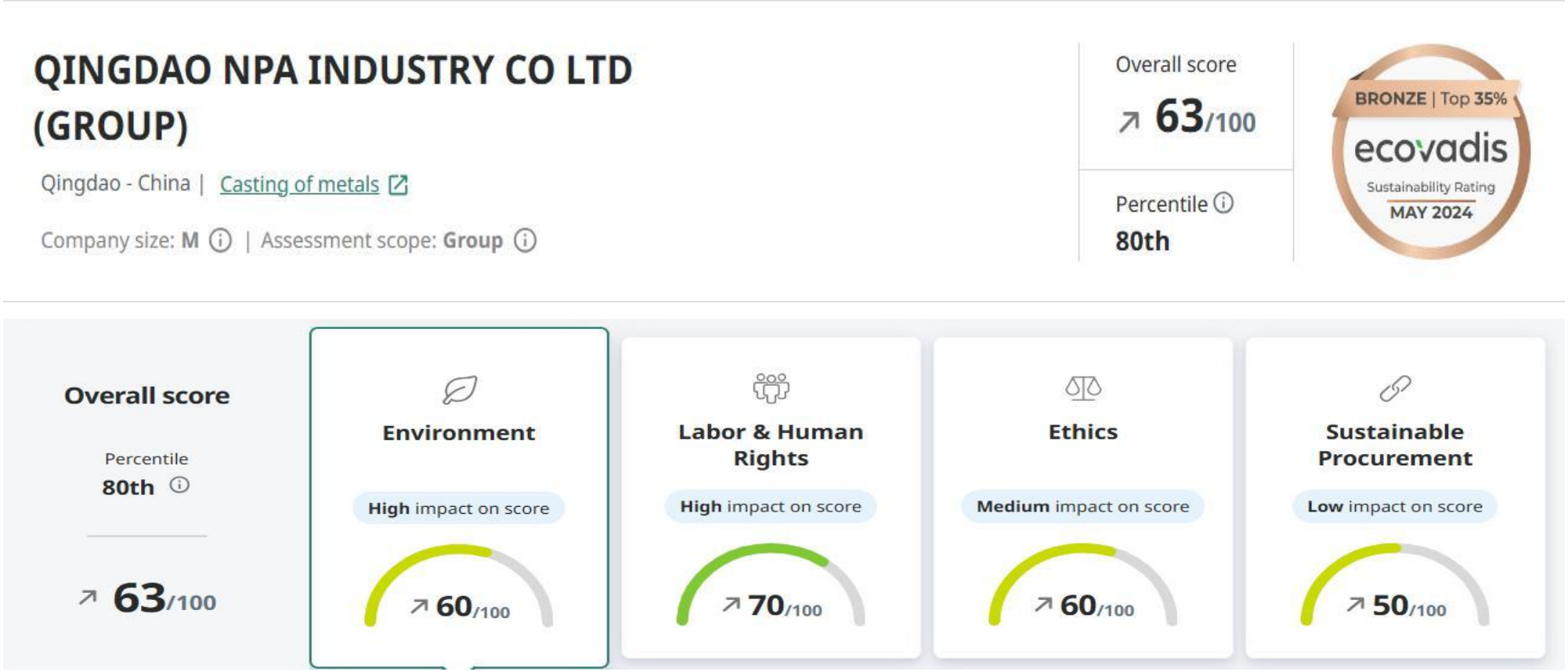
#	Year	Customer and Project
17		**Xinfuxing Group**
	2026	145 pcs asbestos rollers
	2025	41 pcs asbestos rollers
	2024	12 pcs lehr rollers, 68 pcs asbestos rollers
	2023	859 pcs asbestos rollers, 24 pcs asbestos rollers with encoder and 1100 pcs steel rollers
	2022	10 sets asbestos rollers, 5 pcs adjustable rollers, 35 pcs steel rollers, 30 pcs auxiliary roll
18		**Inner Mongolia Yujing Technology Co. , Ltd.**
	2026	20 pcs transition rollers
	2025	683 pcs steel rollers, 476 pcs fiber rollers
	2022	41 pcs steel donut rollers, 446 pcs steel rollers, 55 pcs adjustable rolls, 16 pcs lift out rollers and 544 pcs asbestos rollers
19		**Jilin Yingxin Glass Co., Ltd.**
	2024	4 pcs lift out rollers, 24 pcs adjustable rollers, 274 pcs steel rollers, 388 pcs asbestos rollers, 41 pcs steel ring rollers, 23 transition rollers

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Sustainability for Green and Eco-Friendly enviornment



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Social responsibility: saving resources

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