



CITIC PACIFIC SPECIAL STEEL

TIANJIN PIPE CO.,LTD

Tianjin Pipe Corporation

Steel Pipe & Tube Company Brochure



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Preface

TPCO Business

Tianjin Pipe Corporation -TPCO is one of global leading seamless steel pipe manufacturers and the largest in China, headquartered in Tianjin, a dynamic & fast developing industrial city. Its core

business is manufacturing steel pipes that attains to the advanced international standards and serves global energy, machinery and other industries.

TPCO Advantages

- ◆ **Integrated mill:** strict quality control, starting from steel
- ◆ **Centralized and huge capacity:** short lead time and competitive cost control
- ◆ **World class R&D:** approved by IOCs for high end product tests
- ◆ **Transportation:** 15km to world-top-five seaport and 120 km from Beijing

TPCO Core Value

People Oriented
Innovation
Responsibility
Customer First



Preface

TPCO Introduction

Tianjin Pipe Corporation - TPCO, is one of the world leading seamless pipe manufacturers, with capacity of 3.5 million tons per year. TPCO has ranked the world's biggest mill since 2009 in terms of production outputs of seamless pipe, TPCO's products have been exported to over 100 countries and regions worldwide.

TPCO equipped with state-of-the-art facilities and technologies, its integrated production starting from iron making, steel making, pipe rolling, heat treatment till pipe finishing, its full range of products can meet all relevant specifications and demands of seamless pipe from industry of energy, machining as well as engineering projects.

TPCO has built the 1st and unique 508mm PQF mill in the world, equipped with all necessary on-line inspection equipment such as Ultrasonic, Magnetic Flux Leakage for pipe OD and wall thickness inspection etc.

Being leading seamless pipe manufacturer, TPCO not only produce OCTG products according to API standards, non-API standards, premium connection, line pipe and process pipe but also other kinds of seamless pipes which are widely used in machining, power generation, automotive industry, and etc. So far, there are 26 steel grades, near 10,000 product varieties can be supplied.

TPCO has also built internal and external anti-corrosion and heat preservation coating lines that applied for pipe line project onshore and offshore.

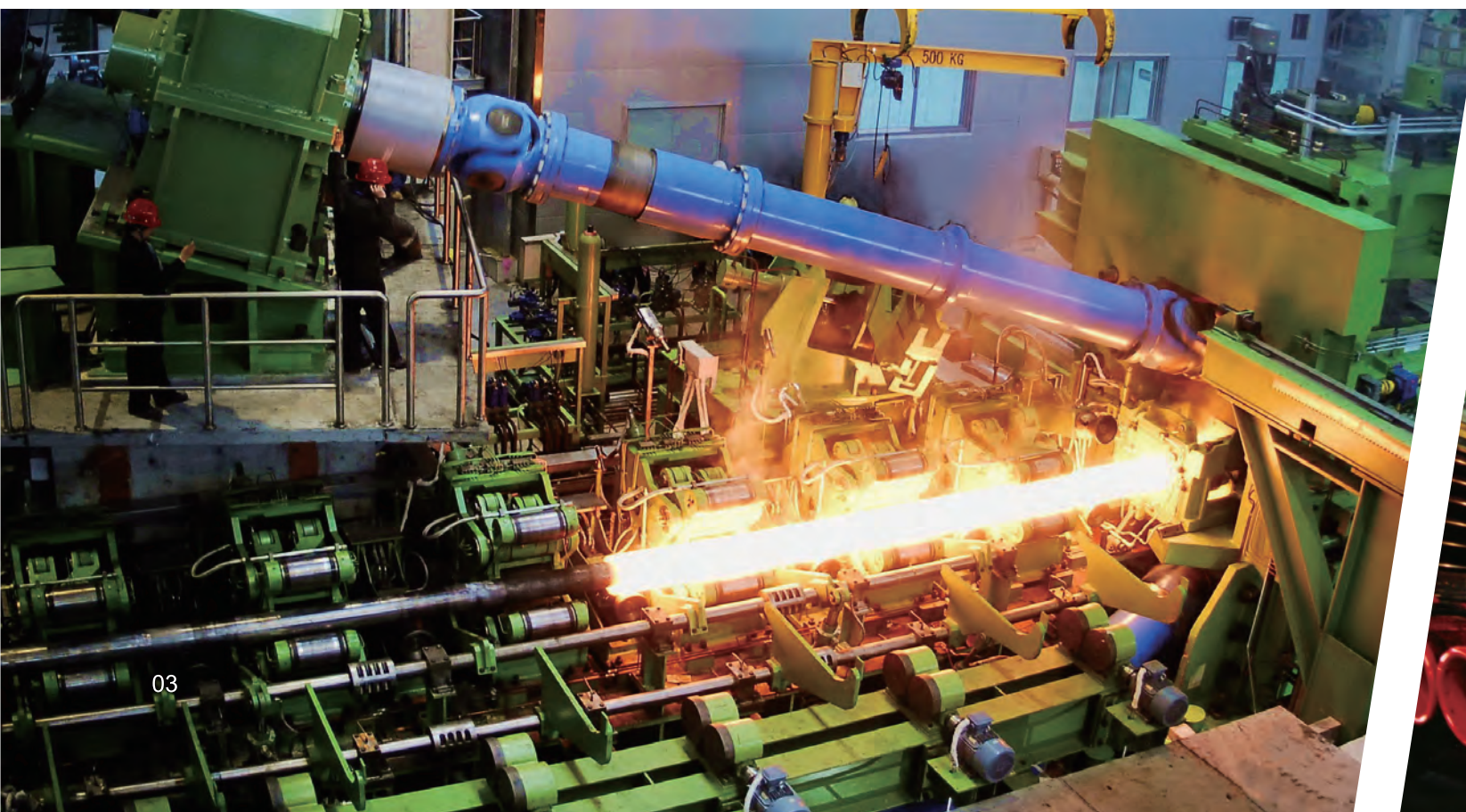
Several strategy cooperation agreements have been signed by TPCO with international and domestic major Oil companies and key accounts of general industry, TPCO OCTG products has been successfully run into a depth of 8882 meters Oil well, which is one of the most deepest onshore well in Asia, and other projects such as chemical, petrochemical, refining, SanXia Dam, Olympic stadiums, China West-East interstates gas line project, and etc.

Starting from 1994, TPCO has been certified by all kinds of international and domestic accreditation institutions and passed more and more qualifications from major Oil companies, leading EPC contractors.

A fully qualified ISO 9001 Quality management system is running efficiently in TPCO.

TPCO, as a responsible company, is also committed to environment protection, employee safety and health and other social responsibilities.

TPCO is gaining ground to be multi-nationally operating corporation. It has established many overseas sales companies and offices including those in UAE, Korea, Australia, Canada, Uzbekistan, Nigeria and etc.



Equipment & Technology

TPCO is equipped with the world’s first-rate production equipment and technology. The production lines are composed of 4 major parts: iron-making, steel-making (billet), pipe-rolling and pipe finishing.

Smelting system

There are now one iron-making works and two steel-making works in TPCO. The steel-making plants are equipped with electric arc furnace (EAF), ladle refining furnace (LF), vacuum degassing device (VD), vacuum

oxygen degassing furnace (VOD), RH vacuum degassing furnace and continuous casting lines to meet the requirements of producing high purity and quality steel billets.

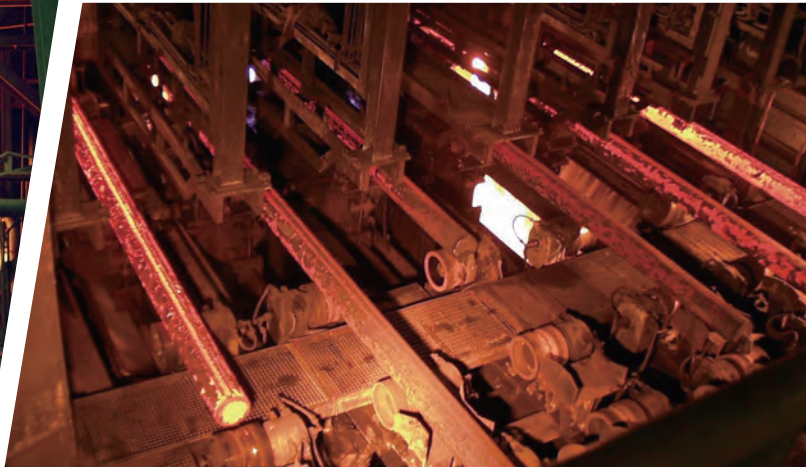
The steel making works are equipped respectively with 150-ton, 90-ton and can produce round billets of outside

diameters 150~500 mm and square billets of 150 x 150 mm. Total annual billet capacity is 3 million tons.

Electric Arc Furnace (EAF)



Continuous Casting (Round Billets)



Pipe rolling system

Main equipment:
Rotary billet heating furnaces, piercing mills, rolling mills, reheating furnaces, sizing mills, cooling beds and NDE inspection systems.

Rolling mill:
TPCO has installed seven rolling mills of different technologies, including MPM, PQF, ASSEL, and Rotary Expansion.

Scope of pipe sizes

Mill / Unit	Outside Diameters (mm)	Wall Thicknesses (mm)
168 PQF Mill	32~170	2.5~22
219 ASSEL Mill	88.9~219	9.5~50.8
250 MPM Mill	114~340	4.5~40
258 PQF Mill	114~245	4~30
460 PQF Mill	245~457	6.4~57
508 PQF Mill	299~508	7.5~60
720 Rotary Expansion Mill	325~720	9.5~40
Hot Expansion Unit	Below 1200	6~80
Cold-rolling and Cold-drawing Unit	25~250	1~28



Equipment & Technology

Heat treatment system

Heat treatment lines in TPCO for producing high grade pipes satisfying the most stringent applications, among which a brightening line and a

solution annealing line treats stainless steel pipes, high alloy pipes and boiler tubes, making excellent product quality after treatment.

Pipe finishing system

Pipe finishing lines, mainly including: casing and tubing lines, plain-end pipe lines (for line pipe and P.E. OCTG), tubing upsetting line, coupling lines.

Main equipment:

CNC threading machines, chamfering machines, hydraulic testing machines, NDTs, saws, coupling screw-up machine, coupling phosphate line, up-setter, marking/measuring/weighing devices, and others.

CNC threading machines: introduced from U.S.A., Belgium, Spain, Germany and Japan.

Non - destructive tests

Various NDT technologies are adopted in TPCO for detection of transversal, longitudinal and lamination defects in the inner and outer surfaces of pipe body, pipe end and coupling, including

electro-magnetic, ultrasonic, magnetic particle, eddy current, to ensure that all pipes supplied to the customers are of high quality.

Subsea line pipes: specific production facilities

To fully satisfy stringent technical requirements for manufacturing of subsea line pipe, such as DNVGL-ST-F101, API, ISO specifications, EPC specifications and client project specifications,

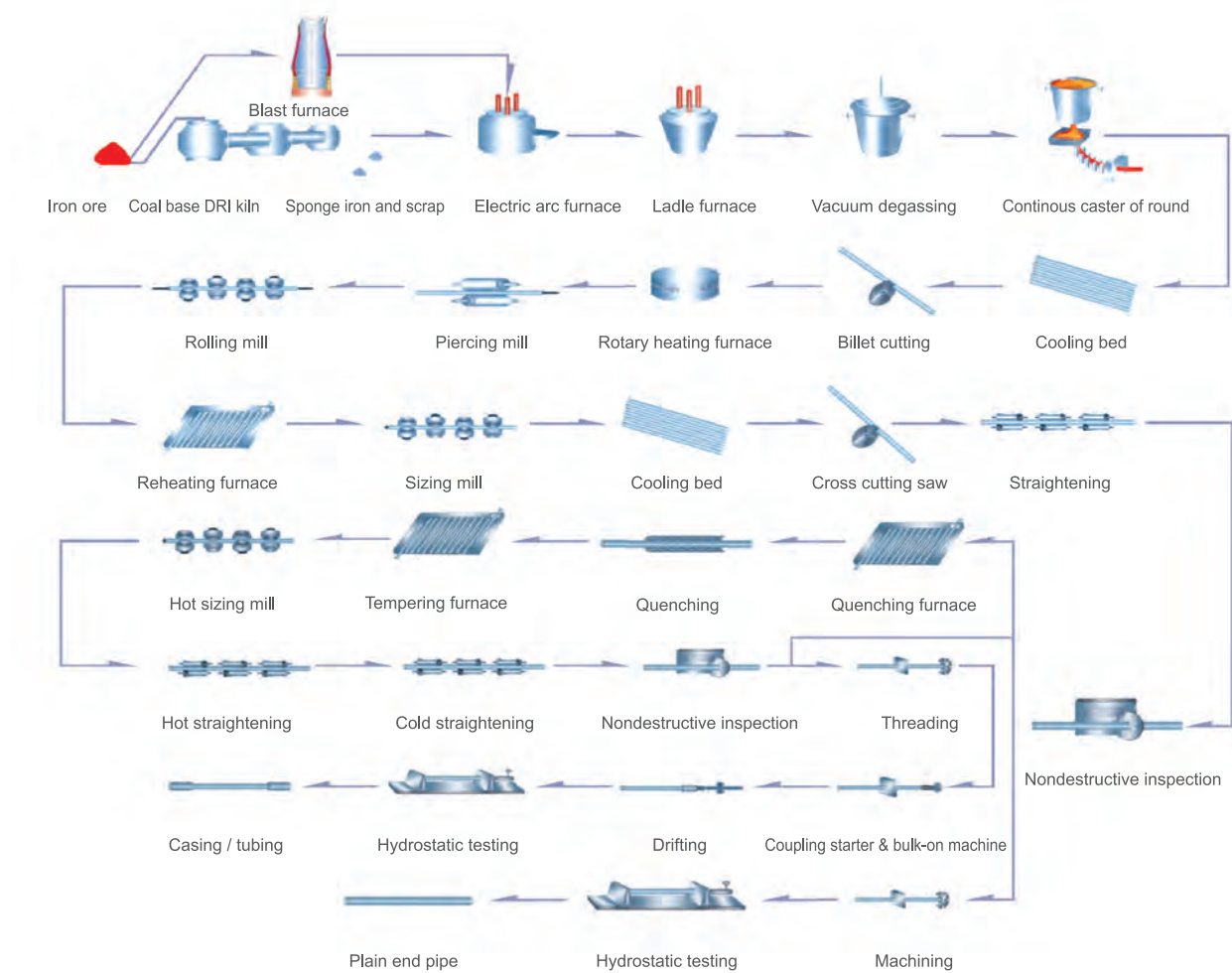
TPCO has built several production lines focusing on subsea and offshore line pipes, which provide higher technical and productional capabilities than for normal onshore products.

Higher hydraulic test pressure:
max. 200 MPa (for pipe O.D. of 273.1mm or below)
More accurate pipe end I.D. tolerance:
min. +/- 0.6mm (depending on pipe sizes)
Low press die stamping on bevel:
For pipe O.D. ranging from 114.3mm to 323.90mm
Inner surface stenciling:
For pipe O.D. ranging from 219.1mm to 323.90mm
Subsea line pipes:
O.D. : 60 ~ 711mm
W.T. : 4.0 ~ 50mm

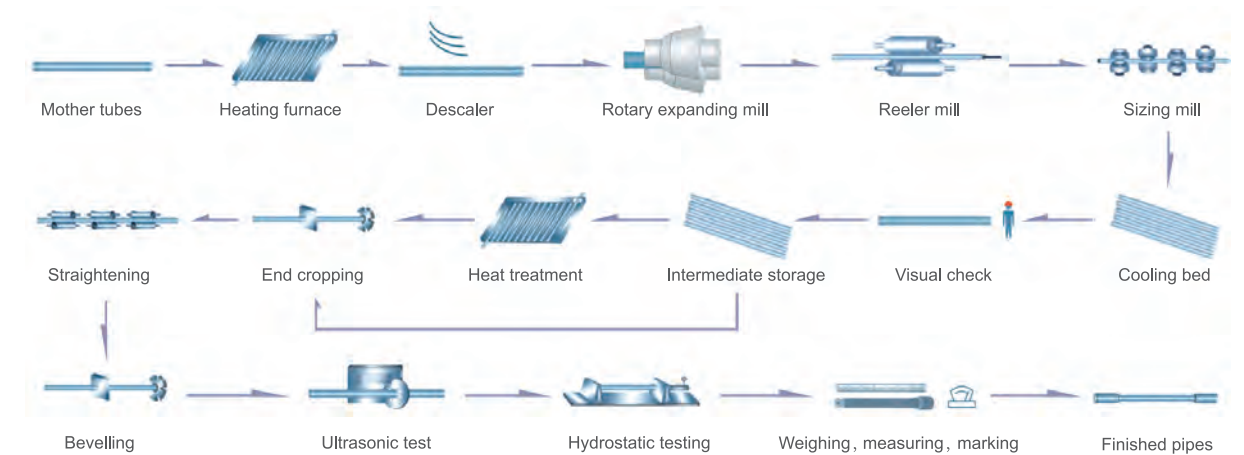


Production Process

MPM & PQF Mill



Rotary Expansion Mill



Products and Services

TPCO has been producing and supplying casing, tubing and line pipes according to API standards, non-API standards, premium connections, for onshore, offshore and subsea applications, and other pipes used in various industries, with 26 steel grades, and about 10,000 varieties, being among the top rank of the world pipe industry.

TPCO produces OCTG of API grades and TP series. TP series are the proprietary products developed independently by TPCO suitable for oil and gas wells with severe and tough conditions, including high collapse casing series, steam injection/ heavy oil recovery casing series, high collapse anti-sour corrosion series, 3Cr and 13Cr anti-CO₂ corrosion series, Ni-based CRA and Ti-based alloy grades, and high-strength super-deep well casing series. TPCO has its own proprietary products of the premium connection series.

Services

TPCO attaches great importance to serving customers, and always ready to meet the customers' requirements before sale and after sale at any time, including licensing the repair shops, providing with pup joints, cross over, technical training, engineering maintenance, field service for pipe running etc.

TPCO holds about 250 valid registered patents which include 30 registered patents related to premium connection in both China and overseas, there are more than 20 repair workshops are licensed outside China, covering almost all major oil and gas areas worldwide. Overseas service team is working on 24 X 7 to provide technical support to global clients, including well design, material selection and premium connection down-hole operation training etc.

Application

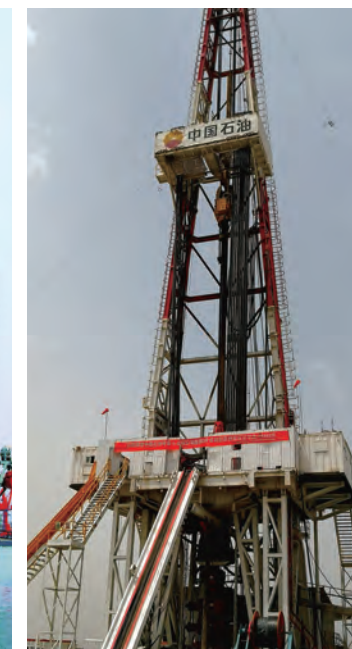
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Beijing Daxing international airport



Offshore platform of Bohai oilfield



Luntan 1# well in Tarim Oilfield
Most deepest onshore well in Asia

Seamless pipe

Casing: O.D. 4-1/2" ~ 20"
Tubing: O.D. 2-3/8" ~ 4-1/2"
Drill pipe: O.D. 2-3/8" ~ 6-5/8"
Line pipe: O.D. 2" ~ 28"
Cylinder pipe: O.D. 5.563" ~ 28"
Boiler tubes: O.D. 1.9" ~ 28"
Mechanical pipe: O.D. 2" ~ 28"



Refinery



Thermal power plant



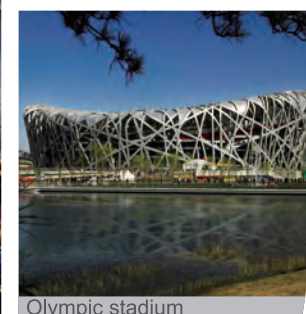
Heavy industry



Airbus A380



Nuclear power plant



Olympic stadium



Olympic stadium



SanXia Dam

Quality Products

Striving to become the world's top quality producer of tubular goods, TPCO adheres to its following internal guidelines:

- Superior material
- Refined smelting
- Accurate rolling
- Precision finishing
- Meticulous work

All TPCO products are manufactured with high quality steel round billets whose features are high purity, good uniformity and flawless surface. Using the most advanced rolling, heat treatment and finishing lines and

sophisticated inspection equipment and with the meticulous work of TPCO personnel, premium pipes are produced and our goal of total quality control is attained.

Advanced Means of Quality Inspection

To ensure product quality, a number of on-line inspection equipment has been established to monitor composition analysis, non-destructive testing, measurement, drifting, hydrostatic testing and other critical elements of pipes.

In addition to on-line inspection and testing, TPCO has also set up five

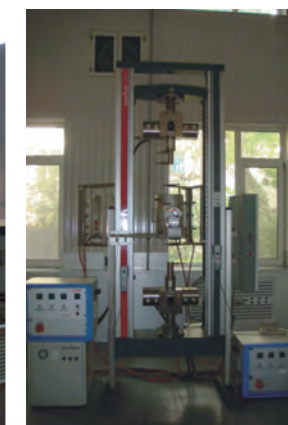
full-time & professional quality inspection stations which are responsible for the analysis, inspection and determination of process quality, quality of incoming raw material, physical and chemical properties of products and technical indexes, etc.

Total Quality Control & Customer Service

TPCO has established proven quality control systems in accordance with world-wide standards and is continuously implementing the latest proven systems as they become available. The current systems are established in accordance with API Q1 specifications, ISO9001 standards and others. TPCO insists on the system of internal quality examination and has trained internal examiners

organized in groups who play an important role in system operations to attain the goal of "Total Quality Control".

TPCO is committed to the highest level of customer service. Some of the goals are, on time delivery, close communication and proactive after-sales service to attain full customer satisfaction.

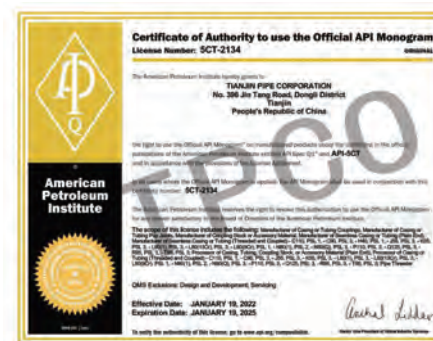


Quality Assurance System & HSE

Starting from 1994, TPCO has been certified by all kinds of international and domestic accreditation institutions such as:

- API Certificates;
- ISO 9001:2015 Quality Management System Certificate by TUV;
- ISO 14001 / ISO45001;
- Classification Society Certificates: CCS、ABS、BV、DNV.GL、Lloyd's Register and etc.
- PED Certificate.
- CE Certificate.

TPCO has been passed more and more qualifications from major Oil companies, such as Saudi Aramco、ExxonMobil、BP、PDVSA、Shell、Chevron、Total、ConocoPhillips、Apache etc. TPCO's products also been well qualified leading EPC contractors, such as Bechtel、Technip、Saipem、Hyundai E&C、Petrofac、Fluor、Samsung Engineering、JGC etc.



Research & Development

TPCO owns a large-scaled and comprehensive CNAS certified R&D centre in China, and takes the leading position in pipe industry, more than 400 sets of international advanced testing and inspection devices are equipped and well used in the Lab, including a full process experimental production line for customized materials development, 4 sets of full-load premium connection testing rigs, which enable in-house seal ability test according to ISO13679 CAL IV ,API 5C5 CAL IV and Customer's requirement. TPCO performs strict quality inspection on materials and finished goods, ensured its products always meet industry standards and customer additional requirements.

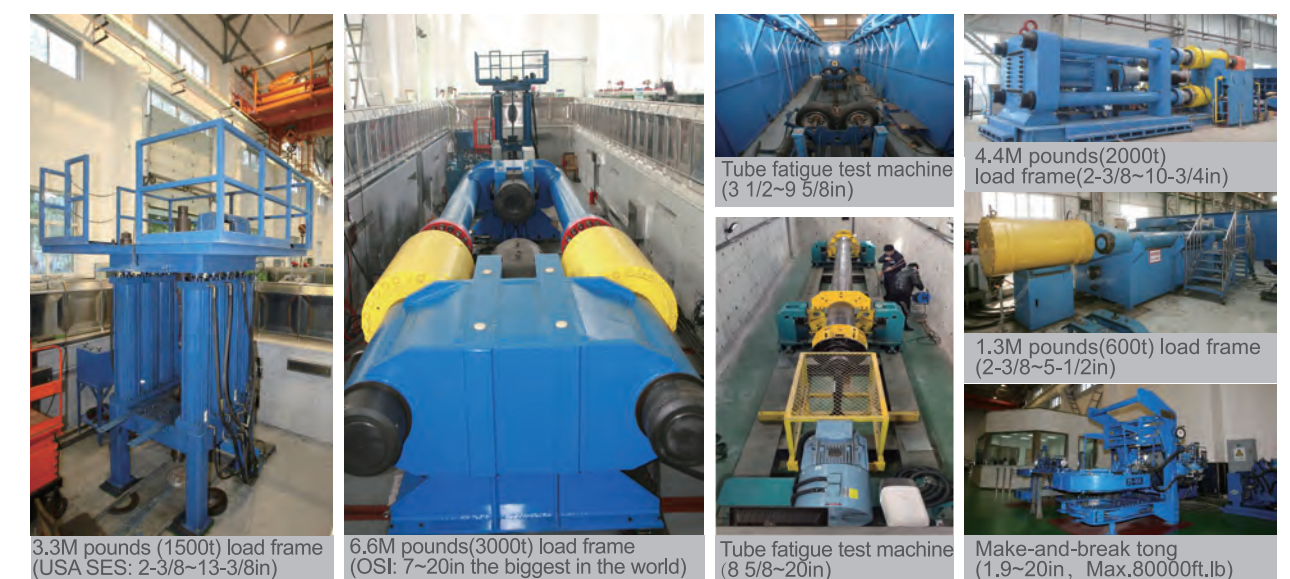


After 30 years development, it has 13 specialized testing and researching divisions, and about two hundred researchers. R&D center now owns a competent team, including 2 doctors and 43 masters. More than 10 senior technical specialists cultivated by company itself, who have already been the leaders of the company technology innovation, mainly devote to material researching, steel-making, rolling, premium connection developing and other important research fields.

Domestic leading full-process seamless pipe simulation production line



Connection evaluation system



Stress corrosion test system



References

Approved and accepted by:

Oil companies



EPCs



Production & Sales Network



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