Yangzhou Jiangdu Yongjian Co., Ltd.

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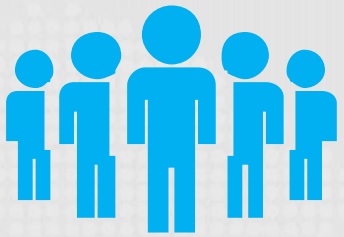


I Company Overview

About Us

Company Location: No. 1458, Wenchang East Road, Yangzhou City

Company Type: Privately-owned Limited Liability Company

Company registered capital: 8219.65 Ten thousand yuan

Current company employees: 278 people, including technical personnel 42 people, technicians 98 people.

The company has the following subsidiaries:

Oil Cylinder Division: Specializing in the production of small and medium-sized oil cylinders: 25-400, maximum test pressure 145MPa

Hydraulic Complete Set Division: Large hydraulic cylinders: cylinder diameter 400-1400,

Maximum length 16000mm, hydraulic pump stations, hydraulic complete set equipment, etc.

Water Equipment Subsidiary: Specializing in the production of various hydraulic metal structures

Make the best products, provide the best service, and achieve the best reputation

National High-Tech Enterprise

21 Years National-Level Specialized and New 'Little Giant' Enterprise

Director Unit of China Hydraulic Pneumatic and Seals Industry Association

Member of China Hydraulic Pneumatic and Seals Standardization Committee

National Intellectual Property Advantage Enterprise

Consecutive 20 Years 3A Credit Rating Enterprise

Jiangsu Province Quality Credit AAA Grade Enterprise

Three Provincial and Ministerial Science and Technology Third Prizes, One Yangzhou City Science and Technology First Prize, One Third Prize

Gold Supplier of China State Shipbuilding Corporation

AA Credit Rating Water Conservancy Machinery Manufacturing Enterprise

Large and Medium-Sized Enterprises in Yangzhou City, Key Industrial Enterprises in Jiangdu District

Jiangsu Province Quality Credit AAA Enterprise

Gold Supplier of China State Shipbuilding Corporation

Jiangsu Province Technology Entrepreneur

Second Prize for Mechanical Design and Product Innovation in Jiangsu Province

National Intellectual Property Advantage Enterprise

Model Enterprise for Trade Secret Protection


BTCC-QMS

北京天一正认证中心有限公司

质量管理体系认证证书

兹证明

扬州市江都永坚有限公司

质量管理体系符合

GB/T 19001-2016 / ISO 9001:2015 标准

质量管理体系认证所覆盖的范围

气动元件、液压缸、气动及液压系统总成、液压启闭机的设计，制造；海事设备（海工设备升降装置、减摇鳍）的制造。

IAF CNAS MANAGEMENT SYSTEM CNAS C026-M

Quality Management System Certification


BTCC-OHSMS

北京天一正认证中心有限公司

职业健康安全管理体系认证证书

兹证明

扬州市江都永坚有限公司

职业健康安全管理体系符合

GB/T 45001-2020/ISO 45001:2018 标准

职业健康安全管理体系认证所覆盖的范围

气动元件、液压缸、气动及液压系统总成、液压启闭机的设计开发、制造；海事设备（海工设备升降装置、减摇鳍）的制造。

IAF CNAS MANAGEMENT SYSTEM CNAS C026-M

Occupational Health and Safety Management System Certification


BTCC-EMS

北京天一正认证中心有限公司

环境管理体系认证证书

兹证明

扬州市江都永坚有限公司

环境管理体系符合

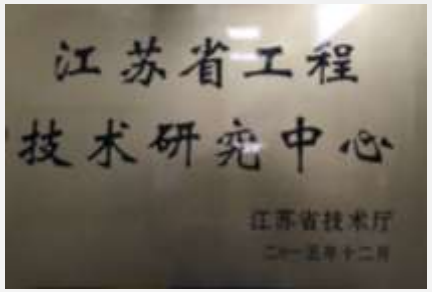
GB/T 24001-2016 / ISO 14001:2015 标准

环境管理体系认证所覆盖的范围

气动元件、液压缸、气动及液压系统总成、液压启闭机的设计开发、制造；海事设备（海工设备升降装置、减摇鳍）的制造。

IAF CNAS MANAGEMENT SYSTEM CNAS C026-M

Environmental Management System Certification



The company currently has a total of 42 product R&D and design personnel, including 1 Senior Engineer, 5 Senior Engineers, and 25 Engineers; The company has established provincial-level R&D platforms such as the Jiangsu Provincial Engineering Technology Research Center, Jiangsu Provincial Enterprise Technology Center, and Jiangsu Provincial Graduate Workstation. It has also established long-term industry-university-research cooperation relationships with many universities and research institutes, including Nanjing University of Science and Technology and CSSC 704 Research Institute, laying a foundation for the company's R&D capabilities.

Undertook 2 provincial and ministerial-level science and technology projects
6 Jiangsu Province key promoted new products and new technologies
Holds 16 valid authorized invention patents and 37 utility model patents
Received 3 provincial science and technology awards and 2 municipal science and technology awards.

Invention Patent

Science and Technology Award

The company's employee team is stable and mature. Currently, employees with more than 20 years of service account for 25%, setting a good example for the younger generation.

We have established long-term employee training programs and improve the overall quality of employees through various competitions. For example: Our company's welder Gu Wuhui won first place in the welding competition in Yangzhou City, and quality inspector Han Yongmei won the first prize in the vernier caliper measurement skills competition.

In the joint graduate training program with Nanjing University of Science and Technology, graduates are stationed at the factory for long-term teaching, creating a good research environment for students and guiding the company in the application of new software and cutting-edge technologies .

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II Main Products and Industry Application Examples

Large Hydraulic Cylinder

φ700 Marine Hydraulic Cylinder

Crane Hydraulic Cylinder

Mining Support Leg Oil Cylinder

Offshore Platform Lifting Hydraulic Oil Cylinder

Multi-stage Hydraulic Cylinder

Large
Cylinder Diameter Range: 20 ∽ 1400mm
Maximum Length: 16000mm
Maximum Weight: 60t
Maximum Test Pressure: 145MPa

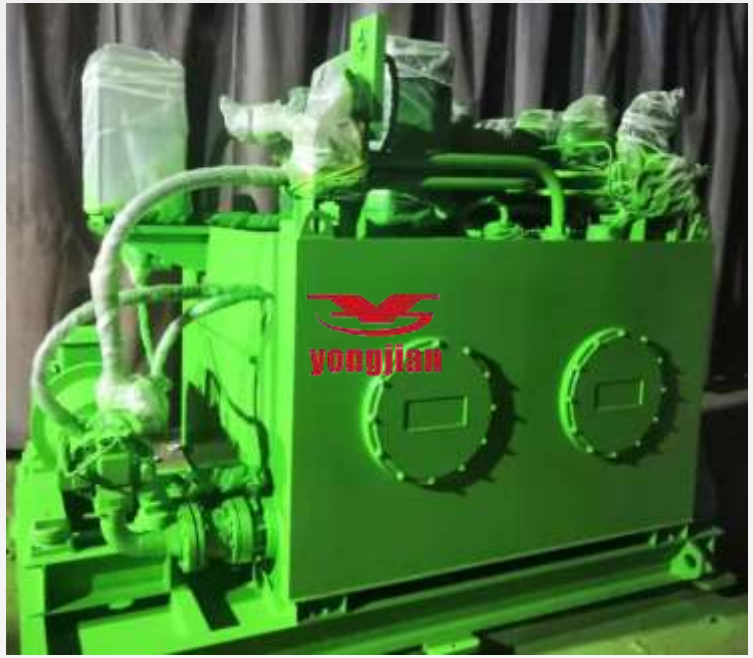
Precision
Low-speed Hydraulic Cylinder:≤ 1mm/s
high speed hydraulic cylinder： ≥ 6000mm/s
Proportional Servo Hydraulic Cylinder: 20Hz

Special
Special Functions:
Multi-stage Cylinder, Multi-stage Double-acting Cylinder,
Multi-stage Equal Thrust Cylinder
Rack and Pinion Cylinder
Wave Compensation Cylinder
Pneumatic-Hydraulic Damping Cylinder
AGC, AWC Oil Cylinder
Cylinder with Various Sensors and Functional Valves

Special
Special Application Environments:
Temperature Environment: -50 ∽ 200 ℃
Marine Environment: Under Seawater 300 meters
High Dust Environment: Foundry, Coking, Cement
Radiation Environment: Nuclear Facilities
Vibration Environment: Vehicle-mounted, Hammering
Explosion-proof environment:

Special
Piston rod targeted special Surface treatment:
Surface quenching
Surface electroplating hard chrome, double-layer chrome
Surface electroplating Nickel + Chrome
Surface Spraying Plasma ceramic
Surface spraying high-velocity ceramic
Surface stainless steel laser cladding

Applied in marine and offshore engineering, metallurgical heavy industry, water conservancy and hydropower, vehicle-mounted mobile and JG matching various hydraulic oil sources, functional valve groups, complete hydraulic systems, with a maximum power of up to 800Kw,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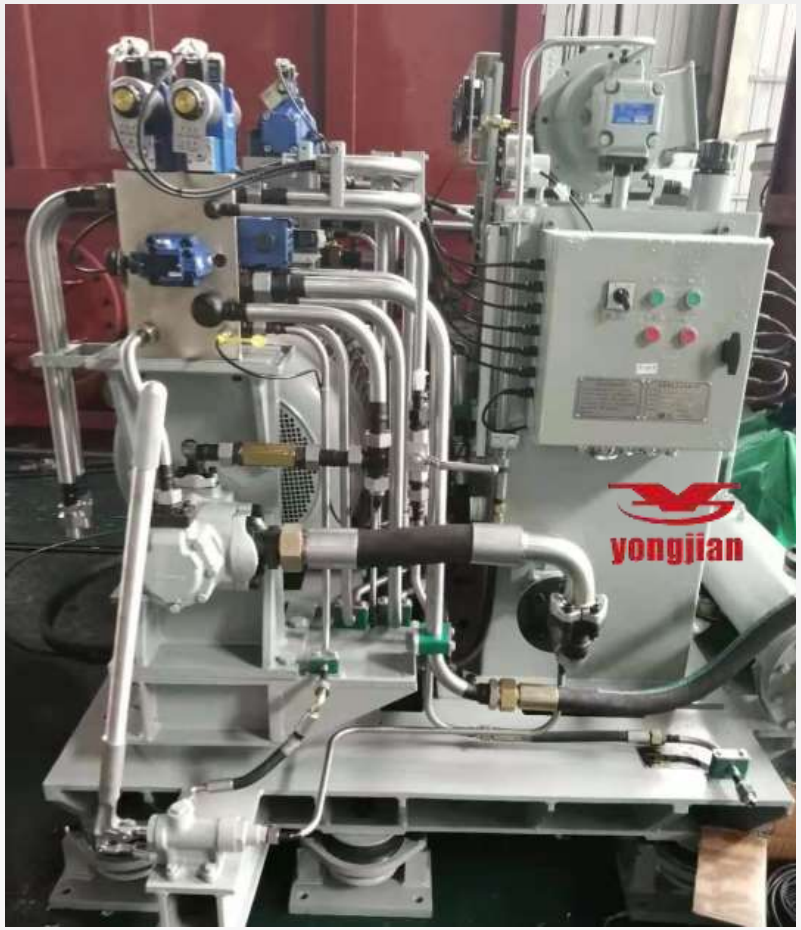
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For the first time, a century-old German company has delivered a hydraulic system to a company outside Europe for manufacturing, delivery and acceptance in progress

For the first time, a century-old German company has delivered a hydraulic system to a company outside Europe for manufacturing, delivery and acceptance in progress

Transfer Boat Trolley

Processing, Installation, and Retrofit of Experimental Equipment and Supporting Air Chamber

Rockburst Testing Machine at Wuhan Branch of Chinese Academy of Sciences

Anti-Rolling Fin

Product Application Fields	Application Equipment	Provided Products	Main Clients
Engineering Vessel Support	Dredger	Mud Gate, Hanger Hydraulic Cylinder for Split Hopper Barge	Shanghai Dredging Company Tianjin Dredging Company Netherlands
Offshore Wind Power Equipment	Hydraulic Jack-up Platform	Hydraulic Lifting Device	China Shipbuilding Industry Corporation Hantong Group Changfei Offshore Engineering
	Stabilizing Pile Platform	Hydraulic Pile Gripper Device Hydraulic System	CCCC Third Harbor Engineering Hantong Group
	Booster Stations, etc.	Pile Clamps, Hydraulic Cylinders	Honghua
Shipyard Manufacturing Equipment	Ship Transfer Trolley	Hydraulic Systems and Hydraulic Cylinders	GSI Huangpu Shipyard, etc.
	Flip Mechanism	Hydraulic Systems and Hydraulic Cylinders	Hantong Yingji /611 Institute
Anti-Rolling Fin	Retractable and Non-Retractable Electric Drive, etc.	Hydraulic Systems, Hydraulic Cylinders Mechanical Actuators, etc.	CSSC 704 Institute

Complete equipment including mud gates and hangers (both with hydraulic cylinders) provided for the trailing suction hopper dredgers of Shanghai Channel Bureau and Tianjin Channel Bureau

Hydraulic cylinders provided for split hopper barges for companies such as Shanghai Hangjie, Netherlands, and the United States

Project	Vessel Type	Main Specifications and Supply Content	Quantity	Ship Inspection	Supply Period
First Offshore Platform Supporting	Changjiang Channel Dredging Lifting Platform	Φ 300/ Φ 180-1280 Lifting Cylinder	16	CCS	Year 2012
Second Offshore Platform Supporting	Mobile Life Support Lifting Platform	Φ 500/ Φ 280-1280 Hydraulic Cylinder	16	CCS	Year 2015
Third Offshore Platform Support	CCCC Second Harbor Engineering Gravel Pile Operation Lifting Platform	Φ 500/ Φ 280-1700 Hydraulic Cylinder, Hydraulic System, Ring Beam	16	CCS	Year 2015
Fourth Offshore Platform Support	Daqiao Single Pile 4000T Offshore Wind Power Installation Platform	Φ 560/ Φ 360-1600 Lifting Cylinder	32	CCS	Year 2016
Fifth Offshore Platform Support	Sanxia Single Pile 4000T Offshore Wind Power Installation Platform	Φ 560/ Φ 360-1600 Lifting Cylinder	32	CCS	Year 2017
Supporting the sixth offshore platform	450T Special lifting platform	220/100/1050 Hydraulic cylinder, hydraulic system, ring beam	16		Year 2017
Supporting the seventh offshore platform	Huana 2000T Embedded rock wind power lifting platform	600/300-1600 Lifting cylinder	16	ABS	Year 2018
Supporting the eighth offshore platform	2000T Embedded rock wind power lifting platform	600/300-1600 Hydraulic cylinder	16		Year 2018
Supporting the ninth offshore platform	2800T Lifting device hydraulic system	Lifting hydraulic system	4 Sets	CCS	Year 2018
Tenth Offshore Platform Support	Land 2800T Wind Power Lifting Platform	630/360-1600 Lifting Hydraulic Cylinder	16	CCS	Year 2018
Eleventh Offshore Platform Support	Honghua 850T Wind Power Operation and Maintenance Platform	400/200/1300 Hydraulic Cylinder, Hydraulic System, Ring Beam	16	CCS	Year 2018
Twelfth Offshore Platform Support	CSSC 704 Institute 600T Multifunctional Construction Platform	360/180-1300 Hydraulic Cylinder, Hydraulic System, Ring Beam	16	CCS	Year 2018

Project	Vessel Type	Main Specifications and Supply Content	Quantity	Ship Inspection	Supply Period
Thirteenth Offshore Platform Support	Truss-type Dual Step Lifting Platform	680/300-1800 Hydraulic Cylinder	36	LR	Year 2018
Supporting the Fourteenth Offshore Platform	Tongsheng 500T Pile Gripper Lifting Platform	320/160/1050 General Contract for Hydraulic Cylinder, Hydraulic System, Ring Beam and Other Lifting Devices	16		Year 2019
Supporting the Fifteenth Offshore Platform	CSSC 101 Wind Power Installation Platform	Φ 560/ Φ 360-1600 Hydraulic Cylinder and Hydraulic System, etc.	32	CCS	Year 2019
Supporting the Sixteenth Offshore Platform	Yantai Dalao Bureau Double Step Wind Power Installation Platform	Double Step Hydraulic System	4	CCS	Year2020
Supporting the Seventeenth Offshore Platform	Tongsheng 2500T Wind Power Lifting Platform	600/300/1650 Hydraulic Cylinder, Hydraulic System, Ring Beam	16	CCS	Year 2021
Eighteenth Offshore Platform Support	Hengtong Lande 2500T Wind Power Lifting Platform	600/300/1650 Total Contract for Lifting Devices such as Hydraulic Cylinder, Hydraulic System, Ring Beam	16	CCS	Year 2021
Nineteenth Offshore Platform Support	Baosheng Changfei 1200t 4000T Double Step Hydraulic Pin Lifting System	630/290-2150 High Position, Low Position Ring Beam Lifting Cylinder	24	CCS	Year 2022
Twentieth Offshore Platform Support	Hantong HY78 1200T 5040T Double Step Hydraulic Pin Lifting System	540/280-1800 Hydraulic Cylinder, Hydraulic System, Ring Beam, Electrical Control, etc.	1 Set	CCS	Year 2022
21st Offshore Platform Supporting	Hantong HY80 1200T 5040T Double Step Hydraulic Pin Lifting System	540/280-1800 Hydraulic Cylinder, Hydraulic System, Ring Beam, Electrical Control, etc.	1 Set	CCS	Year 2022
22nd Offshore Platform Supporting	Tengdong 1200t 5080t Double Step Hydraulic Pin Lifting System	540/290-2000 Hydraulic Cylinder, Hydraulic System, Ring Beam, etc.	1 Set	CCS	Year 2022

Project Name: Hangongping 2 Lifting Mechanism Gravel Pile Platform

Shipowner: CCCC Second Harbor Engineering

Shipyard: Jiangsu Dajin Heavy Industry

Lifting Device: CSSC 704 Institute

Single Pile Lifting Capacity: 2000t

Supply Scope: Hydraulic Cylinder, Hydraulic System, Ring Beam Assembly

Main Parameters of Hydraulic Cylinder: Lifting Cylinder 500/280-1700

Quantity of Hydraulic Cylinders: 16 pieces

Delivery Time: 2015 Year October

Project Name:

Daqiao Single Pile 4000T Self-elevating Self-propelled Wind Power Installation Platform

Sanxia Single Pile 4000T Self-elevating Self-propelled Wind Power Installation Platform

Shipowner: China Railway Fuchuan Marine Engineering Co., Ltd.

Shipyard: Xiamen Shipbuilding Industry

Lifting Device: Runbang Heavy Industry

Single Pile Lifting Capacity: 4000t

Scope of Supply: Hydraulic Cylinder

Main Parameters of Lifting Hydraulic Cylinder: 560/300-1600

Quantity of Hydraulic Cylinders: 2*32 pieces

Supply Period: 2016-2017 years

Project Name: 101# Offshore Wind Power Installation Platform

Shipowner: CSSC Marine Engineering

Shipyard: Shanhaiguan Shipyard

Lifting Device: CSSC 704 Institute

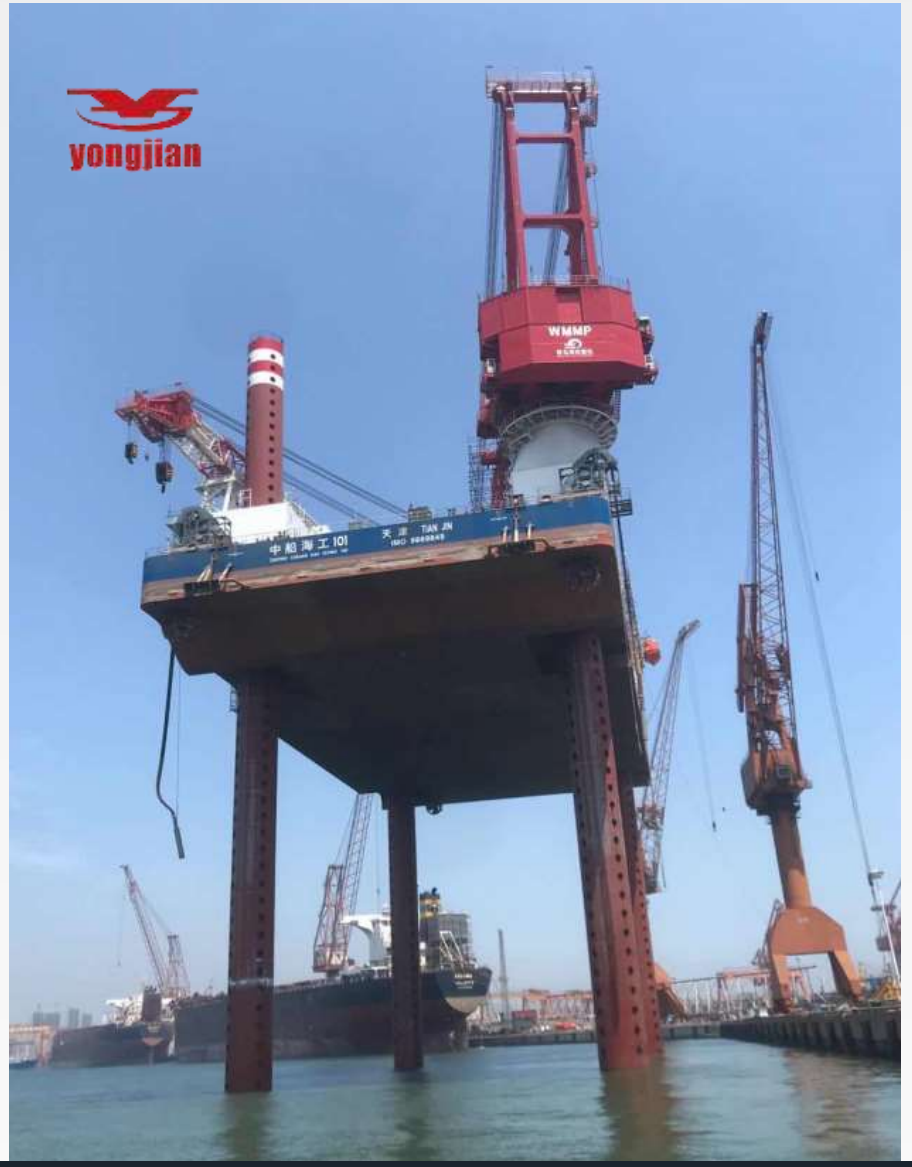
Single Pile Support Capacity: 6000t

Scope of Supply: Hydraulic Cylinder, Hydraulic System

Main parameters of lifting hydraulic cylinder: 560/280-1700

Number of hydraulic cylinders: 32 pieces

Delivery time: 2019 year



Project name: H469 Offshore Platform Lifting Device

Shipowner: Yantai Dalao Bureau

Shipyard: CIMC Raffles

Lifting Device: CSSC 704 Institute

Scope of supply: Hydraulic System

Delivery time: 2019 year

Project name: Ouyang 001 Offshore Platform Lifting Device

Shipowner: Zhejiang Ouyang Offshore

Shipyard： Jiangsu Taixing Dayang Marine Equipment

Lifting device: China Merchants Tian Shi

Scope of supply: Hydraulic System (In cooperation with EATON Company)

Delivery Time: 2018 Year

Project Name:

Changsheng 1200 Offshore Wind Power Installation Platform

Ship Owner: Changfei Marine Engineering

Shipyard: Zhenhua Heavy Industries

Lifting Device: Guangdong Jingyin

Single Pile Lifting Capacity: 5000t, Double Step

Scope of Supply: Hydraulic Cylinder

Main Parameters of Lifting Hydraulic Cylinder: 630/280-1700

Number of Hydraulic Cylinders: 48 Pieces

Delivery Time: 2022 Year

Project Name:

HY78, HY80 Hydraulic Pin Jack-up Wind Power Installation Platform

Ship Owner: Jiangsu Hantong Group (Marine Construction)

Shipyard: Nantong Yingji Heavy Industries

Lifting Device: Yongjian Company

Single Pile Lifting Capacity: 5040t, Double Stepping

Scope of Supply: Hydraulic Cylinders, Hydraulic Systems, Ring Beam Assemblies, and Other Complete Equipment

Main Parameters of Lifting Hydraulic Cylinder: 560/300-1600

Number of Hydraulic Cylinders: 2*64 pieces

Delivery Time: 2023-2024 years

Hydraulic Cylinders, Hydraulic Systems, Electrical Control Systems, and Ring Beam Assemblies Before Shipment

Lifting Device During Installation

Project	Vessel Type	Shipyard or Shipowner Name	Main Specifications and Supply Content	Supply Period
First Pile Gripper Matching	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	200/110-1277, 240/160-2350, 240/160-1500 Hydraulic Cylinders, Hydraulic Systems	2017 Year
Second Pile Gripper Set	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	200/110-1277, 240/160-2350, 240/160-1500 Hydraulic Cylinders, Hydraulic Systems	2017 Year
Third Pile Gripper Set	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	200/110-1277, 240/160-2350, 240/160-1500 Hydraulic Cylinder, Hydraulic System, Electrical Control System	2018 Year
Fourth Pile Gripper Set	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	240/160-2350, 240/160-1500 Hydraulic Cylinder, Hydraulic System, Electrical Control System	2018 Year
Fifth Pile Gripper Set	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	320/220-1500, 320/220G-2000 Hydraulic Cylinder, Hydraulic System	2020 Year
Sixth Pile Gripper Set	Pile Gripper Oil Cylinder Without Guide Arm Structure	Jiangsu Ocean Water Construction	320/220-1500, 320/220G-2000 Hydraulic Cylinder, Hydraulic System	2020 Year
Seventh Pile Gripper Set	Pile Gripper Stabilizing Platform	Shanghai Tongsheng	320/160/1050 All Hydraulic Cylinders, Pump Station, System Piping, and Electrical Control Assembly	2019 Year
Eighth Pile Gripper Set	Pile Gripper Hydraulic System Assembly with Non-Guided Arm Structure	Nantong Pengrui Offshore Zhongtian Project	200t*1200 Hydraulic Cylinder, Pump Station, System Piping, and Electrical Control	2019 Year
Ninth Pile Gripper Set	Pile Gripper Device Hydraulic System Assembly with Guided Arm Structure	Sanhang Xiamen Electromechanical Company	160t*1200 Hydraulic Cylinder, Pump Station, System Piping, and Electrical Control	2020 Year
Tenth Pile Gripper Set	Pile Gripper Device Hydraulic System Assembly with Guided Arm Structure	Sanhang Xiamen Electromechanical Company	160t*1200 Hydraulic Cylinder, Pump Station, System Piping, and Electrical Control	2020 Year

Project	Vessel Type	Shipyard or Shipowner Name	Main Specifications and Supply Content	Supply Period
Eleventh Pile Gripper Set	Underwater Intelligent Multi-Pile Gripper Device Hydraulic System Assembly	Sanhang Xiamen Company	100t*1200 Hydraulic Cylinder, Pump Station, System Piping, and Electrical Control	Year 2021
Twelfth Pile Gripper Set	Underwater Intelligent Leveling Device Hydraulic System Assembly	Sanhang Xiamen Company	250/200-1800 Hydraulic Cylinder, Pump Station, Leveling Mechanism, System Piping, and Electrical Control	Year 2021
Thirteenth Pile Gripper Set	Pile Gripper Device Hydraulic System Assembly with Guided Arm Structure	Sanhang Ningbo Branch	200t*2850 Hydraulic Cylinder, Pump Station, System Piping, and Electrical Control	Year 2022
Fourteenth Pile Gripper Set	Cangnan Offshore Wind Power Project Pile Gripper Device Hydraulic System Assembly	Sanhang Xiamen Company	320/220-2500, 320/220-2050 Hydraulic Cylinder, Hydraulic System	Year 2022
Fifteenth Pile Gripper Assembly	SPIC Shandong Peninsula South Offshore Wind Power Project Pile Gripper Device Hydraulic System Assembly	CCCC Third Harbor Engineering (Xiamen) Co., Ltd.	200t*1200, 200t*2500, 100t*300 Hydraulic Cylinders, Hydraulic System Power Station and Control Console, Operation Room	Year 2022
Sixteenth Pile Gripper Assembly	Subsea Pile Foundation Leveling and Guiding Device Underwater Piling and Surface Correction System	XCMG Group	450/250-6500 Hydraulic Cylinder, Upper and Lower Ring Beams, Surface Guiding Pile Gripper, Hydraulic System and Electrical Control	Year 2023
Seventeenth Pile Gripper Assembly	TP-001 Pile Stabilizing Platform Hydraulic System	Jiangsu New Hantong Ship Heavy Industry	280/180-1300 Hydraulic Cylinder, Hydraulic Pump Station, Hydraulic Pipeline, and Electrical Control	Year 2023
Article 18 Pile Gripper Support	TP-002 Pile Stabilizing Platform Hydraulic System	Jiangsu New Hantong Ship Heavy Industry	280/180-1300 Hydraulic Cylinder, Hydraulic Pump Station, Hydraulic Pipeline, and Electrical Control	Year 2023
Article 19 Pile Gripper Support	Multifunctional Offshore Wind Power Foundation Piling Platform	Liyang Marine Engineering	320/220-2250 Hydraulic Cylinder, Hydraulic Pump Station, Hydraulic Pipeline, and Electrical Control	Year 2024

Project Name: Bottom-Supported Single Pile Stabilizing Platform

Shipowner: CCCC Third Harbor Engineering Co., Ltd., Fourth Harbor Engineering Co., Ltd.

Shipyard: Xiamen Shipbuilding Industry, Pingtan Xiongying Shipyard, Zhejiang Yishun Wind Power

Single Pile Diameter: 8 ∽ 10.5 meters

Pile Gripper Correction Force: 200t

Scope of Supply: Pile Gripper Device (including Hydraulic Cylinder), Gripper Arm Hydraulic Cylinder, Pin Hydraulic Cylinder, Hydraulic System, Electrical Control System, On-site Piping, and other complete equipment

Pile Gripper Device Stroke: 1500, 2200, 2800, etc.

Supply Time: 2020-2022 year

Zhongtian Offshore Engineering -- Single Pile Gripper Device

Project Name: Bottom-Supported Single Pile Stabilizing Platform

Shipowner: Zhong Tian Technology

Shipyard: Jiangsu Haili Wind Power

Single Pile Diameter: 8 ∽ 10.5 meters

Pile Gripper Correction Force: 200t

Scope of Supply: Pile Gripper Device (including Hydraulic Cylinder), Gripper Arm Hydraulic Cylinder, Pin Hydraulic Cylinder, Hydraulic System, Electrical Control System, On-site Piping, and other complete equipment

Pile Gripper Device Stroke: 1500, 2250, 500

Delivery Time: 2024

Project Name: Bottom-Supported Four-Pile Stabilizing Platform

Ship Owner: Shandong Hongzhou

Shipyard: Nantong Yahua Shipyard

Pile Leg Diameter: 2.6 ∽4 meters

Root Opening Distance: 30*30

Scope of Supply: Pile Gripper Device (including Hydraulic Cylinder), Positioning Pile Hydraulic Cylinder, Hydraulic System, Electrical Control System, On-site Piping, and other complete equipment

Delivery Time: 2023

Innovative Features: Pile Positioning Mechanism, Gripper Arm Rotation Mechanism

Project Name: Bottom-Supported Four-Pile Stabilizing Platform 2 Sets

Ship Owner: Hantong Group Marine Construction

Shipyard: New Hantong Shipyard

Pile Leg Diameter: 2.6 ∽4 meters

Root Opening Distance: 30*30

Scope of Supply: Pile Gripper Device (including Hydraulic Cylinder), Positioning Pile Lifting Hydraulic Cylinder, Hydraulic System, Electrical Control System, On-site Piping, and other complete equipment

Delivery Time: 2023

Innovative Features: Platform Positioning Pile Leveling Mechanism

Underwater Intelligent Positioning and Leveling Pile System

The project is applied to the underwater foundation pile driving operation of the four-pile jacket for offshore wind power. The entire equipment is located on the seabed at a depth of 50 meters underwater, and the operators perform operations and inspections on the working vessel, achieving precision in pile driving elevation, spacing, and perpendicularity. The bottom right picture shows a photo taken during the construction process, currently located about 40 meters underwater.Our company owns the intellectual property rights of the equipment, and the accuracy verified by construction far exceeds the equipment accuracy requirements.

Applicable pile diameter range for sinking fc piles	2.2m~4.0m
Applicable pile diameter range for sinking piles	2.2m~4.0m
Root spacing	30*30 （ 24 、 27 ）
Total platform height	18.82m
Pile gripper correction force	100t
Pile gripper cylinder stroke	1.2m
Leveling force (per anti-settling plate)	400t
Leveling cylinder stroke	1.8m
Leveling and correction accuracy	≤0.3%
Detection method	Sonar, underwater laser, etc.

Project Name: Guanghuo Qingzhou Booster Station Jacket Pile Clamping Device

Shipyard: Honghua

Delivery Time: April 2021

Main Parameters:

Parameter name	Quantity
Single Pile Locking Force	8000KN
Steel Pipe Pile Diameter	4200mm
Steel Pipe Pile Wall Thickness	60mm
Steel Pipe Pile Material	DH36
Inner Diameter of Pile Shoe	4450mm
Height of Pile Clamping Device	600mm (Adjustable)
Pile Clamping Cylinder Diameter	160
Pile Clamping Cylinder Stroke	280

YINCHAO JILIAO PROJECT HYDRAULIC HOIST MACHINE PROJECT

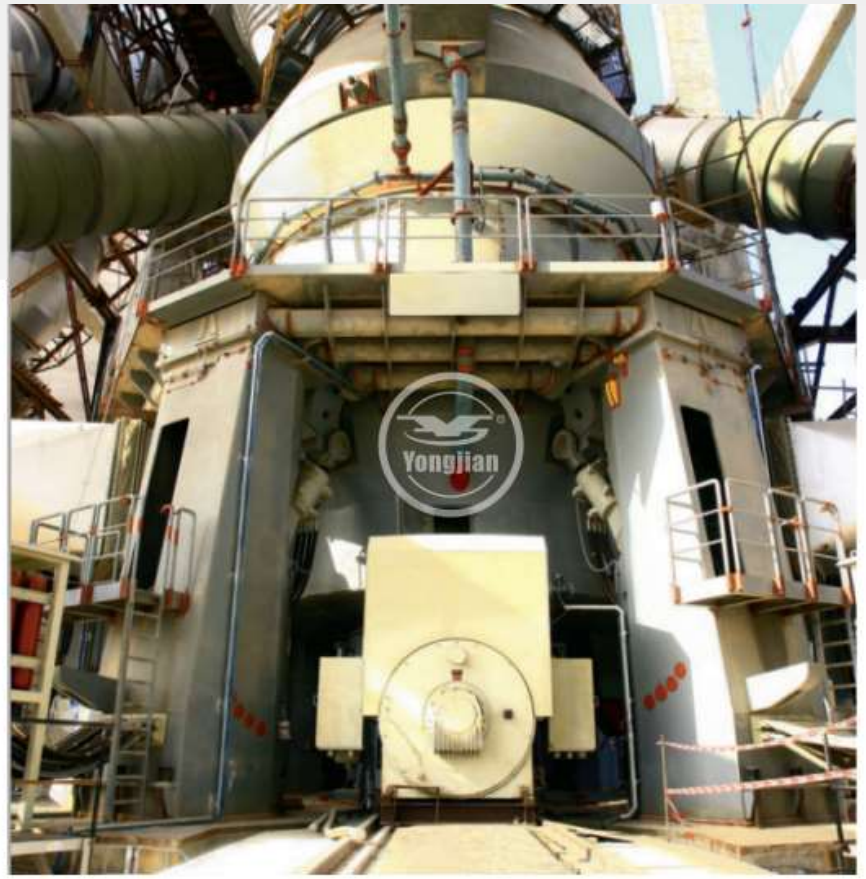
THE ONLY HYDRAULIC HOIST PROJECT AT THE SHANGHAI WORLD EXPO, THE RELIABILITY OF ITS OPERATION IS CRUCIAL TO THE DAILY DRAINAGE SAFETY OF THE BAILIANJING AREA.

YANGTZE RIVER PROTECTION PROJECT JIUJIANG CONSTRUCTION CONTRACTING DEPARTMENT SHAYAN ROAD GATE BRIDGE HYDRAULIC HOIST PROCUREMENT PROJECT

Applied in production lines of the steel industry such as smelting, hot rolling, cold rolling, rail beam, pickling, electroplating, and cooling beds, including all hydraulic cylinders like AGC, AWC, balance cylinders, expansion and contraction cylinders, and balance blocks.

AGC Hydraulic Cylinder:
Cylinder Diameter: Φ 800~ Φ 1400mm
Frequency Response: ~12HZ
Working Pressure: ~31.5MPa

Balanced Plunger Cylinder:
Cylinder Diameter: ~650mm
Working Pressure: ~35MPa



Serving in metal slag, coal powder, and other grinding machine loading oil cylinders, enduring high frequency, fatigue, impact, heavy dust, and continuous operation under harsh conditions, reaching the advanced level of similar international products.

Equipped with the main top oil cylinder, correction oil cylinder, and exit oil cylinder for large rectangular pipe jacking machines

Equipped with the main top oil cylinder, correction oil cylinder, and exit oil cylinder for Zhongyuan 1 rectangular pipe jacking machine

At the construction site of the most advanced hard rock tunnel boring machine in China, equipped with the main top oil cylinder, correction oil cylinder, and screw machine oil cylinder

yongjian

III Manufacturing Capability and Process Flow

Processing of the Cylinder Body

Processing Equipment: Heavy Duty CNC Lathe (CK61160)
Processing Content: Outer Diameter and End Face Machining of Cylinder Body
1, Align with Hole, Finish Turning Outer Diameter and End Face,
2, Synchronize Belt to Both Ends for Threaded Hole Indexing, and Perform Hydraulic Drilling and Tapping.
Quality Requirements:
1, Perpendicularity of Both End Faces to Hole 0.06,
2, M48 Threaded Hole Perpendicular to End Face,
3, M48 Threaded Hole Indexing Accuracy
4. The thread forming is aesthetically pleasing, without defects such as cross-threading or scratches.

Processing Equipment: CNC Deep Hole Boring Machine (FT500*12000)
Processing Content: Precision Machining of the Inner Bore of the Cylinder Body
Equipment Price: 210 million imported from Italy
Processing Range:
Cylinder Diameter: 50-750mm
Length: 1000 - 120,000mm.
Processing Accuracy:
Roughness: Ra:0.2um
Straightness: 0.02mm/1000mm
Roundness: 0.02mm

Large-scale piston rod finishing

Processing Equipment: Heavy Duty CNC Lathe CK61160X18/40
Processing Content:
Single clamping cutting process for outer circle, positioning shoulder, root R angle, sealing groove, and end face forming.
Outer circle, positioning shoulder h8, outer sealing groove dimensional accuracy h9, external thread M320×6-6g
Quality Requirements:
1, Ensure groove bottom roughness Ra0.8
2, Root R arc roughness Ra1.6
2, Perpendicularity of end face and positioning shoulder 0.03
3, Coaxiality of groove, thread, and positioning shoulder 0.03

Horizontal Machining Center

High-performance, heavy-duty, large and medium-sized horizontal machining centers imported from Doosan, Korea
Model: NHM6300,
Travel: 1050/850/1000(mm),
It is an advanced model with high performance and high precision standards
Processing hydraulic cylinder end caps, mounting parts
Processing hydraulic system valve blocks and other parts
High precision, high efficiency, good consistency

Numerical Control Floor-type Boring and Milling Machine

The TJK6920 CNC floor-type boring and milling machine from Jiaoda Kunji is a rare piece of equipment among domestic oil cylinder peers.
Mainly used for the milling and precision hole processing of various large-scale, heavy-duty parts (with strong milling capability)
Its X axis travel reaches 10000 mm, Y axis 4000 mm, Z axis 2500 mm, the rotary table can bear 45T, and any three axes can be linked.
Processing of large installation parts and support seats ensures that the hydraulic cylinder can work reliably within the design range for a long time.

Numerical Control Horizontal Milling and Boring Machine

Processing Equipment: Numerical Control Planer-type Horizontal Milling Boring Machine TKP6513
Four-axis Three-linkage
Processing Content: Rear cover of oil cylinder, rod end eye, cylinder body, installation parts, etc.
Milling opposite sides, boring holes, drilling and tapping threads to size
Milling various spherical surfaces, special-shaped structures, threads, etc.
Quality Assurance Capability:
1. Ensure symmetry of opposite sides 0.05
2. Aesthetic thread forming, free from defects such as cross-threading and scratches, especially for milling the end face threaded holes of large cylinder bodies, achieving grade 6 or above, roughness within Ra1.6, perpendicularity to the end face within 0.05, and positional tolerance within 0.05

Welding Robot

Variable Position, Horizontal Rotating Axis;
Vertical Rotating Axis;
Vertical Fixed;
Horizontal Fixed;
Multi-station Continuous Welding Operations.

Circumferential Submerged Arc Welding

Ring Weld Diameter Φ 2000mm, After Welding Evaluation, Weld Seam Depth Can Reach 190mm.
Stable and Reliable Welding Quality, Low Stress, High Welding Efficiency, and Low Cost.

Argon Arc Welding Machine

Automatic Welding for Submerged Arc Welding of Oil Pipelines
Forming Meets Design Requirements
Good Appearance Consistency
High Processing Efficiency

yongjian

(1) Issue Design Task Book, Confirm Customer Requirements

370 磨机润滑柜

设计任务书

文件代号：917512-00-2-CN-00SR

编　制：

校　对：

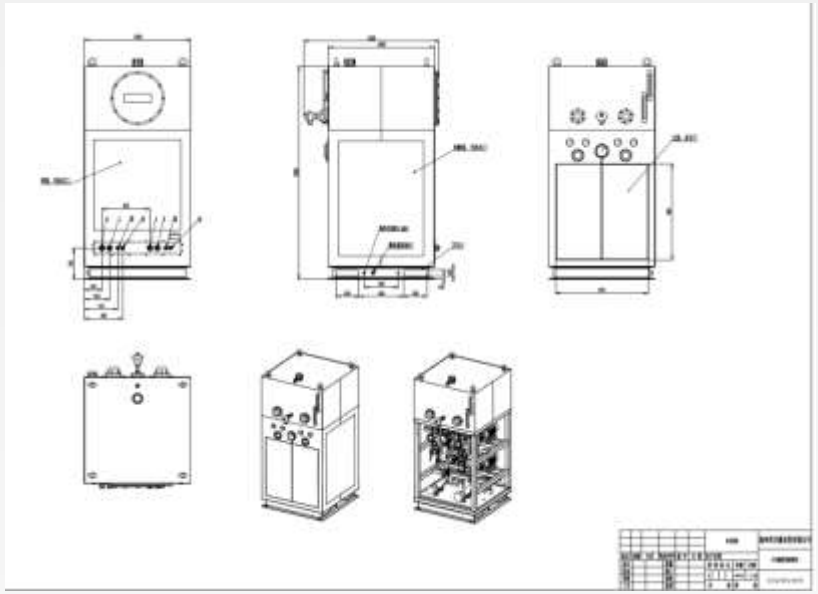
会　签：

审　核：

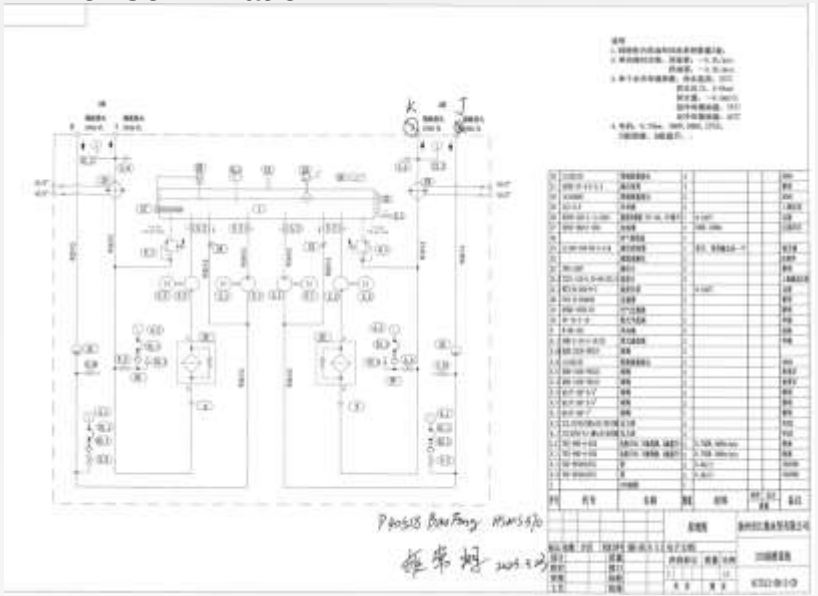
扬州市江都永坚有限公司

2023 年 3 月

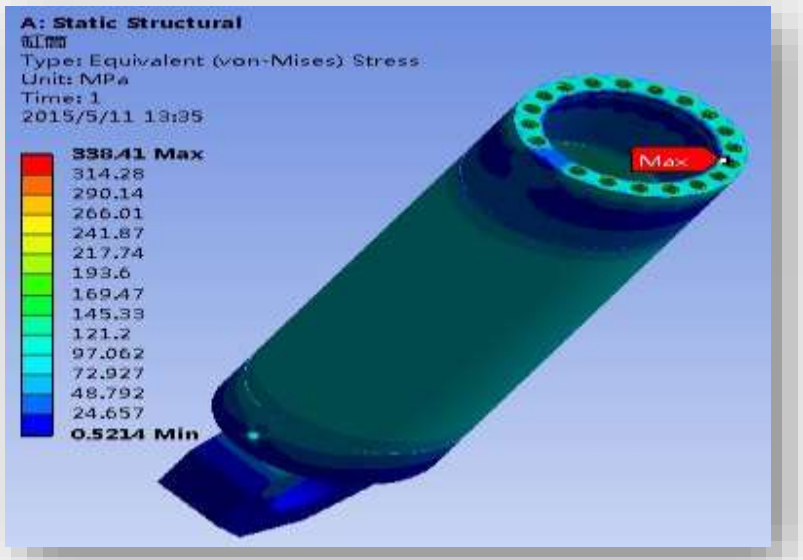
(2) Design 3D Scheme Diagram, Prepare Test Outline



(3) Review 3D Scheme, Confirm Selection of Purchased Parts Brands, Send to Customer for Confirmation

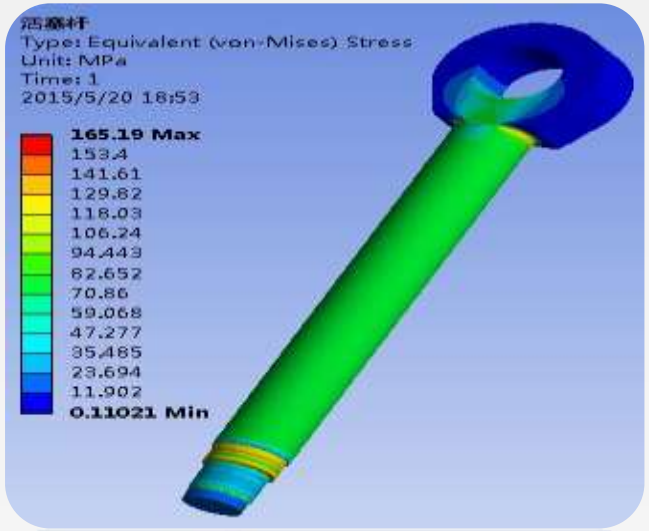


(4) Hydraulic Oil Cylinder Life Calculation



Equivalent Stress Cloud Diagram of Cylinder Barrel

Equivalent Stress Cloud Diagram of Screw

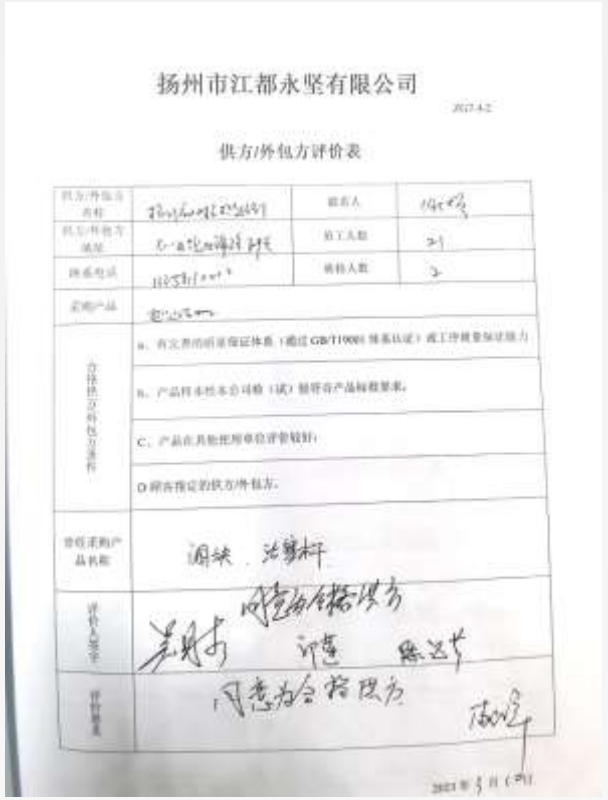


Equivalent Stress Cloud Diagram of Piston Rod

★ All hydraulic cylinder designs comply with the regulations of the classification societies and undergo finite element analysis and life calculation (so far, all domestic and international classification society drawings have been approved in one go)

3.1 Supply Chain Selection and Management

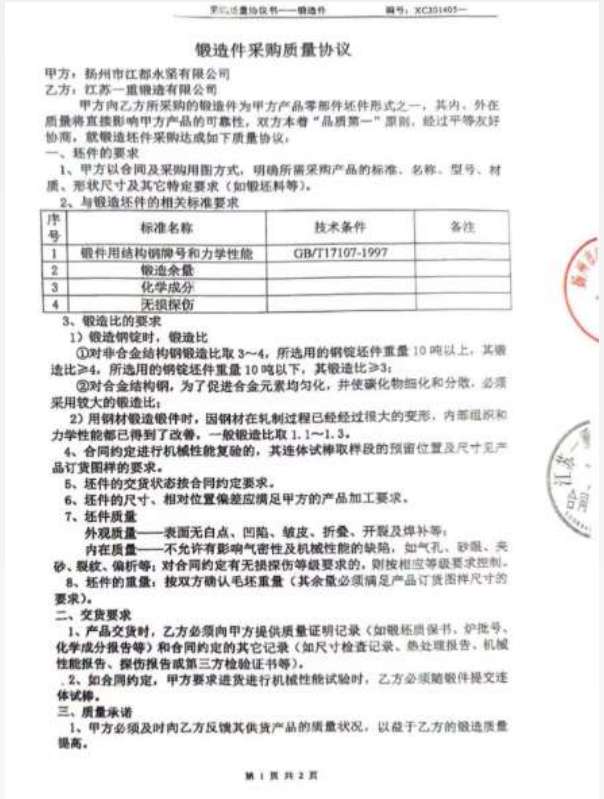
(1) Supplier Evaluation and Re-evaluation



扬州市江都永坚有限公司

供方/外包方评价表

(2) Annual Quality Agreement of Suppliers



锻造件采购质量协议

甲方：扬州市江都永坚有限公司
乙方：江苏一重锻造有限公司

甲方向乙方所采购的锻造件为甲方产品零部件坯件形式之一，其内、外在质量将直接影响甲方产品的可靠性，双方本着“品质第一”原则，经过平等友好协商，就锻造坯件采购达成如下质量协议：

一、坯件的要求

1、甲方以合同及采购用图方式，明确所需采购产品的标准、名称、型号、材质、形状尺寸及其它特定要求（如锻坯料等）。

2、与锻造坯件的相关标准要求

序号	标准名称	技术条件	备注
1	锻件用结构钢牌号和力学性能	GB/T17107-1997	
2	锻造余量		
3	化学成分		
4	无损探伤		

3、锻造比的要求

1）锻造钢锭时，锻造比

①对非合金结构钢锻造比取 3～4，所选用的钢锭坯件重量 10 吨以上，其锻造比≥4，所选用的钢锭坯件重量 10 吨以下，其锻造比≥3；

②对合金结构钢，为了促进合金元素均匀化，并使碳化物细化和分散，必须采用较大的锻造比；

2）用钢材锻造锻件时，因钢材在轧制过程已经经过很大的变形，内部组织和力学性能都已得到了改善，一般锻造比取 1.1～1.3。

4、合同约定进行机械性能复验的，其连体试棒取样段的预留位置及尺寸见产品订货图样的要求。

5、坯件的交货状态按合同约定要求。

6、坯件的尺寸、相对位置偏差应满足甲方的产品加工要求。

7、坯件质量

外观质量——表面无白点、凹陷、皱皮、折叠、开裂及焊补等；

内在质量——不允许有影响气密性及机械性能的缺陷，如气孔、砂眼、夹砂、裂纹、偏析等；对合同约定有无损探伤等级要求的，则按相应等级要求控制。

8、坯件的重量：按双方确认毛坯重量（其余量必须满足产品订货图样尺寸的要求）。

二、交货要求

1、产品交货时，乙方必须向甲方提供质量证明记录（如锻坯质保书、炉批号、化学成分报告等）和合同约定的其它记录（如尺寸检查记录、热处理报告、机械性能报告、探伤报告或第三方检验证书等）。

2、如合同约定，甲方要求进货进行机械性能试验时，乙方必须随锻件提交连体试棒。

三、质量承诺

1、甲方必须及时向乙方反馈其供货产品的质量状况，以益于乙方的锻造质量提高。

第 1 页 共 2 页

(3) 24-Year Qualified Supplier List

发放号：08

受控

扬州市江都永坚有限公司

合格供方/外包方名单

（2023年度）

编　制：

审　核：

批　准：

2023年11月20日

(4) Various Supplier Qualification Documents

扬州市江都永坚有限公司

供应商资质文件

(委外特殊工序加工)

2023 年 11 月 10 日

3.2 Procurement

(1) Consistency of Component Procurement List and Technical Documents

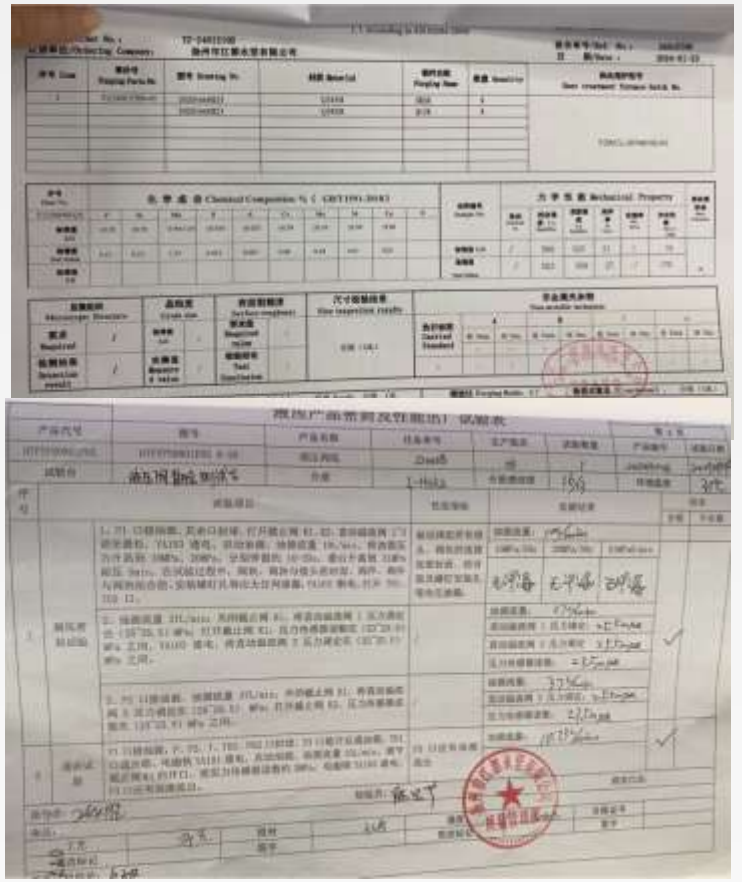
370润滑柜元器件清单

序号	代号	名称	数量	备注
1		370油箱	1	
2.1	YGP-RF206(V3)	泵	2	6.0ml/r
2.2	YGP-RF204(V3)	泵	2	4.2ml/r
3.1	YE3-90S-6-B35	电机	2	0.75KW,1000r/min
3.2			2	
4.1	213.53/63/-0.1-0MPa/G1/4B/CBM	压力表	2	
4.2	213.53/63/1MPa/G1/4B/CBM	压力表	2	
5.1	Q11F-16P-1″	球阀	1	
5.2	Q11F-16P-3/4″		2	
5.3		球阀	2	
5.4	KHB-16SR-PN315		2	
5.5		球阀	2	
5.10	KHB-22LR-PN315	球阀	2	
6.1	DBD-S-10-G-10/25	管式溢流阀	2	
9	W-RD-16S	单向阀	2	
18	DV-16-3-10	管式节流阀	2	
19	QUQ2-10X0.63	空气过滤器	1	
20	PLF.H-160*20	过滤器	2	
21.1	WTZ/Q-280-N-C	温度仪表	1	0-120℃
21.2	T221-120-6.35-60-ZG1/4	温度计	2	
22	YWZ-250T	液位计	2	
23	LC100-450-R-S-G-M	液位控制器	1	常开、常闭触点各一个
27	HRY2-380/1-650	加热器	2	380V,1000w
28	WZPK-22R-C（L=300）	温度传感器	1	0-120℃
29	GLC-0.8	冷却器	2	

(2) Signed Procurement Contracts

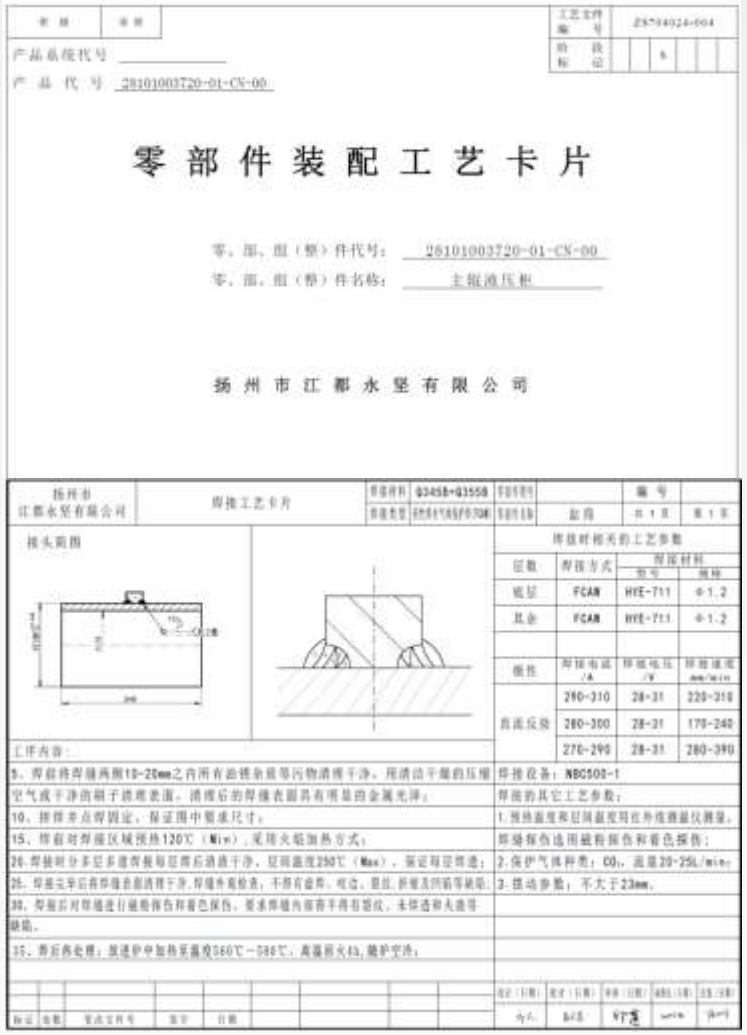
工业品买卖合同

(3) Certificates and Quality Assurance Documents



4.1 Process Document Preparation

(1) Process Operation Card



零 部 件 装 配 工 艺 卡 片

零、部、组（整）件代号： 2S101003720-01-CN-00

零、部、组（整）件名称： 主提油压杯

扬 州 市 江 都 水 坚 有 限 公 司

(2) Process Planning Document

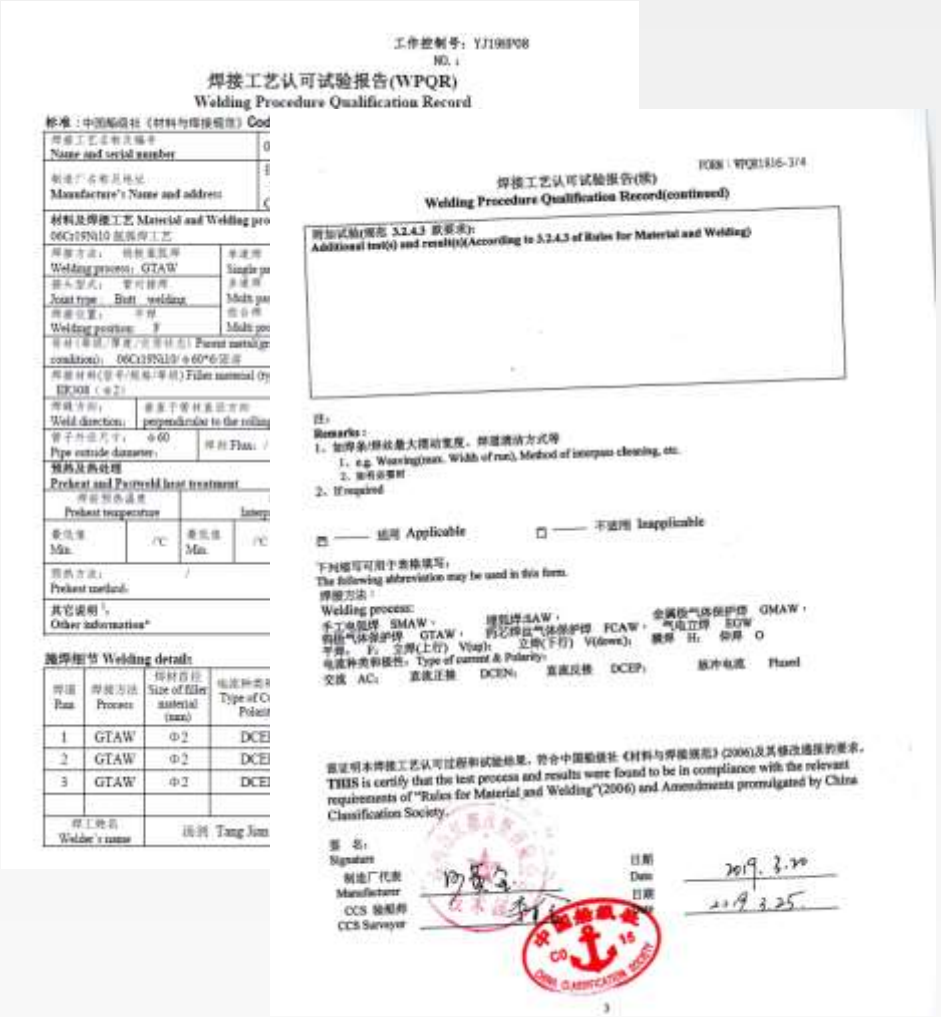
焊接工艺计划书(pWPS)

Preliminary Welding Procedure Specification

焊接工艺计划书(pWPS)(续)

Preliminary Welding Procedure Specification(continued)

(3) Process Approval Test Report and Results



焊接工艺认可试验报告(WPQR)

Welding Procedure Qualification Record

焊接工艺认可试验报告(续)

Welding Procedure Qualification Record(continued)

4.2 Quality Control Planning

创新引领 诚实守信 科学管理 持续改进

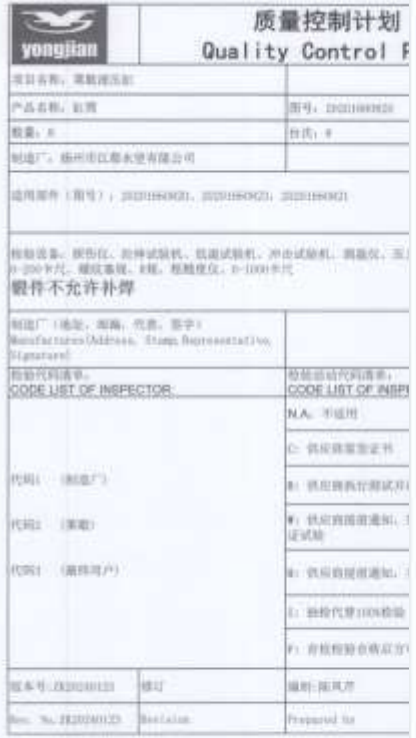
20201660820

缸筒质量控制计划

编制：陈凤芹 2024.01.23

校对：祁 杰 2024.01.23

审核：陈传俊 2024.01.24



质量控制计划

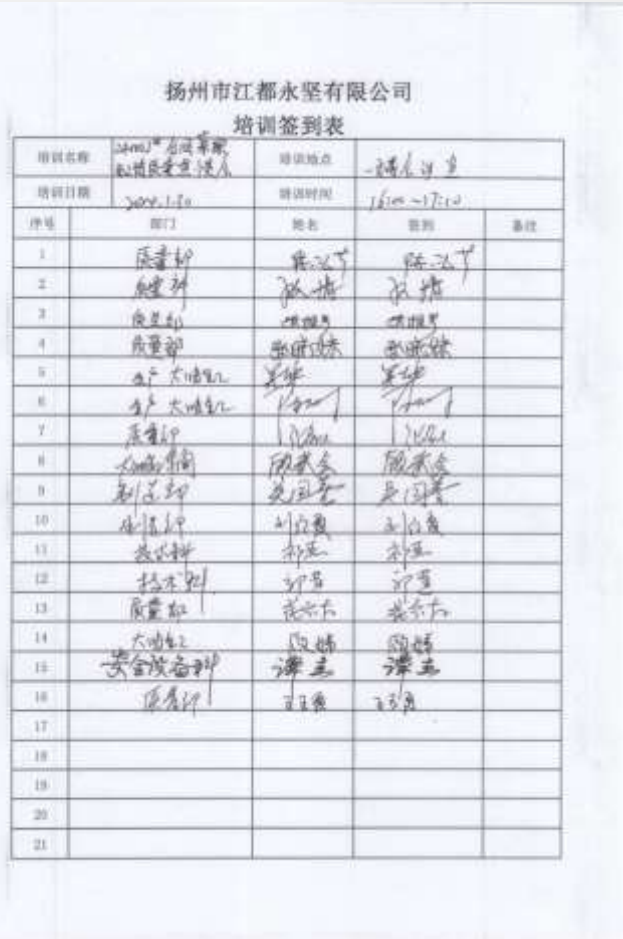
Quality Control P

质量控制计划

Quality Control Pl

质量控制计

Quality Contro



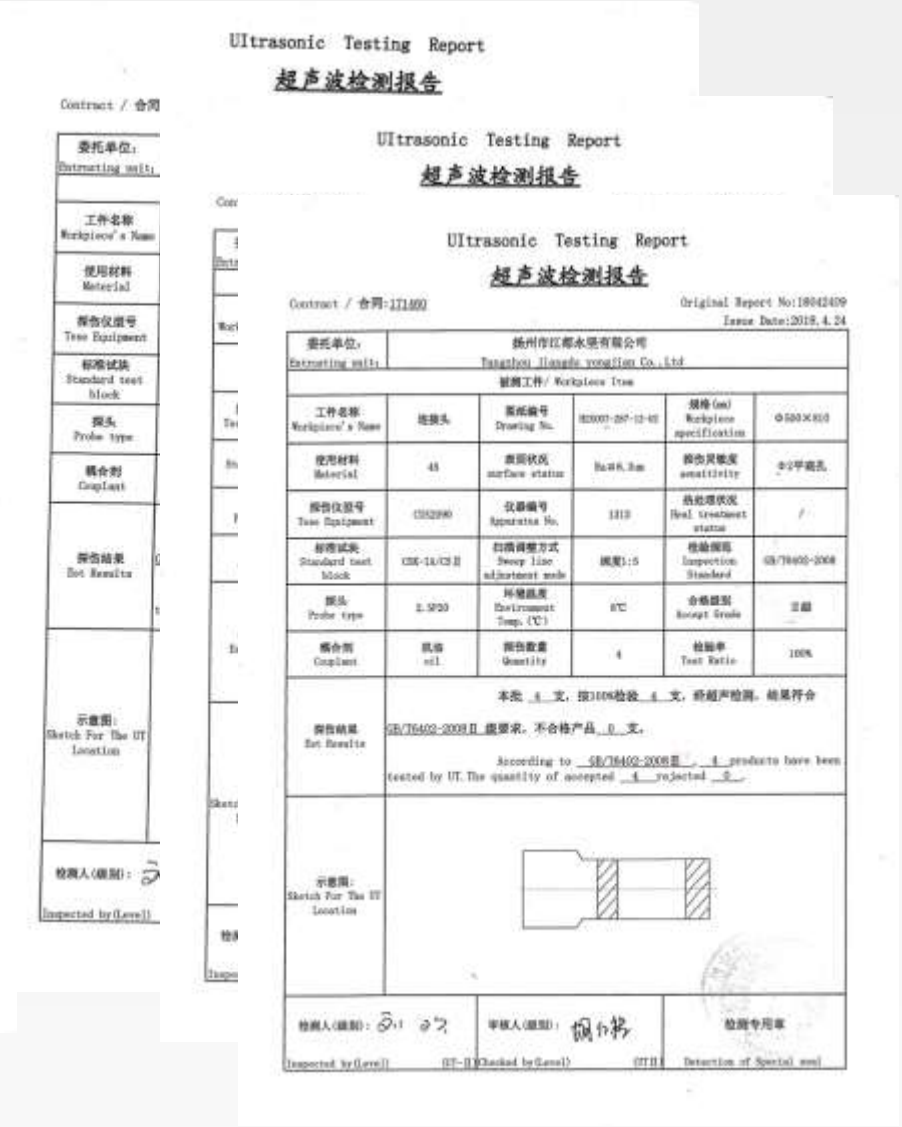
扬州市江都永坚有限公司

培训签到表

5.1 Welding

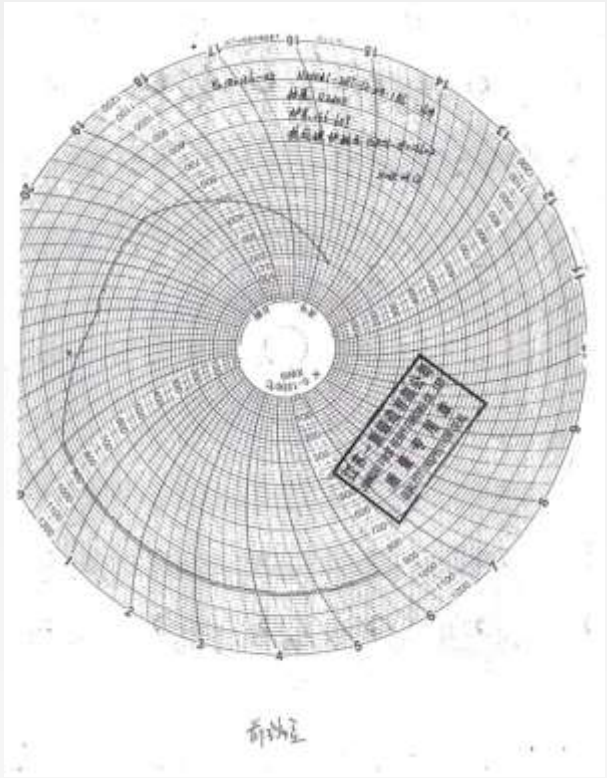
- The company has 20 employees with CCS welding certificates and hires professional senior welding engineers for long-term welding guidance and training.
- The company conducts welding procedure qualification for all welding materials and submits them to CCS or ABS for certification
- The company performs 100% flaw detection or radiographic inspection on all welded stress-bearing components
- There are guaranteed measures and strict monitoring for preheating before welding, interlayer temperature, and post-weld heat preservation during the welding process

焊接工艺认可试验报告(WPQR)
Welding Procedure Qualification Record



UItrasonic Testing Report
超声波检测报告

5.2 Heat Treatment



1 All heat treatments have process documents and dial temperature curves of the heating process
2 All parts after heat treatment are inspected for surface hardness compliance and undergo 100% UT
3 Mechanical properties tests, including one tensile and three impact tests, are conducted as required

UItrasonic Testing Report

超声波检测报告

Contract / 合同: 171460

Original Report No

Issue Date:

委托单位 Entrusting unit	扬州市江都永坚有限公司 Yangzhou Jiangdu yongjian Co.,Ltd				
被测工件/ Workpiece Item					
工件名称 Workpiece's Name	管堆盖	图纸编号 Drawing No.	H25011-287-12-04-1	规格(mm) Workpiece specification	Φ7
使用材料 Material	Q345D	表面状况 surface status	Ra≤6.3um	探伤灵敏度 sensitivity	Φ2
探伤仪型号 Tese Equipment	CUS2090	仪器编号 Apparatus No.	1313	热处理状况 Heat treatment status	
标准试块 Standard test block	CSK-IA/CSⅡ	扫描调整方式 Sweep line adjustment mode	深度1:5	检验规范 Inspection Standard	GB/T64
探头 Probe type	2.5P20	环境温度 Environment Temp.(℃)	18℃	合格级别 Accept Grade	Ⅱ
耦合剂 Couplant	机油 oil	探伤数量 Quantity	4	检验率 Test Ratio	10
探伤结果 Det Results	本批 4 支，按100%检验 4 支，经超声检测，结果: GB/T6402-2008Ⅱ 级要求，不合格产品 0 支。 According to GB/T6402-2008Ⅱ, 4 products has been tested by UT. The quantity of accepted 4 rejected 0				
示意图: Sketch For The UT Location					
检测人(级别): Inspected by(Level)		审核人(级别): Checked by(Level)		检测专用章 Detection of Special	

江苏一重锻造有限公司

热处理报告

Heat treatment report

QR8.2.4-08

No. 18013602

客户名称/Customer	扬州市江都永坚有限公司	日期/ Date	2018-04-20
合同号 / Contract No.	171460	熔炼号/ Melting No.	166-659
产品名称/Product Name	-	材质 / Material	Q345D

产品编号 Product No.	图号 Drawing No.	数量 Quantity	热处理炉批号 Heat treatment furnace batch No.
YZ180136-02	H25011-287-12-04-1BL	16	YZRCL-18013602

热处理工艺/Heat treatment process

热处理方式/Heat treatment mode					N
	入炉温度 Into the furnace temperature (℃)	保温温度 Holding temperature ±10(℃)	保温时间 Holding time ±0.5(h)	冷却方式 Cooling mode	出炉温度 Tapping temperature (℃)
N	≤300	890±10	6	空冷	896

热处理温度—时间曲线

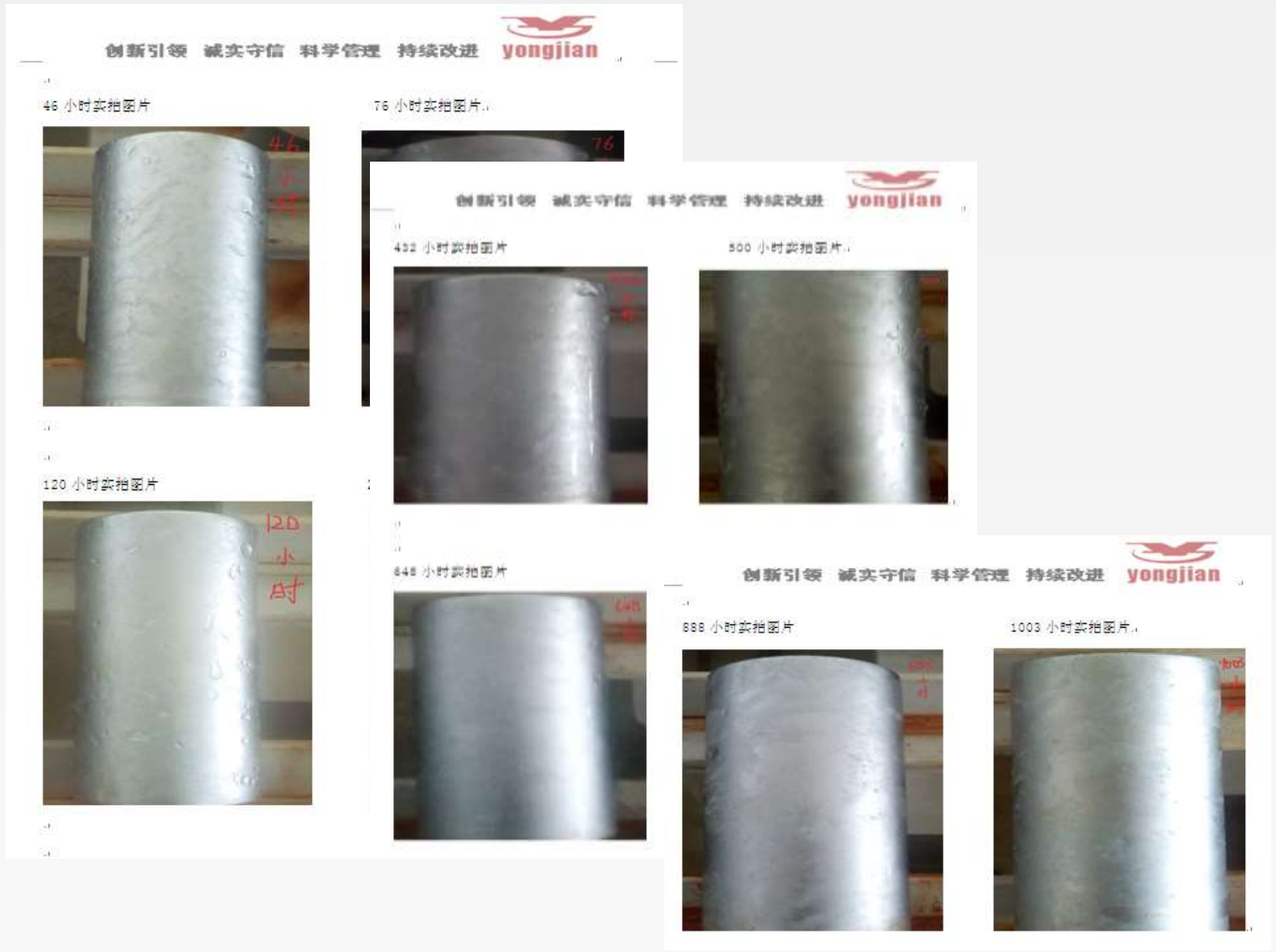
Heat treatment temperature - time curves

硬度检测 HB Test	要求值 Require	HB127-180	结论 Result	合格/Qualified□
	实测值 Actual	162、169、176		
检验 / 日期 Inspector/ Date	单聪/2018-03-12			
审核 / 日期 Reviewed/ Date	肖龙建/2018-03-12			

江苏一重锻造有限公司 质量检验章

H25011-287-12-04-前端盖

5.3 Hydraulic cylinder Piston rod coating salt spray and hardness testing



创新引领 诚实守信 科学管理 持续改进 yongjian

扬州市江都永坚有限公司

盐雾试验报告

共 5 页 第 1 页

产品图号名称	H25007-287-12-03 活塞杆		试样性质	双层镀	
试样规格	Φ49*88		镀层厚度	镀镍 0.045mm，镀铬 0.06mm	
NaCL 品质	99.5%分析纯		盐雾试验类型	5%中性盐水喷雾	
试验时间	2018.2.24-2018.4.7		镀层硬度		
实验仓温度℃	35±1		压力桶温度℃	47±1	
压缩空气压力	1.00±0.01kg/cm²		测试数量	1pcs	
放入时间	2018-2-24/13:00:00	取出时间	2018-04-07/8:00	试验总时间	1003h

周期观察记录表（H）

时间（H）	观察结果（试件外观）	PH 值（6.5-7.2）	盐雾沉降量（1-2ml/80cm2/H）
46	无锈蚀腐蚀	6.8	1.11
76	无锈蚀腐蚀	6.8	1.11
120	无锈蚀腐蚀	6.8	1.11
240	无锈蚀腐蚀	6.8	1.11
432	无锈蚀腐蚀	6.8	1.11
500	无锈蚀腐蚀	6.8	1.11
648	无锈蚀腐蚀	6.8	1.11
768	无锈蚀腐蚀	6.8	1.11
888	无锈蚀腐蚀	6.8	1.11
1003	无锈蚀腐蚀	6.8	1.11

1. 试样时间要求：≥1000h.（中性盐雾试验）
2. 试样试验时间：2018 年 2 月 24 日下午 1 时开始，2018 年 4 月 7 日早上 8 时结束（连续试验）
3. 试样试验完毕等级评定： 10 级.
4. 试样试验过程附实拍图片，见附页.

测试员	顾倩	结果	合格

5.4 Cleaning of hydraulic cylinder components and final cleanliness testing

- 1. Ultrasonic cleaning, temperature set to 45 ℃, cleaning time is 3 × 20 minutes
- 2. Cleaning liquid spray rinse: Components automatically transfer from the ultrasonic cleaning machine to the spray rinse area, high-pressure spray rinse for 2 minutes, removing residue from corners
- 3. Hot air drying: Using dry, clean hot air for drying

After all important oil cylinder tests are completed, the residual oil is checked for cleanliness, all reaching NAS8 level or above

ID	1151
Serial	005073
Test	2481
Date	2018-5-18 上午 11:1
Test	0000
ISO 4406 Code	15/13/12
NAS1638/AS4059E-1	7
RH%	
Temperature deg.	

Print...

ISO Counts / 100ml

	Average	Stage	Stage	Stage
4 μ	24642	22728	28710	22489
6 μ	6858	6938	6938	6699
14 μ	2802	2433	3318	2655
21 μ	737	708	752	752
25 μ	486	442	442	575
38 μ	59	0	0	177
50 μ	44	0	0	132
70 μ	0	0	0	0

NAS1638/AS4059E-1 Classes

NAS1638/μm	5-15	5-25	5-50	50-100	100+
AS4059E1/μ	6-14	14-21	21-38	38-70	>70
Class	5	6	7	6	0

AS4059E-2 Classes

5A/5B/6C/7D/6E/0F

NAS1638/AS4059E-1 Counts / 100ml

AS4059E-1	NAS1638	Average	Stage	Stage	Stage
6-14 μ	5-15 μm	4056	4505	3620	4044
14-21 μ	15-25 μ	2065	1725	2566	1903
21-38 μ	25-50 μ	678	708	752	575
38-70 μ	50-100	59	0	0	177
>70 μ	100+ μm	0	0	0	0

5.5 Hydraulic cylinder assembly

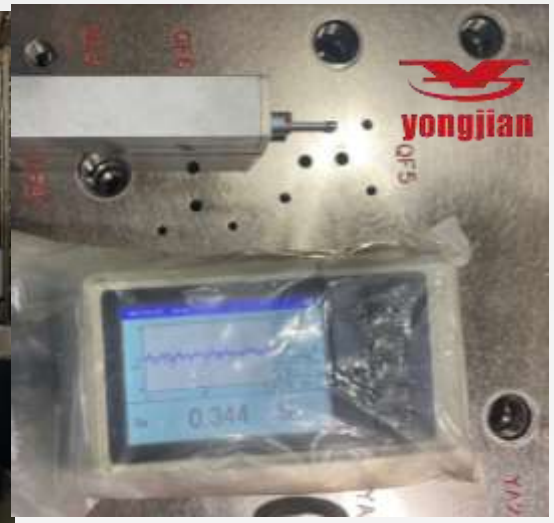
1, All oil cylinder numbers and part numbers correspond one-to-one;
2, All screws are pre-tightened three times using a torque wrench to ensure thread fit accuracy and uniform force distribution;
3, Specialized tooling, frozen assembly of joint bearings, no jamming or hammering allowed during assembly, and no damage to the inner surface of the bearing installation hole;
4, Important assembly nodes are recorded by multimedia.

Permanent identification of product oil cylinder:YJ18060102 corresponding inspection records

5.6 Cleanliness of residual oil in hydraulic cylinder and cross-cut test of paint surface

1. All hydraulic cylinders are pretreated with shot blasting, surface reaches Sa2.5 grade, then coated with anti-rust primer
2. Non-moving mating surfaces are painted, and the paint meets the (ISO12944-2) standard for C5M environmental requirements. The paint film thickness, cross-cut test, and paint adhesion on test panels meet the standard requirements
3. Non-painted surfaces are protected with anti-rust oil

The attached diagram shows the company's shot blasting, painting, drying production line, and an inspector performing a cross-hatch test



6.1 Valve Block Processing

Equipment: Horizontal Machining Center HM63TD

Work Content and Quality Requirements

1. Only two clamping operations are needed to complete the machining of the six working surfaces of the valve block, with the surface roughness of the valve block reaching Ra1.6 or above

2. Good consistency in mass production, with high precision in positional tolerance, parallelism, perpendicularity, and other geometric tolerances

3. Precision machining of oil passage holes, cartridge valve holes, and threaded holes, exceeding the precision requirements of the drawings

4. Marking Engraving Depth Consistent, Clearly Visible, Easy for Permanent Identification

6.2 Oil Tank / Structural Parts Manufacturing

Equipment: Argon Arc Welding Machine ZX7-630S/T

Numerical Control Bending Machine WY68/63

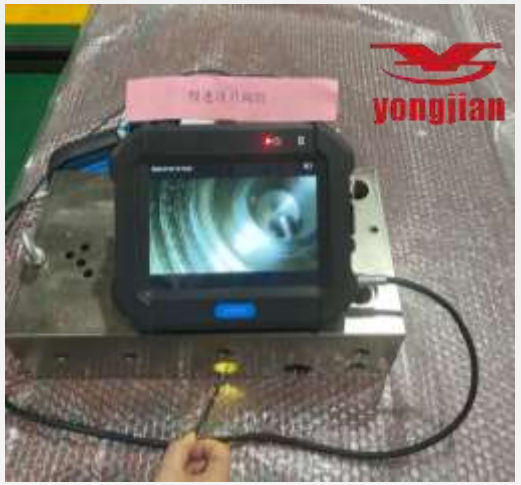
Work Content and Quality Requirements

Sheet metal and welding processing of thin plates for oil tanks, bases, and related structural parts. All oil tanks are welded using argon arc welding, ensuring good forming, minimal deformation, attractive appearance, and guaranteed quality.

6.3 Valve Block Chemical Nickel Plating Control

All valve blocks undergo chemical nickel plating surface treatment
All valve blocks after electroplating undergo coating thickness and surface quality inspection

6.4 Valve Block and Pipeline Debris Control



Equipment: 20 Times Endoscope

1. Inspect internal intersecting oil passages of valve blocks for burrs, oil stains, rust, etc.
2. Inspect internal surfaces of pipeline weld seams for welding defects, weld beads, welding slag residues, etc.

6.5 Hydraulic System Debris Control

Equipment: Pipeline Filtration Cleaning Device JN400B
Particle Detector LPA-W

1. The pressure oil input from the external pump source is pre-filtered and cleaned for the hydraulic pipeline, valve group, and hydraulic system. Through 8-40 hours of high pressure, pulse, and high flow flushing, the oil cleanliness requirements are met, preventing cross-contamination of finished products such as pumps and valves.

2. After the above cleaning, the cleanliness of the flushed oil must not be lower than NAS 8 level, with a maximum of NAS6 level.

6.6 Pipeline Welding

Equipment: GTX automatic docking welding machine
Work Content:
Welding Φ10~Φ80mm pipeline

1. Single-sided welding, double-sided forming
2. Radiographic flaw detection sampling qualified
3. Weld seam appearance is full beautiful, with good consistency.

6.7 Hydraulic Valve Incoming Retest

Equipment: Hydraulic Valve Performance Retest Bench

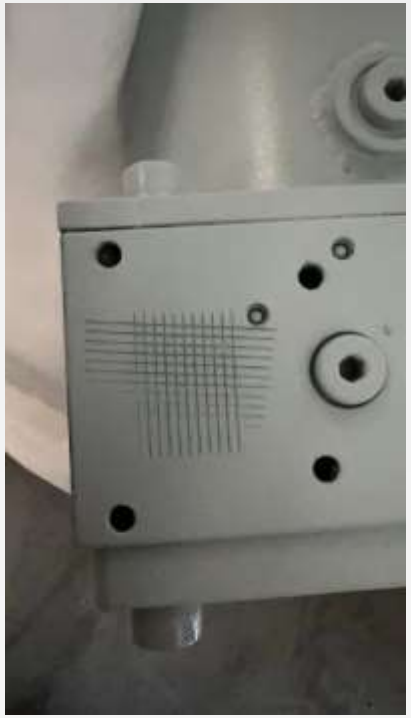
1. With more than two types of media, it can perform performance retesting and calibration of incoming valves

2. Can retain video records throughout the entire retesting process

6.8 Assembly and Testing Process Control

1. An approximately 300 square meter clean assembly room, completely isolated from the outside, with an air supply system ensuring internal pressure higher than the external, guaranteeing internal cleanliness:
2, Video cameras control and record the assembly process of various hydraulic systems
3, All thread tightening and sealant usage are documented with work instructions and recorded via multimedia to ensure control and traceability

6.9 Coating Process Control



Coating Thickness Gauge and Cross Hatch Cutter

1, Measure the paint thickness of the product

2, Test the paint adhesion

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7.1 All large component welding undergoes rigorous process testing and certification by professional certification bodies

Welding Process Specification


FORM: WPS-1/2

焊接工艺规程(WPS)

Welding Procedure Specification

Name and serial number: Q690E+Q690E 埋弧焊工艺 /pWPS-HP2108

Welding process: SAW

Welding parameters

Run	Process	Size of filler material (mm)	Type of current Polarity	Current (A)	Voltage (V)	Travel speed (m/h)	Heat input (kJ/cm)
1	SAW	Φ4	DCEP	450-520	30-38	25-35	2.31-4.74
2	SAW	Φ4	DCEP	400-500	30-38	25-35	2.06-4.56
3	SAW	Φ4	DCEP	400-500	30-38	25-35	2.06-4.56
4,5…	SAW	Φ4	DCEP	400-500	30-38	25-35	2.06-4.56

Welding Procedure Qualification Test Report


焊接工艺认可试验报告(WPQR)

Welding Procedure Qualification Record

Test items and results

Destructive examination

Macrostructure

CCS Ship Inspection Certification Report


中国船级社

CHINA CLASSIFICATION SOCIETY

船用产品证书

CERTIFICATE OF MARINE PRODUCT

7.2 Large Structural Component Welding

Q690E** Head Structure Welding
Inner Diameter: 3000mm
Wall Thickness: 90mm
Continuous Welding Time: 74 hours

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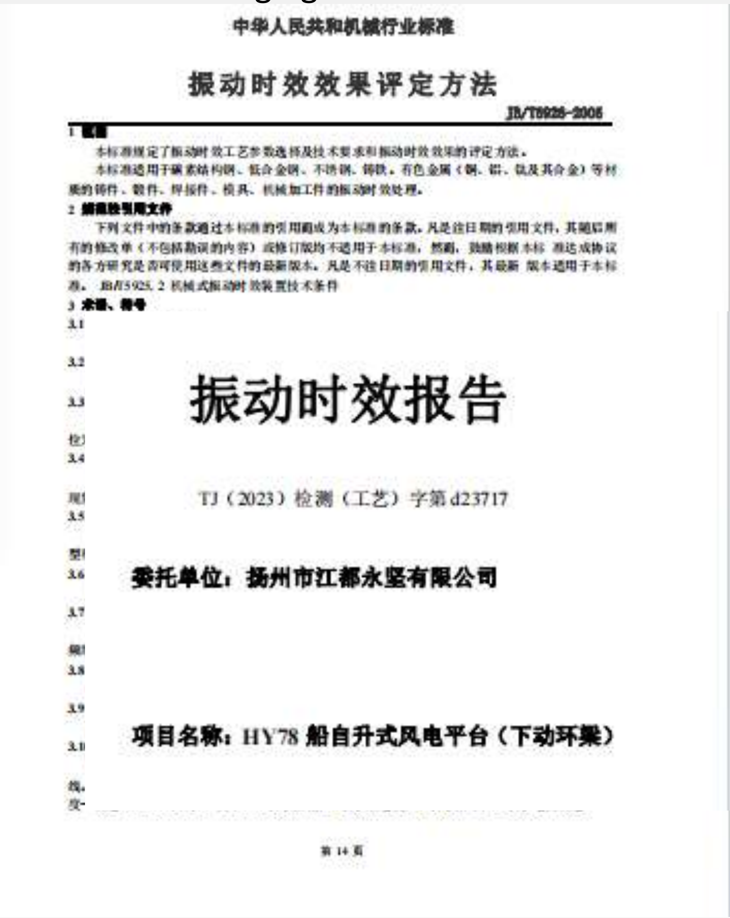
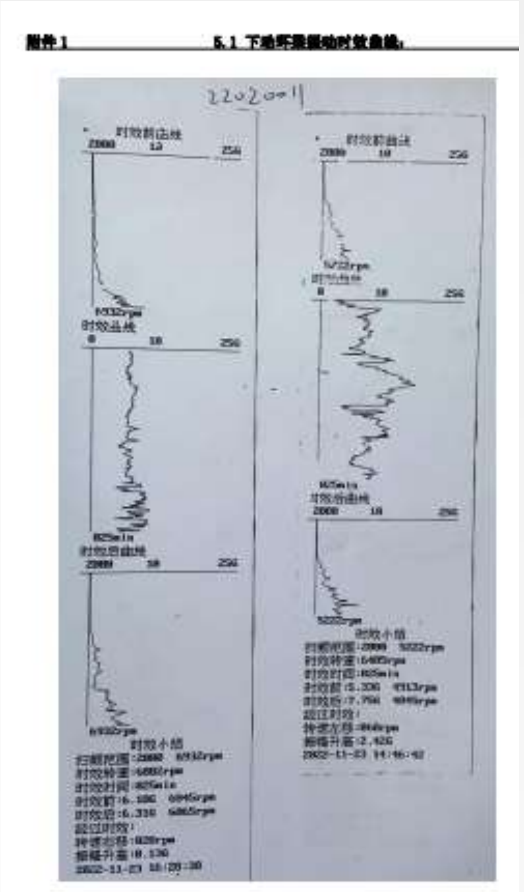
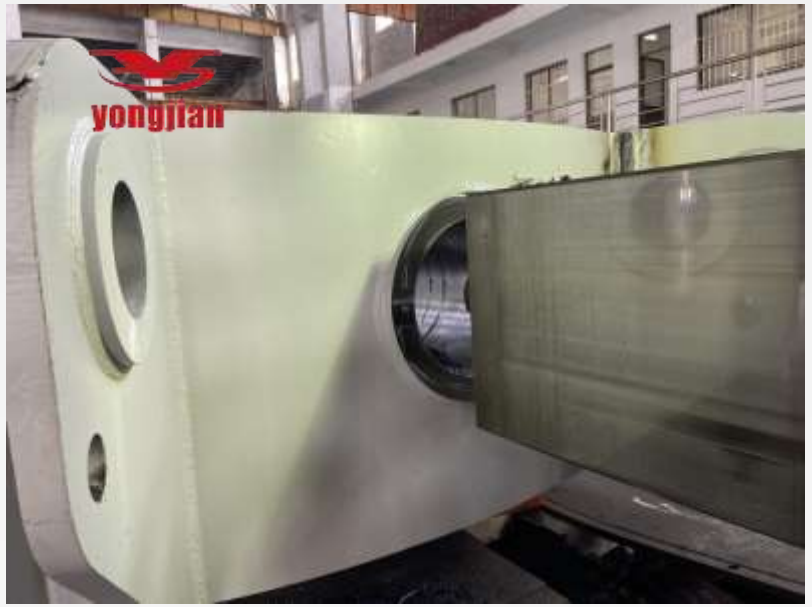
7.3 Post-Welding Stress Relief

For stress relief of large components, a complete process plan should be developed, and a third party should be commissioned to evaluate the vibration effect of the welded structures according to the JB/T5926-2005 Vibration Aging Effect Evaluation Method.





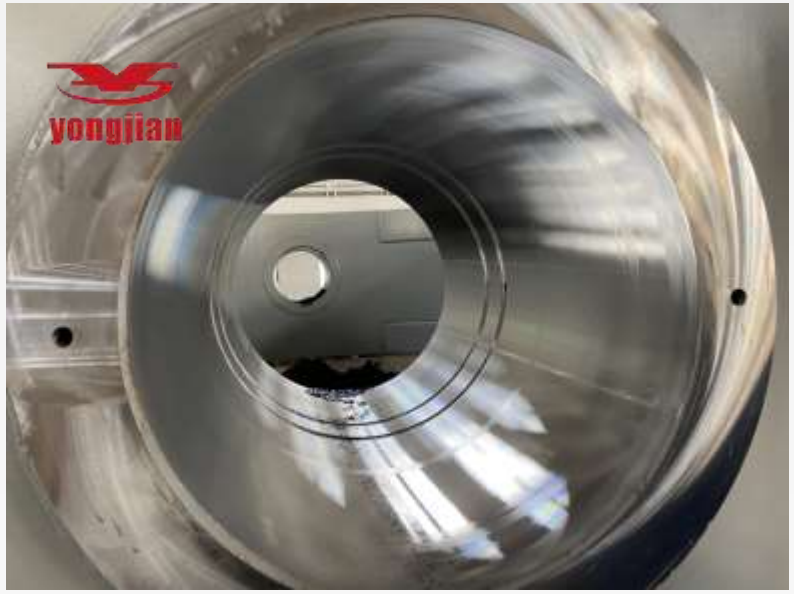
7.4 Large Structural Component Machining

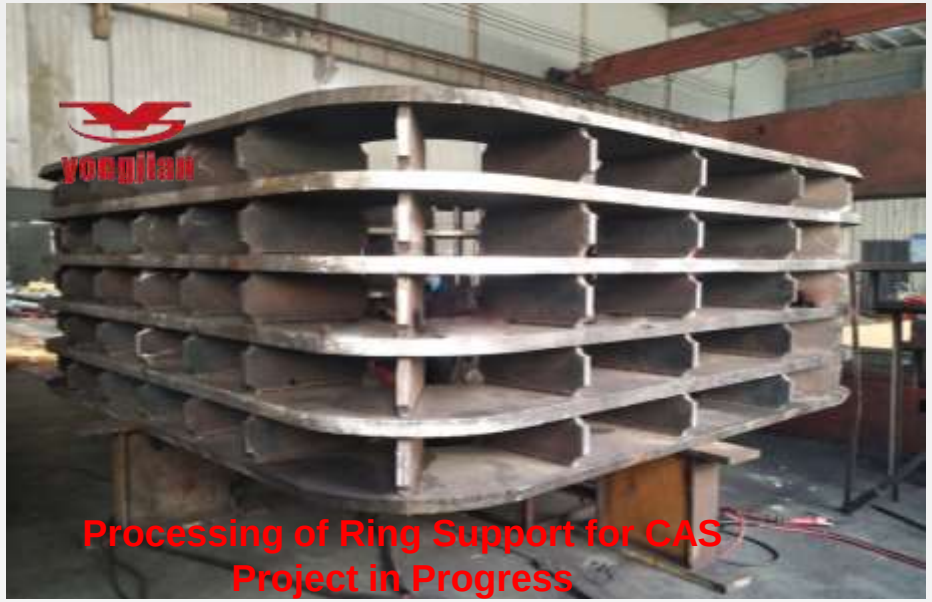


Large structural components in floor-type boring and milling machine processing

Quality Inspection - Positional and Roundness Inspection in Progress

Quality of Machined Inner Hole and End Face





Processing of Ring Support for CAS Project in Progress

600T Platform Pile Frame Processing in Progress

Processing of Upper Support for Pile Gripper Device in Progress

7.5 Large-scale Structural Component Transportation

Single Piece Weight Nearly 60t
Width: 6400mm
Crossing the Yangtze River by Ferry
Handled by Professional, Long-term Partner Transport Company

1

Proportional / Servo Oil Cylinder Test Bench

2

Hydraulic Cylinder Working Condition Simulation Test Platform

3

Hydraulic Cylinder Inertia Load Test Device

4

Load Simulation Device Oil Tank

Since the establishment of the R&D center, nearly 10 million yuan has been invested, with a research and testing plant area of approximately 1200㎡; Forming a precision measurement platform for component quality, hydraulic cylinders, valve and system condition simulation, and testing platform for hydraulic cylinder force and sealing

Coordinate Measuring Machine Room

Servo Hydraulic Cylinder Simulation Test Platform, Variable Amplitude Hydraulic Cylinder Inertia Load Test Bench, Fatigue Life Test Bench.

Hydraulic Valve Flow, Direction, Pressure Incoming Inspection, Calibration Test Bench.

8.1 Inspection and Testing Equipment

Name: **Coordinate Measuring Machine**
Model: 10128 Type
Origin: Sweden
Measurement Range: 1200*1000*800
Measurement Weight: 2 Tons
Detection accuracy: 0.001mm
Purpose: Testing the dimensions and geometric tolerances of critical and important components

Name: **Germany Mahr Universal Digital Measuring Instrument**
Model: 844T
Origin: Germany
Purpose: For the detection of internal and external threads of piston rods, internal and external tapered threads, internal and external gear profiles/ teeth, with a detection accuracy of 0.0001mm


化学分析室 Chemical Analysis Laboratory


机械性能试验 Mechanical performance test


光电分析天平
Photoelectric analytical balance


红外碳硫分析仪
Infrared carbon and sulfur analyzer


油液激光颗粒检测仪
Oil laser particle counter


内窥镜
Endoscope

漆膜划格仪
Paint film scriber


数字式超声波探伤仪
Digital ultrasonic flaw detector


显微硬度计
Micro-hardness tester


涂覆层测厚仪（德国）
Coating thickness gauge (Germany)


里氏硬度计
Leeb hardness tester


螺纹直径三针测量
Three-needle measurement for thread diameter


深度计（日本）
Depth gauge (Japan)


沟槽表面粗糙度测量仪
Groove surface roughness measurement instrument


内窥镜
Endoscope


带表内卡规
Dial caliper gauge


液压缸试验台

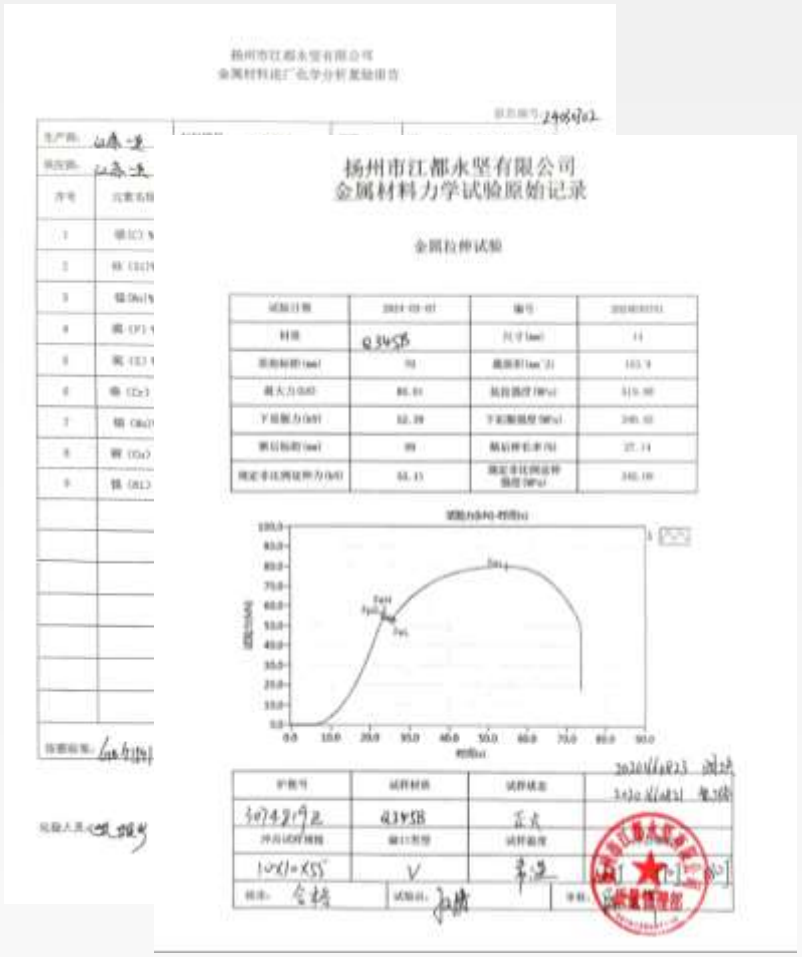

液压泵站出厂试验台

8.2 Qualifications of Inspection Personnel

The company has 17 inspection personnel, among whom 8 have over 20 years of experience and 9 have over 10 years of experience. Each of our quality inspectors is employed after targeted training.

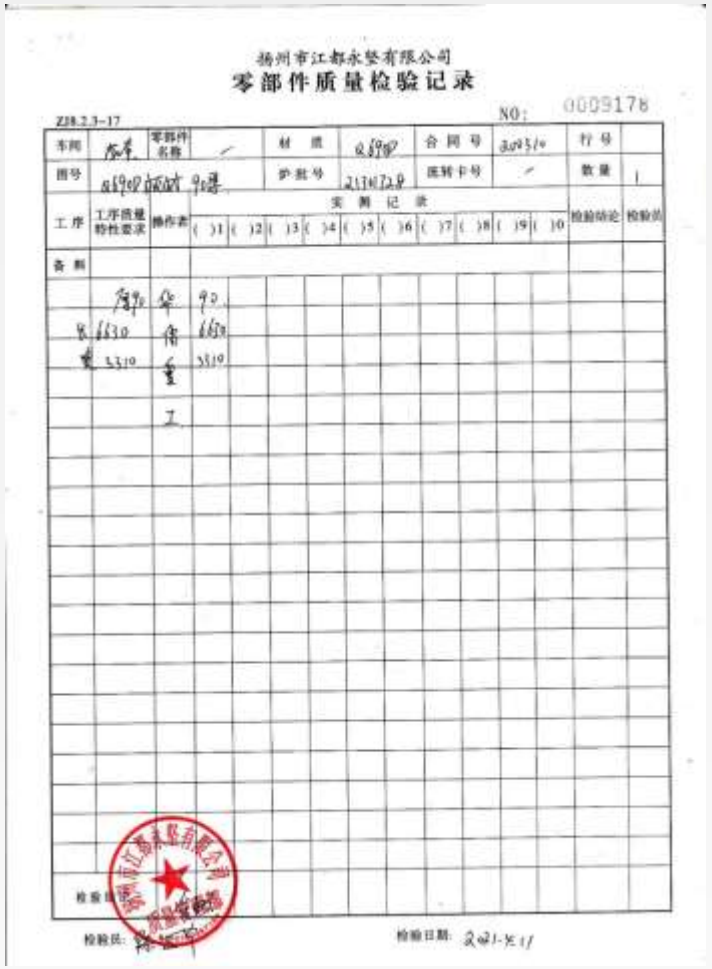
8.3 Process Inspection

(1) Chemical analysis of raw materials, Mechanical properties


扬州市江都永坚有限公司
金属材料力学试验原始记录

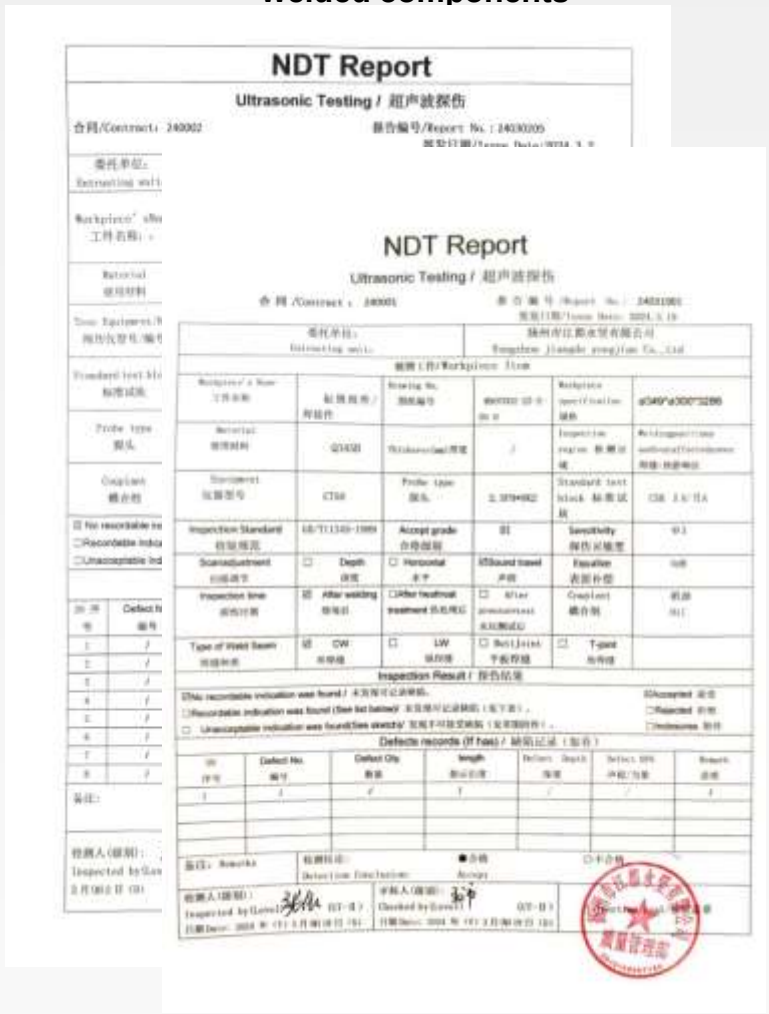
金属拉伸试验

(2) Re-inspection of raw material incoming dimensions


扬州市江都永坚有限公司
零部件质量检验记录

NO: 0009178

(3)Flaw detection of raw materials and welded components


NDT Report

Ultrasonic Testing / 超声波探伤

(4)Component machining dimension inspection report

扬州市江都永坚有限公司
零部件质量检验记录

NO: 0005989

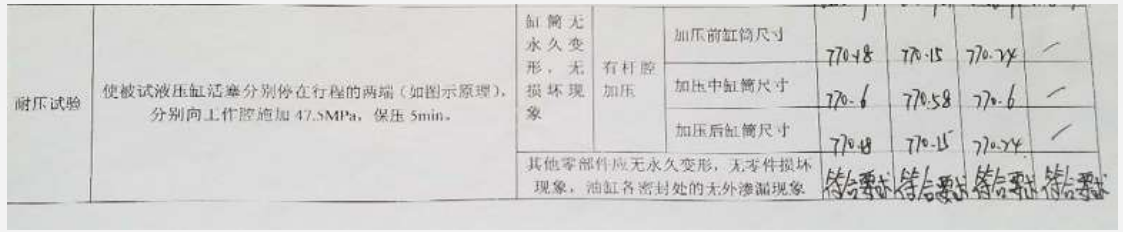
(5)Re-inspection of valves and small flow pumps upon arrival

(6)Valve block inspection test report

阀块检查试验报告

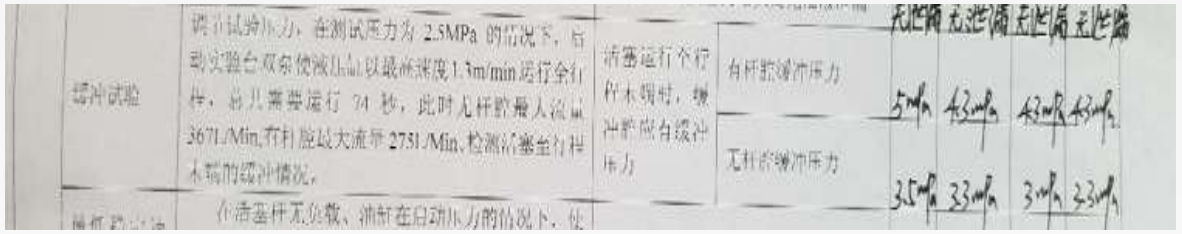
8.4 Hydraulic oil cylinder factory inspection

① Pressure Test: The elastic deformation and dimensional recovery of the hydraulic cylinder body diameter under 1.5 times the rated working pressure are tested and verified to ensure that the material strength meets the design requirements.



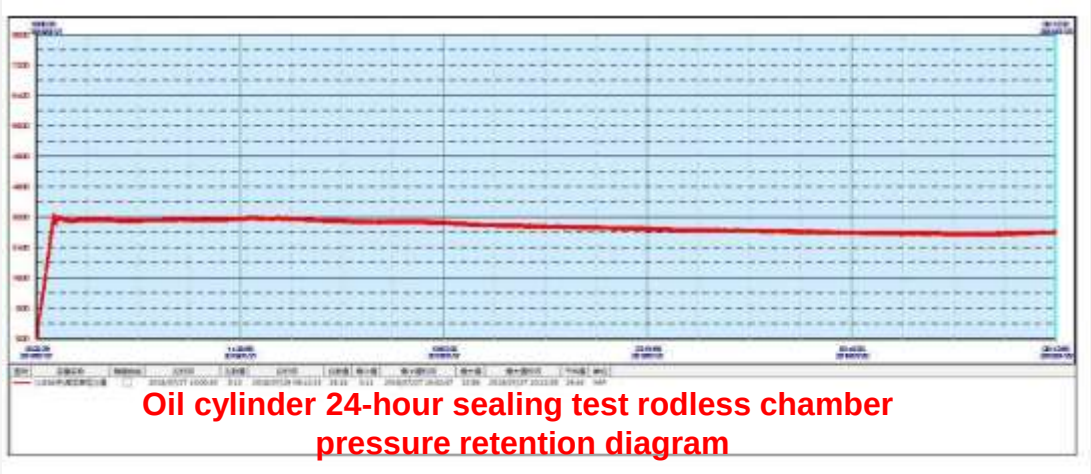
耐压试验	使被试液压缸活塞分别停在行程的两端（如图示原理），分别向工作腔施加 47.5MPa，保压 5min。	缸筒无永久变形，无损坏现象	有杆腔加压	加压前缸筒尺寸	770.48	770.15	770.24	✓
				加压中缸筒尺寸	770.6	770.58	770.6	✓
				加压后缸筒尺寸	770.48	770.15	770.24	✓
		其他零部件应无永久变形，无零件损坏现象，油缸各密封处的无外渗漏现象			符合要求	符合要求	符合要求	符合要求

② Buffer Test and Pressure Variation: Based on the working conditions of the hydraulic cylinder, we designed the buffer plunger in a stepped manner to gradually increase the impact buffering force; the buffer clearance of the cylinder is paired and assembled. Pressure points are designed for the buffer chambers of all cylinders, recording the maximum pressure of the buffer chambers of all cylinders to ensure that the maximum pressure of all buffer chambers is at a similar level and controlled within a safe range.

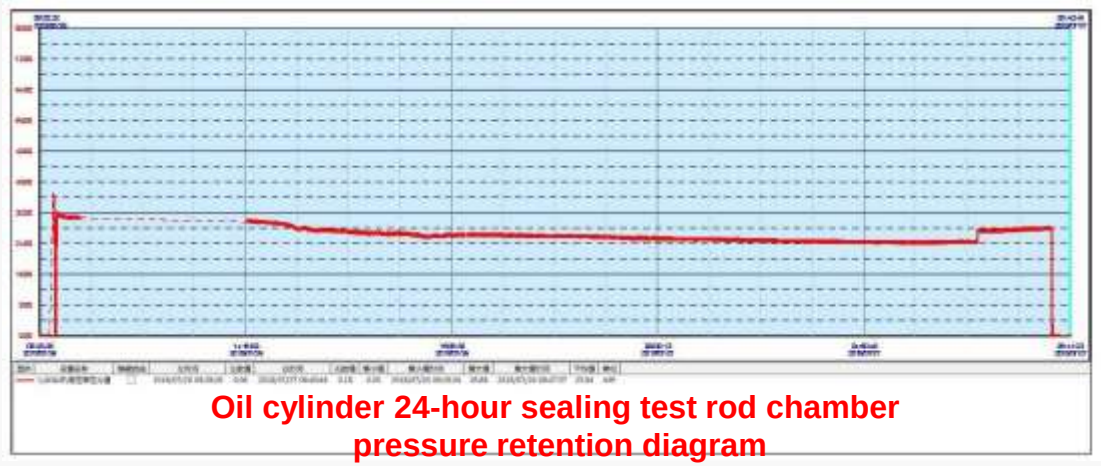


缓冲试验	调节试验压力，在测试压力为 2.5MPa 的情况下，启动实验台双杆使液压缸以最高速度 1.3m/min 运行全行程，活塞需要运行 74 秒，此时无杆腔最大流量 367L/Min，有杆腔最大流量 273L/Min，检测活塞在有杆不同的缓冲情况。	活塞运行不行程不同时，缓冲腔应有缓冲压力	有杆腔缓冲压力	5mPa	43mPa	43mPa	43mPa
			无杆腔缓冲压力	35mPa	33mPa	3mPa	33mPa
	在活塞行无负载、油缸在启动压力的情况下，处						

③Oil cylinder 24-hour sealing test pressure curve



Oil cylinder 24-hour sealing test rodless chamber pressure retention diagram



Oil cylinder 24-hour sealing test rod chamber pressure retention diagram

8.5 Hydraulic Pump station factory inspection

液压系统 CCS 检验报告 表1

产品名称：液压系统　产品型号：220P0100DWG-17　产品编号：1806003　图纸批准号：BP18V0112-01
主系统设计压力：31.5 MPa　副系统设计压力：21MPa　主系统排量：250ml/r　副系统排量：170ml/r
主电机功率：132KW　副电机功率：7.5KW　油箱容积：6300L　主系统安全阀开启压力：31.5MPa
副系统安全阀开启压力：21MPa　现场抽查产品编号：1806003

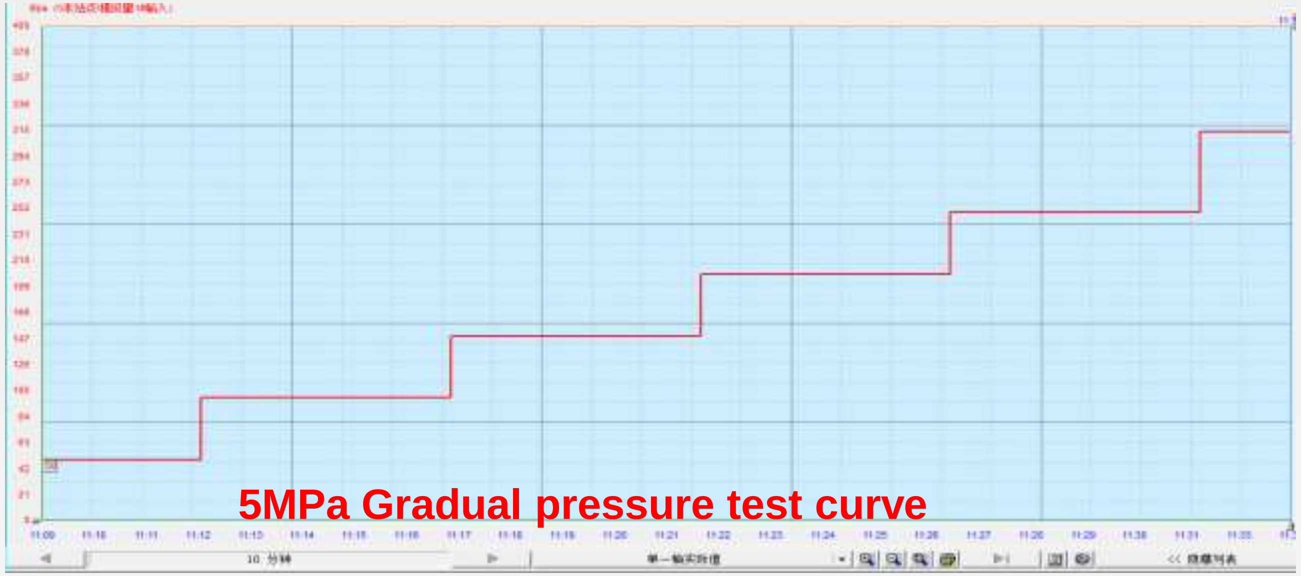
序号	检查项目及要求			验收结果	结论
1	液压装置外观质量检验			无明显缺陷，美观整齐	合格
2	液压管路焊接，焊缝质量检验			管路横平竖直，焊接处充实饱满	合格
3	结构件外观及焊接质量检验			外观无变形，无夹杂	合格
	回路	升降回路压力 38.5MPa	升降缸伸缩回路，保压5min，管路焊缝无渗漏，无永久变形	审核泵压试验报告，合格	合格
		定环梁插销回路压	插销缸伸缩回路，保压5min，管路焊缝无渗漏，无永久变形	审核泵压试验报告，合格	合格

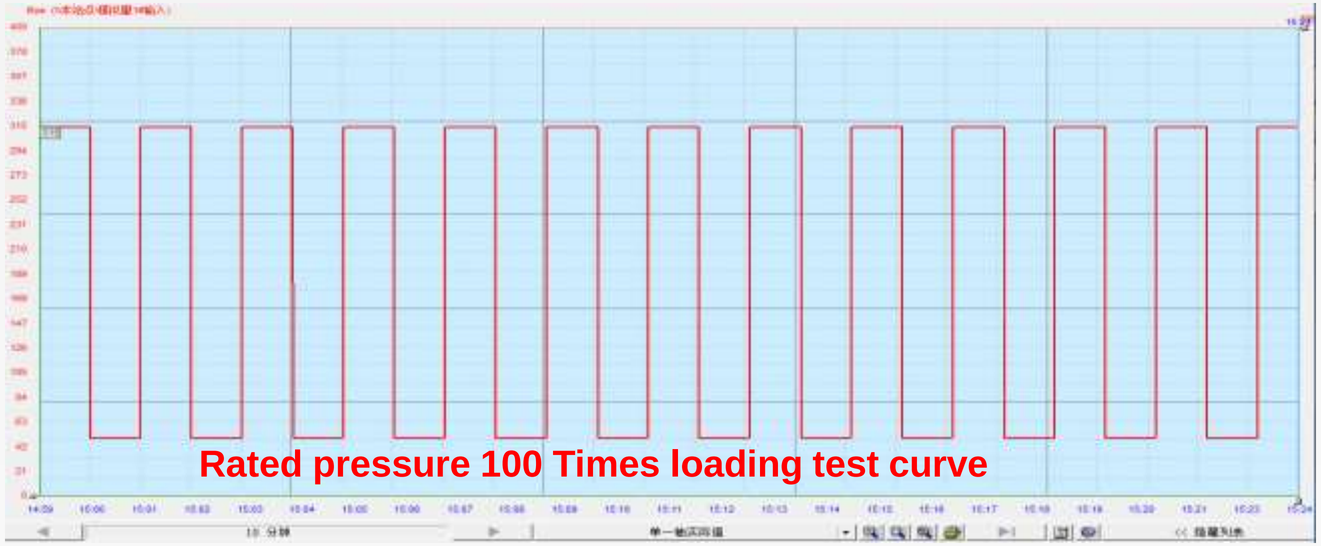
液压系统 CCS 检验报告 续表1

序号	检查项目及要求			验收结果	结论
6	油泵流量试验	比例柱塞泵	在空载情况下流量试验，根据升降油缸的运行速度计算油泵流量，油泵流量不小于350L/min，容积效率大于95%	满足要求	合格
		柱塞泵	在空载情况下流量试验，根据插销油缸的运行速度计算油泵流量，不小于100L/min	满足要求	合格
7	电机功率试验		油泵流量输入55%电信号，调节泵源控制阀块溢流阀压力31.0MPa，电机工作正常	实测：50HZ 状态下转速=1494r/min; V=675V; A=98A;（电机额定电流132A）	合格
8	系统压力传感器功能试验		信号正常	符合要求	合格
9	液位开关功能试验		模拟四个液位　开关信号，发讯正常	符合要求	合格
10	温度传感器功能试验		信号正常，温度显示正常	符合要求	合格
11	滤油堵塞功能试验		短接线路模拟滤油器压差超标发讯，报警	符合要求	合格
12	安全阀开启、调整试验		安全阀开启压力可调节，顶升系统35MPa，插销系统25MPa 范围内	符合要求	合格
13	蓄能器功能试验		停电状态开启，开启蓄能器开关供压21MPa 正常	符合要求	合格

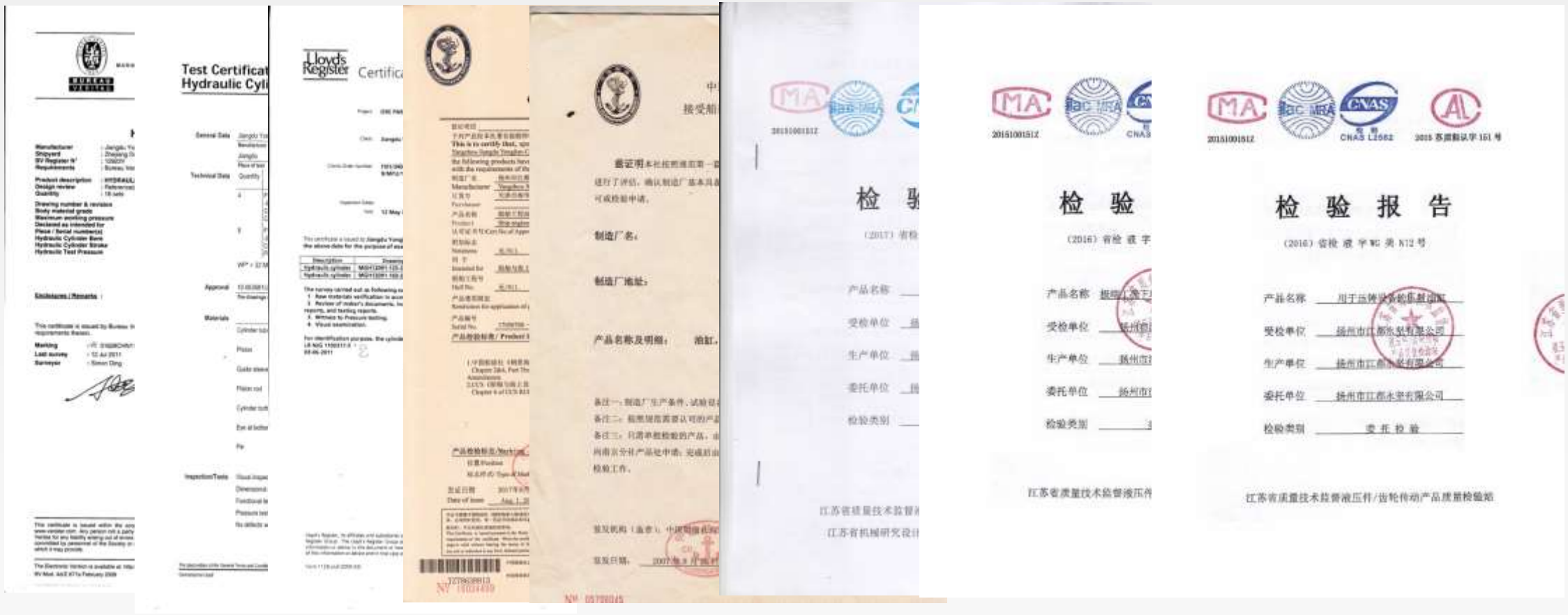
检验用仪器/仪表有效期已核准在有效期内

试验日期：2018.7.10　试验员：[signature]　报告审核：[signature]　验船师：[signature] 2018.7.10


5MPa Gradual pressure test curve


Rated pressure 100 Times loading test curve

8.6 Third-party inspection report, ship inspection report



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THANK YOU

Thank you for watching