

EVOLUTIONARY
Designs
REVOLUTIONARY
Results

TECHNOLOGY LEADER & TOTAL SOLUTIONS PROVIDER

INTRODUCTION

NEW JCM is the PEOPLE you can count on, from Start-To-Finish.

When you choose NEW JCM, you get a team of passionate experts working for you – and with you. From upfront guidance collaboration and engineering to post production, testing and service/training, we have redefined the industry standards for project success.

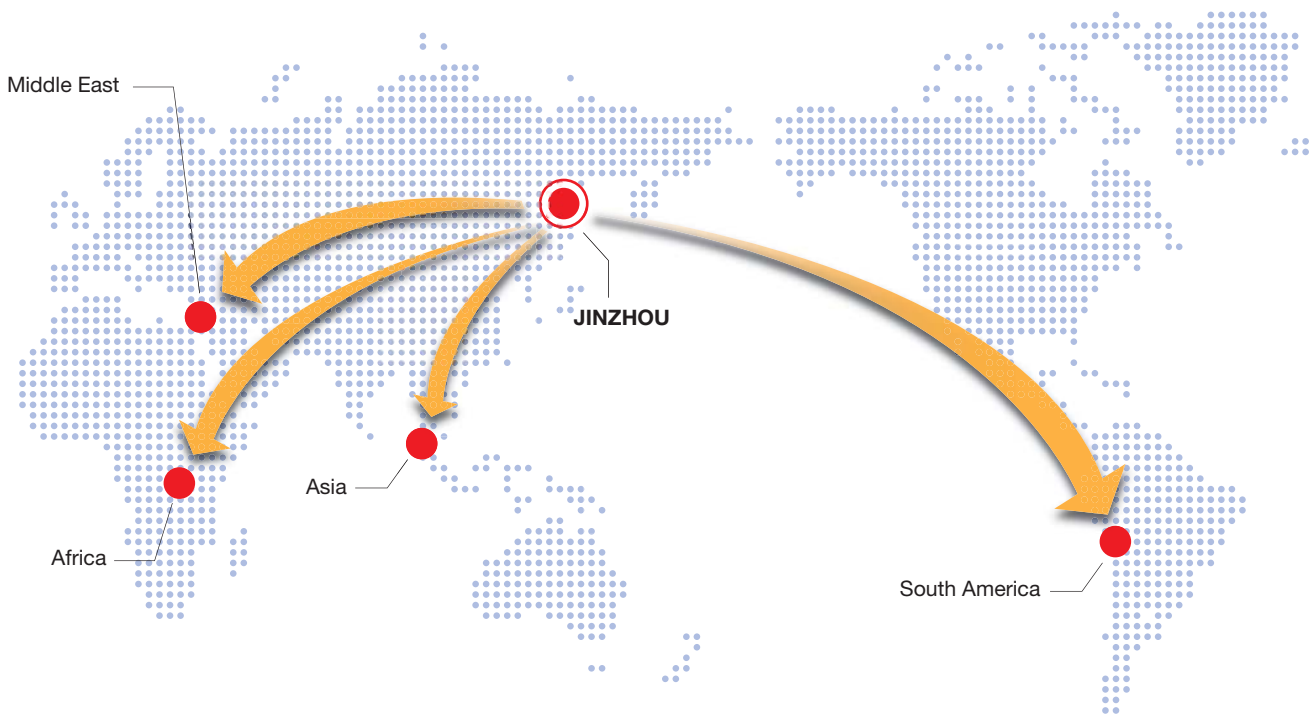
NEW JCM has redefined approach to project successful especially for the Petrochemical industries

and a wide range of industries with our unique capabilities of designing, manufacturing and String Testing of large scale mechanical drive steam turbines and compressors in the same Turbo-Machinery factory.

At NEW JCM, you get more than just another product off the shelf. You get >50 years of application experience, technology that derived from many heritage brands that's relied on a team of product and service specialist tasked with maximizing of your operations.



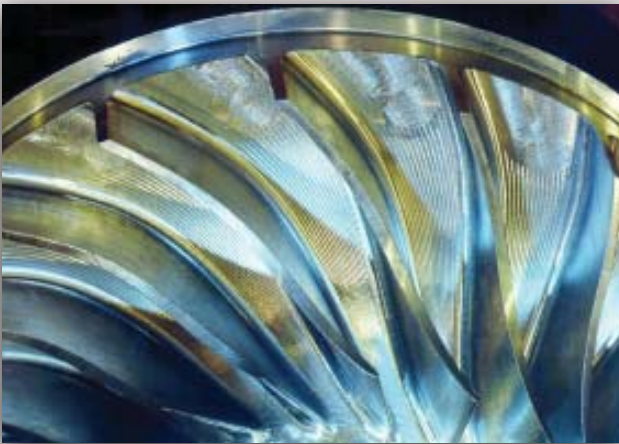
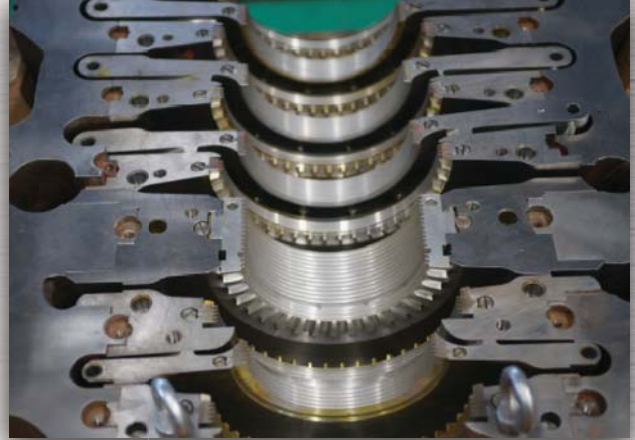
World Wide Network & Supply Record



NEW JCM COMPRESSORS

A heritage name that redefining what's possible.

We have designed and manufactured one of world largest CO₂ and Syngas Compressor Trains for Urea / Ammonia plants.



Critical Features :

NEW JCM centrifugal compressors manufactured in our 6-S advanced manufacturing shop integrating the most advanced CAD / CFD techniques.

NEW JCM SUPPLIES THE COMPLETE RANGE OF TURBOMACHINERY FOR THE PETROCHEMICAL AND OIL & GAS

- Urea / Ammonia plants
- LNG plants
- Methanol plants
- Oil Refinery plants
- Gas Pipe line
- Gas Injection
- Others



HORIZONTALLY SPLIT TYPE

Sample Horizontally Split casing Compressor: CO2 Compressor LP Casing
Type: 6H-6B
Capacity: 116871 Kg/h





NEW JCM PRODUCES ONE OF THE WORLD LARGEST MECHANICAL DRIVE STEAM TURBINE - CURRENTLY NEW JCM IS COMPLETING THE 28MW MECHANICAL DRIVE STEAM TURBINE FOR UREA / AMMONIA

NEW JCM is designing the 36MW Mechanical Drive Steam Turbine For a very large Methanol plant for the Syngas Train.

NEW JCM large size machining center is located in Huludao.



Turbine Casing Machining



Compressor Casing Machining

ADVANCE TECHNOLOGIES IN COMPRESSORS AND MECHANICAL DRIVE STEAM TURBINE - IMPULSE AND REACTION TYPE

NEW JCM DESIGN CAPABILITIES

Through further Engineering, in 2013, **NEW JCM** has achieved to complete the 50000KW Engineering Platform of Mechanical Drive Steam Turbine.



NEW JCM Advanced Impulse Type Rotor

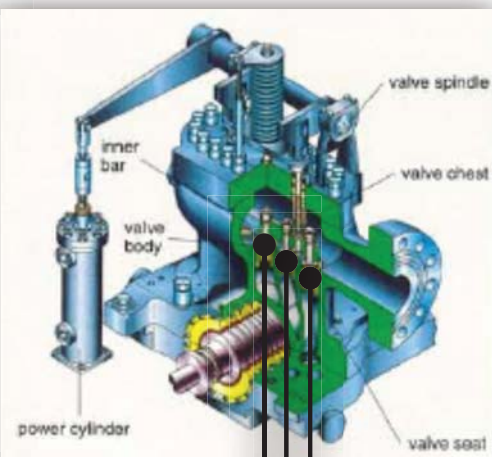


Modern Impulse design



Reaction Type

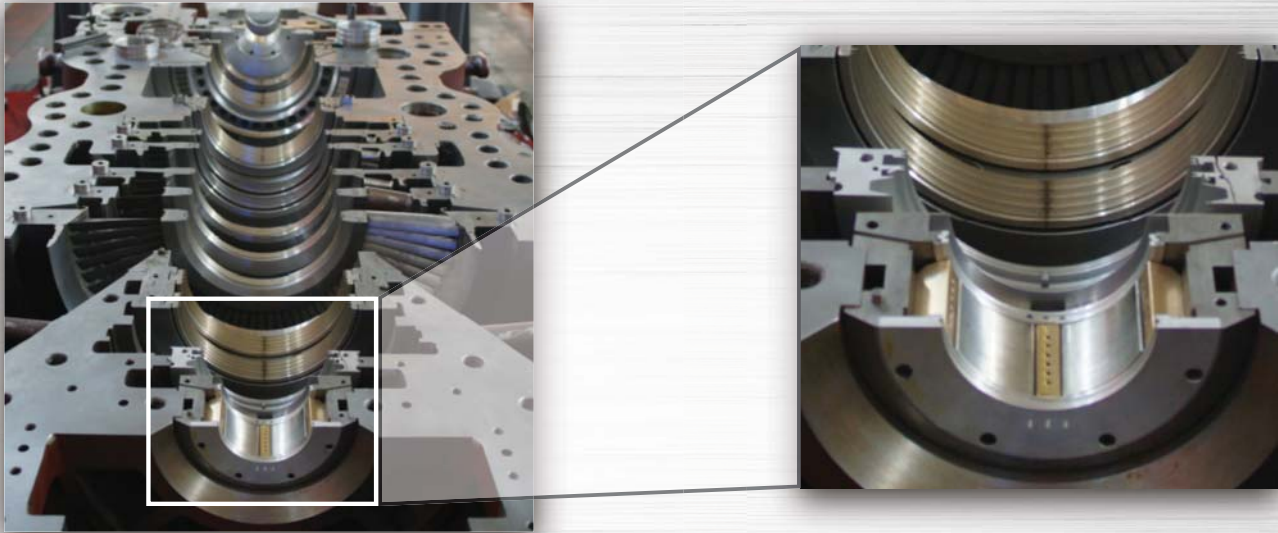
NEW JCM ADVANCED MECHANICAL DRIVE STEAM TURBINE COMPONENTS DESIGNS



Remote Control Main TTV (patented by New JCM), the valves assembly allowed steam inlets at one-time. Hence allowing the ease of start-up of steam turbine and can be remote controlled.

NEW JCM ADVANCE TECHNOLOGIES IN COMPRESSORS AND MECHANICAL DRIVE STEAM TURBINE - IMPULSE AND REACTION DESIGNS

NEW JCM ADVANCED MECHANICAL DRIVE STEAM TURBINE COMPONENTS DESIGNS



Duplex Large Diameter Pads Design providing the maximum supports for large power mechanical drive steam turbines, hence providing best operating stability for steam turbine at changing operating conditions.

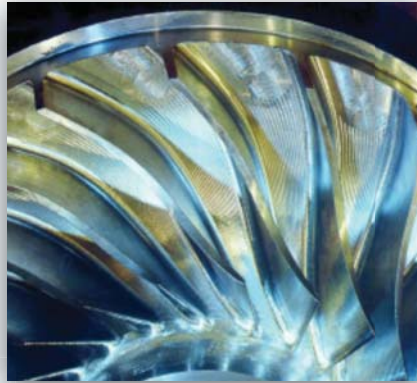


World most advanced Titanium material blades for Last-stage and Second Stage blades with interlocking "crown design".

NEW JCM ADVANCED COMPRESSOR TECHNOLOGIES

Advanced Impeller Design based on advanced CFD calculations and design and model over best in-class industry model.

1. 3~5% improved in Efficiency
2. 5~10% improved in working range
3. At least 10 years in improving Life-cycle



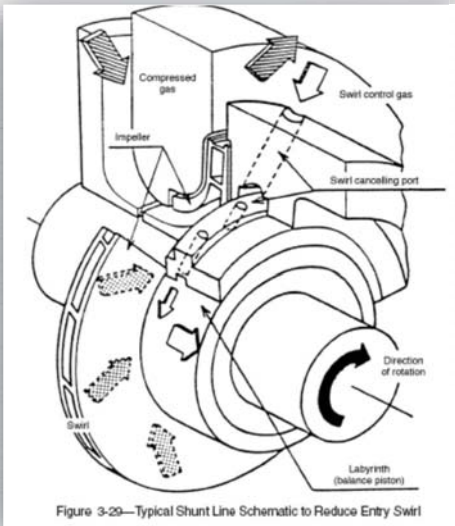
- Highly precision CAD/CAM machining and vacuum wire cut Compressor Diaphragm.
- Diaphragm modular Assembly with advanced heat management welding techniques, eliminated the use of fasteners in the Diaphragm assembly.

1. Significantly minimized the leakages between diaphragm.
2. Significantly reduced the aerodynamic friction losses.
3. Eliminated the potential "cracks" at fastener areas.



NEW JCM ADVANCED COMPRESSOR COMPONENTS DESIGNS

1. Reduced Leakages between Labyrinth by 2~3%.
2. Significantly minimized the vibrations during the increased of speed during operations.



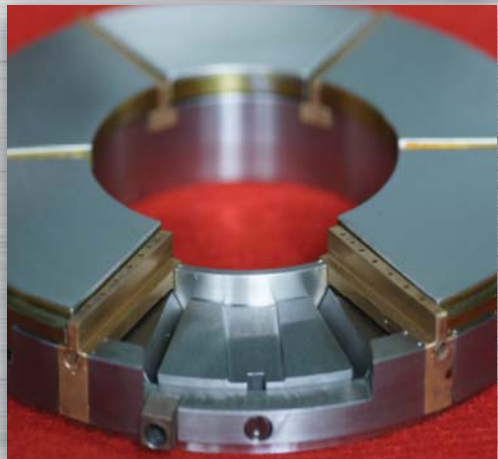
Modular Ring and Honeycomb Seal between Impellers



1. Significantly minimized the vibrations (due to Vortexes) caused by differential pressure in the impellers.
2. Reduced the resonance at critical speed.

1. Direct injection of oil minimized the loss of oil by 50% hence improved bearing life significantly.
2. Tilting pads (self-Balanced) bearing technologies minimized the oil-film changes hence reducing the potential of vibrations

Hydrodynamic Force Oil "Tilting" pad Bearings

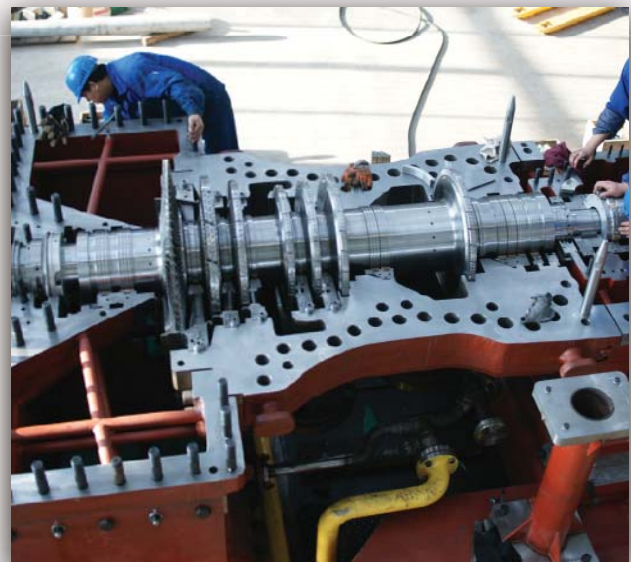


NEW JCM MECHANICAL DRIVE STEAM TURBINE

Critical Features :

Highly Reliable : High Strength Titanium materials

High Efficiency : Innovative design and application of highly practical technologies such as Honeycomb seals



SAMPLE HIGH PRESSURE EXTRACTION TURBINE ROTOR



NEW JCM CAPABILITY

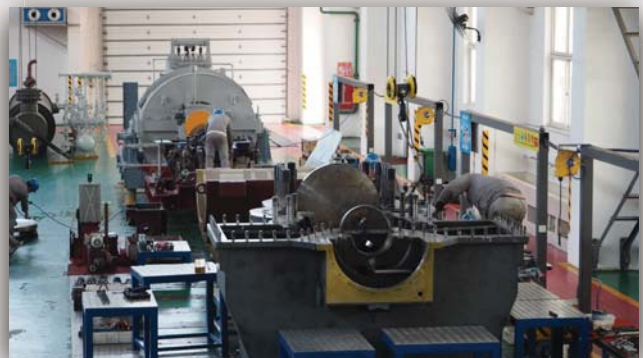
NEW JCM design and manufacture the MHI 40MW Mechanical Drive Steam Turbine Rotor for Petrochina Daqing Ethylene plant crack gas compressor.

NEW JCM is the only company in China that can design, manufacture and test both Compressors and mechanical drive steam turbine in the same factory.

NEW JCM is the only company in China possesses the Technology, Knowledge & Technologies To design, manufacture and test large power (>15MW)/high speed/high efficiency Mechanical Drive Steam Turbine and Integrate them with compressors in one Factory and string test the package.



SCHENCK - High Speed Dynamic Balancing For Rotors.



MHI mechanical drive steam for Ethylene plant crack gas compressor in the Assembly Facility in NEW JCM



NEW JCM Technicians conducting assembly and inspection works for the MHI 40MW mechanical drive steam turbine for crack gas compressor.



FINAL ASSEMBLY AND INTEGRATION

Final Assembly and Integration is done in environmental controlled workshop.
All coating and painting will be done in dust free environment.



SEALS

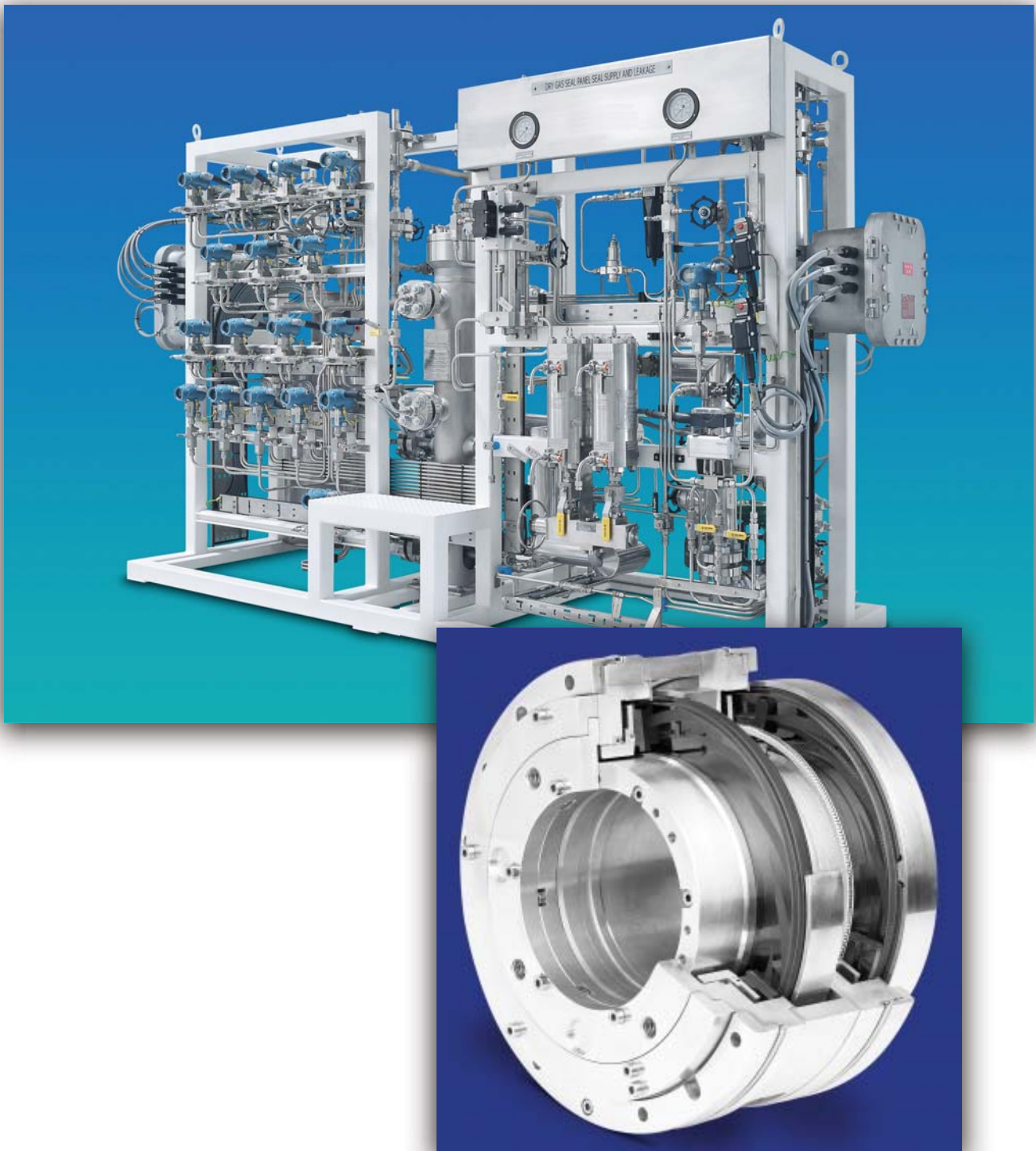
Shaft seals prevent gas leakage from compressor. Inter stages seals reduce the leakage between stages. Following seal types are applicable for Centrifugal Compressors.

Shaft seals :

- Oil film seal (conventional)
- Oil film seal (flexible seal)
- Dry gas seal
- Labyrinth seal
- Mechanical seal
- Segment seal

Inter stages seals :

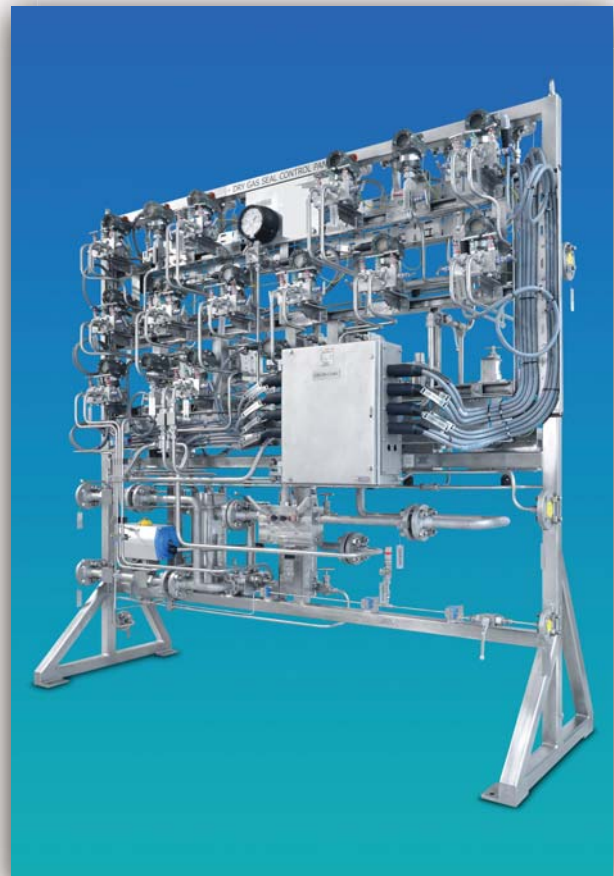
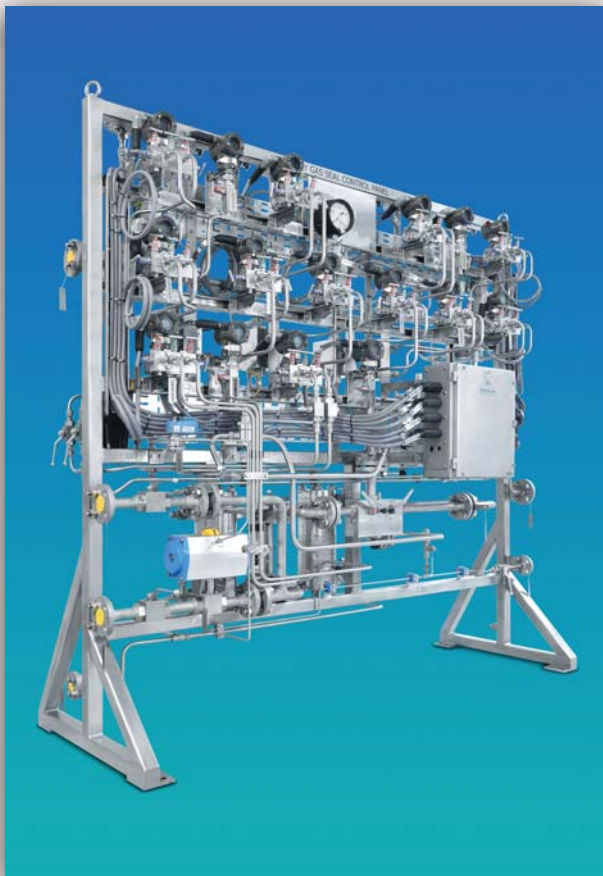
- Labyrinth seal (conventional)
- Labyrinth seal (abradable seal)



VIBRATION MONITORING SYSTEM



DRY GAS SEAL CONTROL SYSTEM



UREA / AMMONIA PLANT

NEW JCM received one of the world largest Urea / Ammonia green-field plant project, the design production capacity for plant is 3250 MT / day of Urea and 2050MT / day of Ammonia. The scope of works included the design, manufacturing and mechanical running / performance tests (API 617, API 612, API 613, ASME PTC-10-Class II and Class I for CO2 package, & Complete String Test of all packages) of the following compressor Trains :

1. Syngas Compressors (LP / HP) with 5EH-7BD (26.4MW) Steam Turbine Drives
2. CO2 Compressors (LP / HP & Gear Box) with 5MXL-8BD (15.7MW) Steam Turbine Drives
3. Ammonia Compressors (LP / HP) with (12.2 MW) Steam Turbine Drives
4. Process Air Compressor (LP / HP) with 7MXL-7 (17.7MW) Steam Turbine Drives

NEW JCM has the capabilities to design and manufacture large-scale (large power and high speed/efficiency) Compressors and Steam Turbine in one factory that provide excellent quality control and manufacturing planning that will significantly reduce the customer lead-time.

NEW JCM unique competence is to perform String Test of the compressors/Steam Trains that will significantly reduce the risks of site installation, alignment and commissioning issues. Hence, provide shorted start-up lead-time and reduce project costs.



All Machines go through an exhaustive String Tests (complete compressor trains and steam turbine or electrical motor drives).



The Machines will be final assembled and coated/painted in controlled environment (dust free).

ADVANCED ASSEMBLY AND TEST CENTER

NEW JCM possesses one of the most Advanced Assembly and Test Center in China and Asia. All **NEW JCM** Compressors/Steam Turbines packages will go through a very vigorous **ASME PTC10-II, Mechanical Running (API 617) and String Tests**. This will reduce risk to your project timeline and budget by allowing **NEW JCM** to transfer all client site potential risks (installations, commissioning and start-up) to our Test Center.



Climate Control Assembly Centre



ASME PTC10-II Shop Test for Ammonia Refrigeration Compressor



API 617 Mechanical Running and String Tests

NEW JCM TEST CENTER

NEW JCM is the only company in China that adopting the state-of-the-art philosophy to design and manufacture compressors and steam turbines in the same manufacturing facilities with a consistent design, manufacturing and quality control systems. Such philosophy enabling NEW JCM to keep our production and delivery schedules in control and meeting and exceeding the customer expectations.



A large-scale CO2 compressors (LP/HP) + Gear Box + Steam Turbine Train in the String Test.

A String Test of the Compressors / Gear Box / Steam Turbine

can be carried out in NEW JCM TEST CENTER – ASME PTC-10-II Performance Test, Mechanical Running API 617, API 612 & API 613 Tests. Thus, the entire train is confirmed of the performance and reliability prior shipment, to ensure delivery of a robust package.



We have earned an excellent reputation from customers for the performance and reliability of our packages through our consistent design, manufacturing, quality and documentation control processes.

NEW JCM TURBOMACHINERY TEST CENTER



NEW JCM Advanced Turbomachiner Test Center

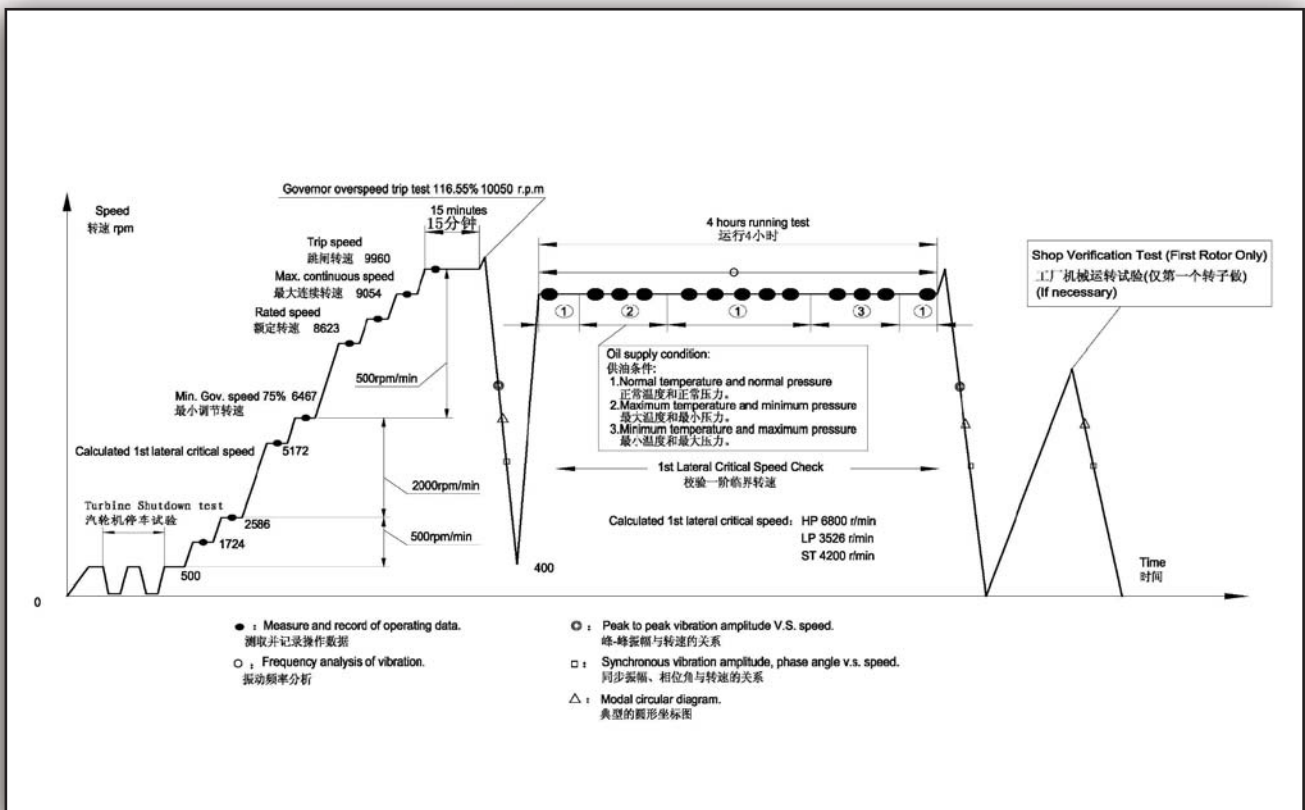
NEW JCM test center is able to do the following tests:

1. API 617 Mechanical Running Test of Compressors
2. API 612 Mechanical Running of Steam Turbines
3. API 613 Mechanical Running of Gearboxes
4. API 614 Running Test of Oil Units
5. String Test of Integrated package (whole package running)
6. ASME PTC-10 Type II Performance Test of Compressors

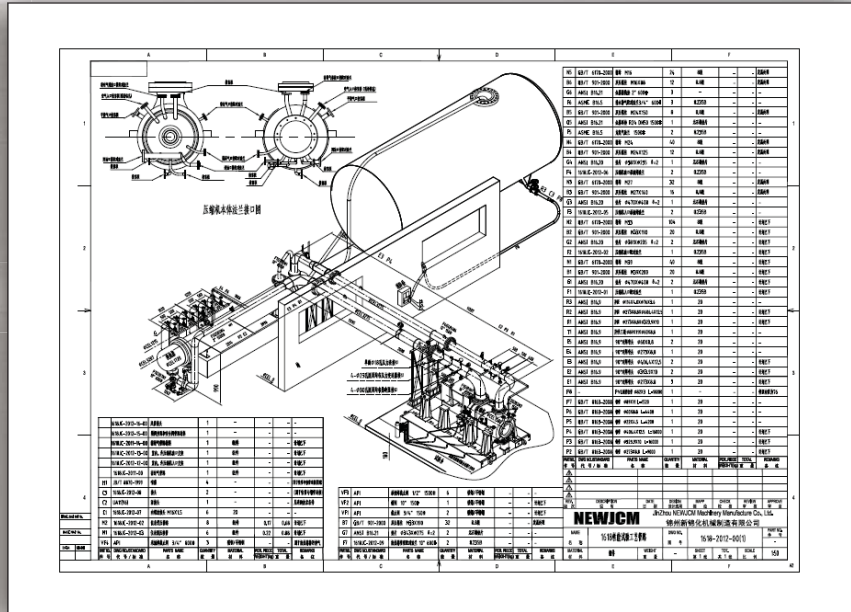
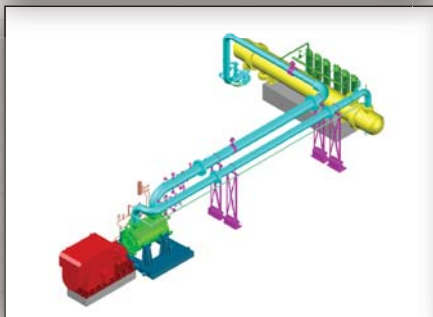
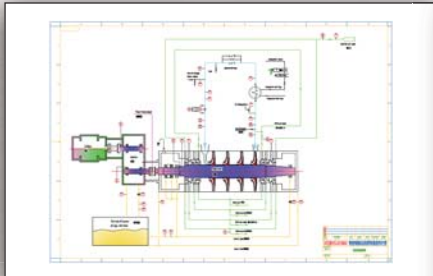
NEW JCM turbomachinery test center equipped with the following facilities:

1. Natural Gas Boiler unit (40 t/h@ 25Barg @ 320 Degree C)
2. BN-3500 Machine Monitoring System
3. Woodward 505E Steam turbine speed control System
4. Siemens S7 PLC unit for controlling the Package
5. Steam Condenser and Vacuum unit
6. Coolers for PTC-10 performance test
7. Shop API 614 Oil Unit
8. Shop Instrument Air Package

Running Test Graph



ASME PTC-10 TEST PROTOCOL – SGS FRANCE APPROVED



Syngas compressor ASME PTC10-2 Shop performance test bed design

ASME PTC-10 Class II Test



Pakistan national oil and gas companies
Natural Gas Compressor : ASME PTC10-2 performance test
With Approved test protocol by SGS France.

API STRING TEST



String Test of Complicate train: Including 6 equipment
Steam turbine-Gearbox-VFD Motor-Gearbox-LP compressor –HP Compressor



String Test of of CO2 Train:
Steam Turbine – LP Compressor- Gearbox- HP Compressor

TEST RESULT MONITORING



HMI Showing all important test data

Competitive Advantages of NEW JCM

- Maintenance background help us to understand operation malfunctions
- The Only Company in China manufacturing both driver turbine and compressor in same plant
- Designing the machines Auxiliary system able NEW JCM to modify the designs in every stage of design
- Advanced test facility for turbine and compressor able NEW JCM to do the String test of whole package
- Minimum installation activity for costumer by doing the string test and assembling the machine on skid in NEW JCM shop (Plug and Play equipment)
- Connection with prestigious universities for complex problem solving and newly developed designs
- Commissioning and Aftersales services with experienced staff

SUCCESS STORY

NEW JCM received orders (in 2012) of the **Syngas Compressors(LP/HP) c/w Mechanical Drive Steam Turbine**, **NH3 Refrigeration Compressors (LP/HP) c/w Mechanical Drive Steam Turbine**, **CO2 Compressors (LP/HP) c/w Mechanical Drive Steam Turbine** and **Air Process Compressors (LP/HP) c/w Mechanical Drive Steam Turbine** from one of the world largest Urea/NH3 plants in Middle East (3250 MTPD Urea & 2050 MTPD Ammonia).

All Compressors and Mechanical Steam Turbines were delivered on time. **NEW JCM** is the only manufacturer in China that can design, manufacture and perform the ASME PTC-10 II, Mechanical Running (API 617) and String tests in one Factory.



CO2 Compressors (LP/HP) c/w Mechanical Drive Steam Turbine



NH3 Refrigeration Compressors (LP/HP) c/w Mechanical Drive Steam Turbine



Syngas Compressors (LP/HP) c/w Mechanical Drive Steam Turbine



Process Air Compressors (LP/HP) c/w Mechanical Drive Steam Turbine (Mechanical Running API617 and String Tests)

SUCCESS STORY

NEW JCM received an order (in 2013) from Oil & Gas Development Corporation of Pakistan (OGDC) for 3x trains of Sales Gas Compressors that c/w Mechanical Drive Gas Turbines. **NEW JCM** and Harbin Guanghan (Research Institute 703) in partnership completed the project in record timing (14 months after receiving of contract). **NEW JCM** is a strategic and preferred vendor of OGDC.



Sales Gas Compressors c/w Dry Gas Seal Control Panel on Skid



Sales Gas Compressors c/w Dry Gas Seal Control Panel on Skid



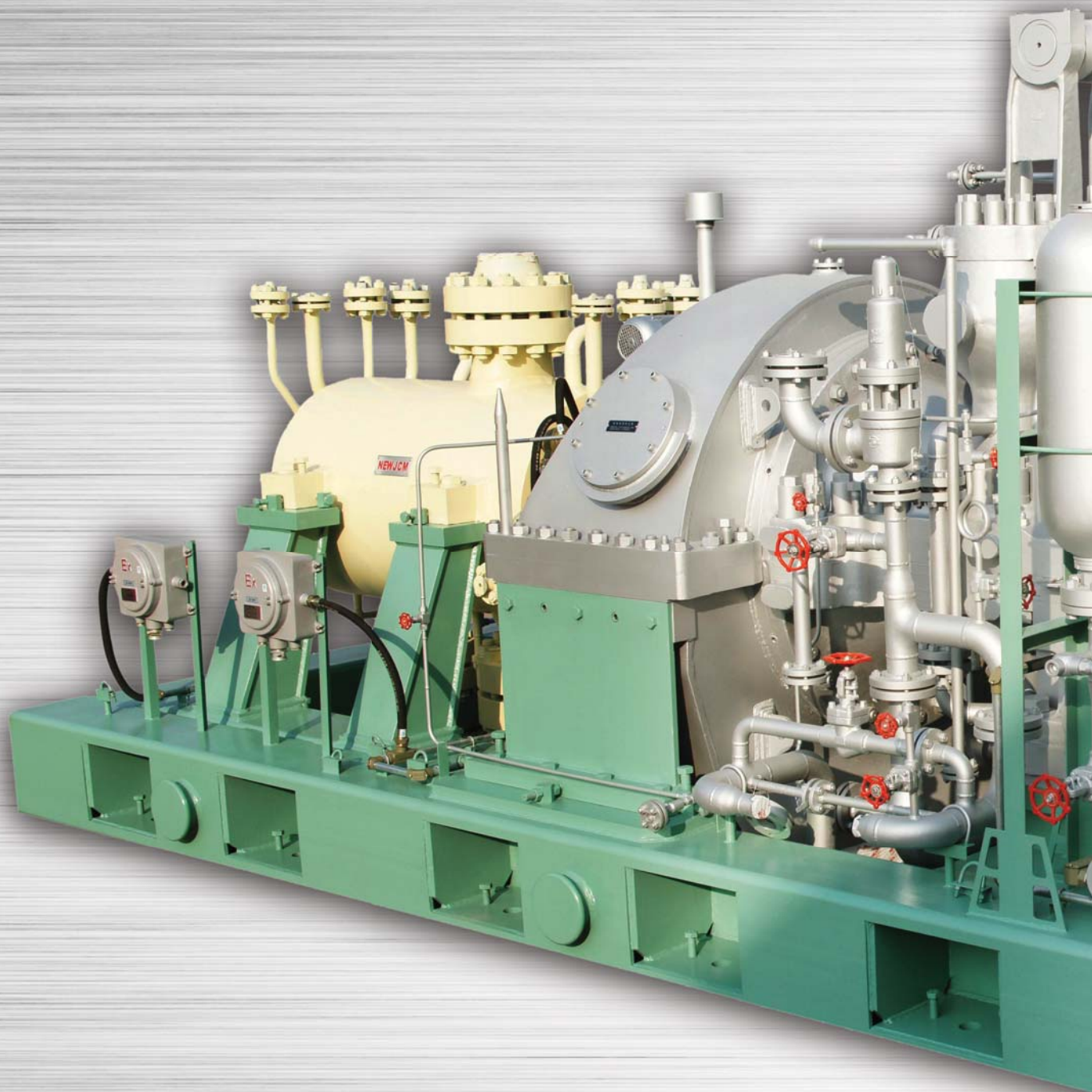
Gas Turbine Packaging



Core Engines are Zorya UGT-6000i



Complete Gas Turbine Packaging c/w Gas Turbine Core Engines Oil Lubrication package and Sound Enclosure



JINZHOU NEWJCM MACHINERY MANUFACTURE CO., LTD.
No. 18, the second, Jingang Street, Jinzhou Economy Development Zone,
Liaoning Province, 121007, P.R. China
Tel: +86 416 3593099 • Fax: +86 416 3593069
Mobile: +86 139 4264 8889 • Email: laurencewei@newjcm.com