



CIC Technical Service Introduction



About CIC Technical Service

Whether it is construction work or after-sales service, we always adhere to the customer-first service principle. CIC has strong scientific and technological strength, a perfect service network system, a professional technical team and strong backup support. We promise to let customers obtain the most advanced equipment while providing them with timely, efficient and reliable services to the greatest extent. Do everything in the interests of customers first.

CIC technical services consist of the following three parts: Alignment and Measurement ; Installation and Commission ; Inspection and Maintenance

Part 1 Alignment and Measurement

CIC has a perfect and powerful measurement team to meet customers' various measurement requirements, whether you are to replace the whole equipment, to update and modification of spare parts, or need to carry out the professional measurement for the equipment before delivery, we all have the corresponding qualifications and matching measurement tools to meet customer requirements.

Alignment:

CIC's alignment service helps you to keep the rotating kiln healthy and operating at peak performance. We provide end-to-end service for

rotary kilns and full pyro processing systems. With more than 60 years of experience covering a wide range of applications and business areas, CIC rotary kiln manufacturer can count on our technology to keep your kiln running.

Alignment of kiln

Untimely treatment, horizontal and vertical misalignment issues on rotary kilns can lead to unpredictable operation and decreased reliability. Alignment is also a key factor in extending the lifetime of equipment and optimizing maintenance costs.



Why Alignment is so Important

Alignment of the shell or drum between the support piers, kiln girth gear to pinion, and tires to support roller, is necessary for all rotary units. By maintaining alignment of the key components, the following benefits can be obtained:

- Equalization or optimization of loads on support piers.
- Reduced power consumption.
- Lower component wear rates, e.g. riding rings, support rollers, gear and pinion, thrust roller, bearings, etc.
- Reduced stress and wear on refractory.
- Reduced risk of shell damage by refractory failure.
- Reduced risk of unplanned stoppage.



The use of accurate and proven procedures, performed by experienced and qualified personnel should be of paramount importance to the operator. CIC has crews with many hundreds of hours of experience on all makes and types of rotary equipment.

We can use the proper diagnostics tools and methods. For example, we rely on measurements of the riding ring and the associated tire slip or creep. However, given that the rotary kiln tyre surface can be irregular due to wear and is often contaminated with lubricant and dust, basing

kiln alignment on tire measurements alone is of questionable accuracy. We use state-of-the-art high-frequency laser equipment to capture data with a high degree of accuracy, calculating the position of the kiln shell rotational axis at each support. Calculations include allowance for flexure, shape distortion and eccentricity of the shell.

Alignment of Grinding Mill

CIC industrial grinding mills undergo rigorous alignment and measurements before leaving the factory, such as the elongation of the end cover joint bolts, the length of the shell, the hole diameter of the shell, and the hole depth of the end cover. Under the special requirements of customers, we will also carry out a laser coaxiality test of the mill.



In the production and operation of the grinding mill, it is necessary to control the machining and installation accuracy, especially during the operation of the mill, it is necessary to carry out "physical examination" on the running condition of the mill regularly, mainly to measure the coaxiality and level difference of the bearing parts at both ends of the mill.



API T3-15 Laser Tracker



API T3-15 Laser Tracker

The Measurement Parameter:

- Horizontal deflection yaw and pitch $\pm 320^\circ$.
- Vertical direction yaw and pitch $+80^\circ/-60^\circ$.
- Angular resolution $\pm 0.07''$.
- Range resolution $1\mu\text{m}$.
- Absolute accuracy.
- Static state $\pm 5\text{ppm}(2\text{sigma})$.

- Dynamic state $\pm 10\text{ppm}$ (2sigma).
- Coordinate repeatability: Better than 2.5ppm.
- Scope of application: temperature 2-40°C, atmospheric pressure 580~800mmHg.
- Relative humidity: 10%~92.5%, within 2km above sea level.



Coaxiality of the SAG Mill produced by CIC for Russian customers



The surveyor of the CIC can go to the customer's site for field measurement; We can survey the transformation of the equipment in use or the corollary equipment of the new project, so as to provide technical support for the subsequent cost accounting and quotation. CIC focuses on

customized services for customers' requirements of products. Equipment transformation and renewal require comprehensive measurement and analysis of the original equipment, as well as design and manufacture, are carried out on this basis, such as the replacement of the rotary kiln girth gear on the grinding machine and the replacement of the rotary kiln tyre.

In addition to on-site measurement, CIC will also use professional measuring equipment to control the quality of products according to customer requirements or its own quality requirements. We could cooperate with manufacturing or maintenance departments to carry out product inspection in the factory or user site, providing reliable data support for the installation and commissioning of products, so as to better serve customers. CIC skilled quality inspection engineers can use

the most advanced laser tracking system to perform ball mill calibration and other tasks.

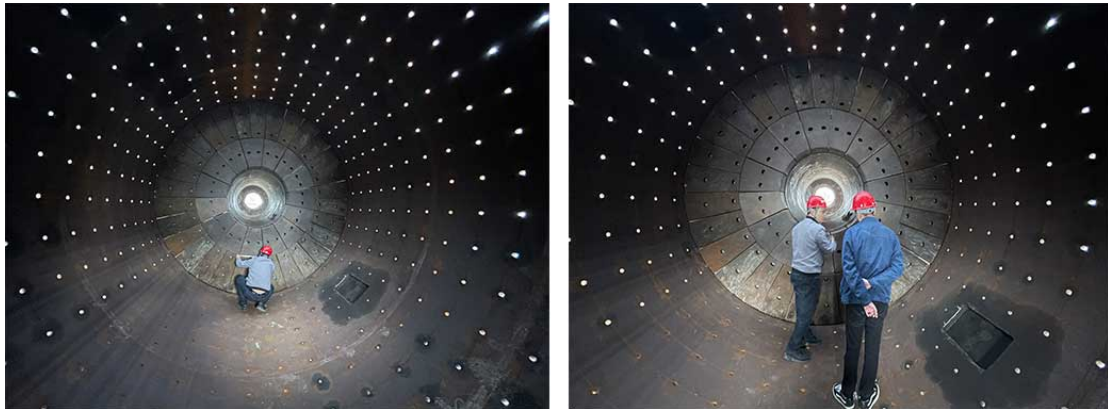


On-site Measurement of Pinion Shaft



CIC Surveyors Make On-site Measurements of $\Phi 3.6 \times 15\text{m}$ Cement Mill Liner in Tanzania

CIC has the unique design and research experience on grinding mill liners, we can optimize and replace the liners used by customers. On-site measurement can be carried out and the situation of liners in use be investigated by our professional engineer, and provide more accurate and more suitable update services on the basis of on-site measurement data.



On-site Measurement for Rod Mill Liner

Part 2 Installation and Commission

CIC has its own installation and commissioning team, which avoids the trouble incurred by the equipment production line owner finding the installation and commissioning engineering team by themselves. No matter where you are in the world, we will go to the site to provide installation and commissioning services for you. In addition, because our equipment is designed, manufactured, installed and debugged as a whole, we are most familiar with our own equipment and the whole installation and debugging process, which can greatly improve the

installation efficiency, ensure the installation quality, and let customers worry free in the whole process.

Take the ball mill as an example, the installation and commissioning requirements of the ball mill equipment are very strict, and the installation needs to be carried out in strict accordance with the drawings and requirements of the ball mill equipment manufacturer.

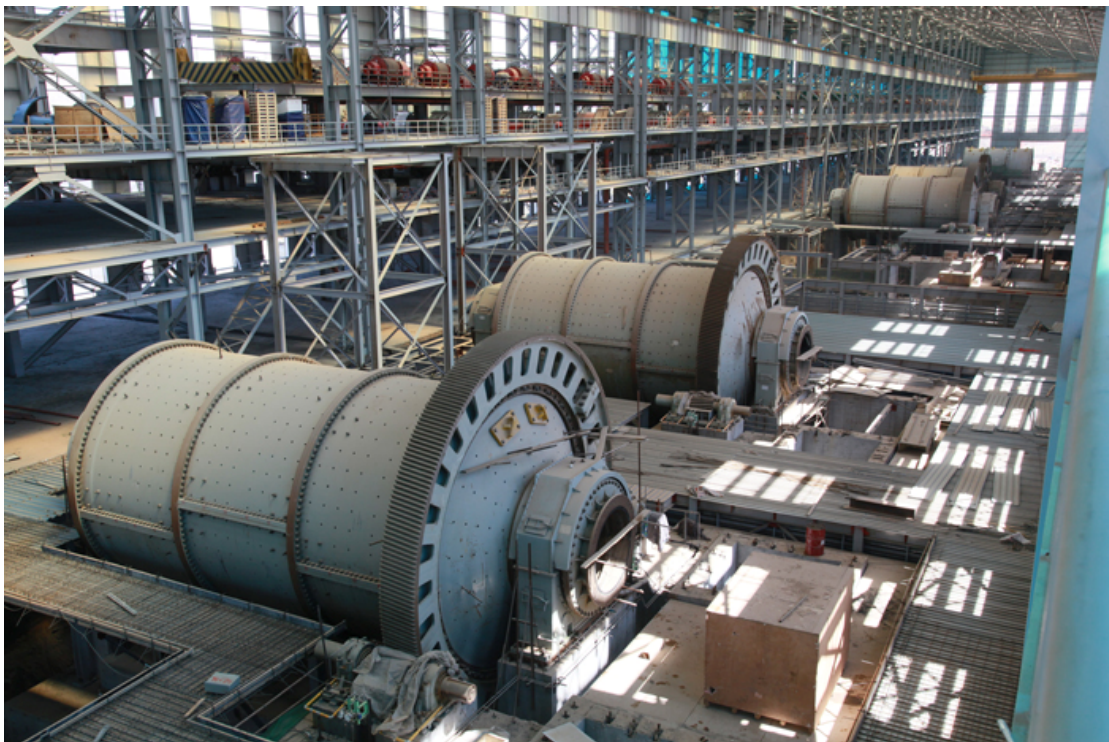


Once problems occur in

individual places, it will form a chain reaction problem to the whole ball mill production line, such as causing the ball mill product size can not meet the requirements, or even reducing the metal recovery rate. If in order to reduce the installation cost and choose the general ball mill equipment installation engineering team, the later is likely to have irreversible problems to the equipment. Therefore, the selection of installation team with formal qualification and rich installation experience is the key to ensure the stable operation of ball mill and realize efficient production.



This is the installation site of $\Phi 5 \times 8\text{m}$ autogenous mill and $\Phi 4.9 \times 10.6\text{m}$ overflow ball mill produced for Sino Iron Ore in Australia



Installation Site of $\Phi 5.32 \times 10.50\text{m}$ and $\Phi 6.32 \times 8.28\text{m}$ Overflow Ball Mill in TISCO Group



Installation Site of Rotary Kiln



Installation and Commissioning Site of Rotary Dryer



Environmental Protection Project Equipment Installation and
Commission Site



Φ3.8x5.0m Rod Mill Installation Site



Φ3.8x5.0m Rod Mill Installation Site



Commissioning Site of SAG Mill in Romania



Commissioning Site of SAG Mill in Romania

CIC successfully completed the task of installation and commission of semi autogenous grinding mill which had exported to Russia in 2020. The SAG mill is the first large mill independently designed and manufactured by CIC. The technical standard is high and the specification is complicated. Our installation team overcame the epidemic situation, went to the Russian project site, maintained the 24-hour uninterrupted connection between China and Russia, actively communicated with customers and successfully completed the installation and commissioning tasks in only 20 days.





Commissioning Site of SAG Mill in Russia



CIC Electrical Engineer Communicated with Foreign Site Personnel for Commissioning

Part 3 Inspection and Maintenance

CIC has a complete technical inspection and maintenance team. Before the equipment is delivered, we will carry out inspection according to the requirements of customers to ensure the quality of products. After the equipment is delivered, in addition to going to the site for installation, we will also train for the clients' operation and maintenance.

Inspection and Detection:

In order to guarantee the quality of the products, CIC insists on implementing strict testing on each of the product. The advantage of

CIC's testing is based on:

- **Experienced Testing Staff**

CIC has more than 200 engineering technical staff, 6 of which are Senior Engineer and 59 are the Engineer. Among all these engineering and technical staff, tens are professional quality control staff, taking charge of the testing of the products for years, to make sure each of the products confirms to the standard requirement of the Technical Agreement and etc.



Inspection of Girth Gear for Turkish Customer



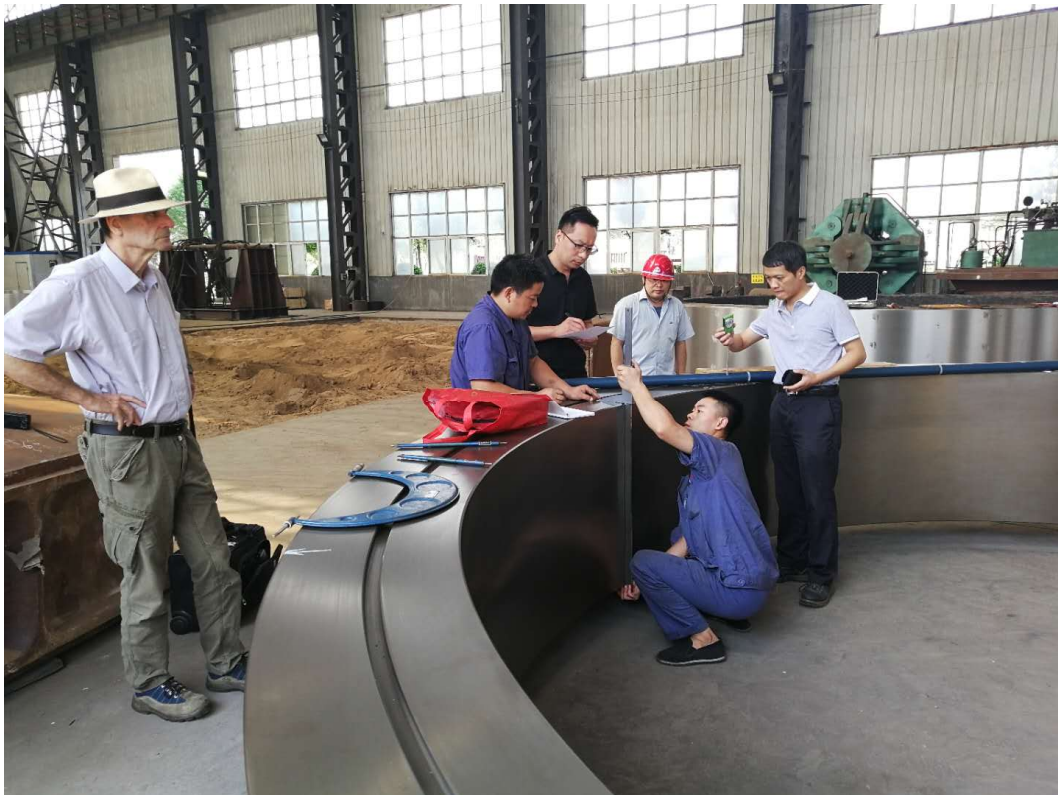
Inspection for Australian Customer



Inspection for DELTA MARIN Corp.(Marine Parts)



Inspection of Dryer Tyre for Indonesian Customers



Inspection for Kiln Tyre of India KHD



Inspection of ball mill liner for Australian FFF







Inspection for ALAS Grinding Mill

- **Advanced Testing Equipment**

CIC possesses tens of the advanced inspection and testing equipments, and is capable to manage most of the regular testing on CIC' s products and issue the relevant testing reports. The equipments CIC possesses includes the Ultrasonic Fault Detector, Universal Hardness Tester, X-Ray Nondestructive Flaw Detector, Rotating Magnetic Field Detector, Multi-purpose Magnetic Powder Flaw Detector, Thickness Guage, 3 Meter Metroscope with the precision of 1/1000 mm, Angular Instrument with the minimum measurable angle of 2seconds, Gear Tooth Form Tester, Gear Hob Tester, Electronic Universal Material Testing Machine, High Frequency Fatigue Testing Machine, and etc.



Mechanical Tensile Tester



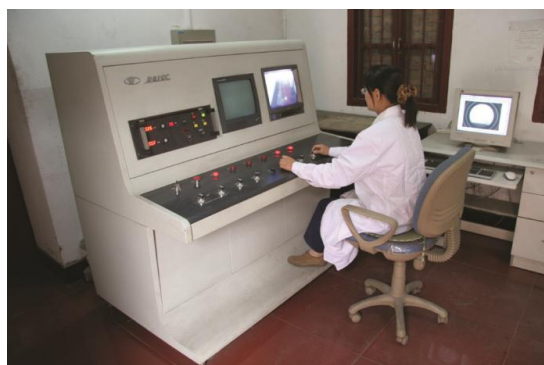
High Precise Gear measuring machine



Mechanical Impact Tester



Universal Hardness Tester



X-Ray Nondestructive Flaw Detector



Ultrasonic Fault Detector



DF100 direct-reading spectrograph



CS-901B Infrared Carbon Sulfur Analyzer

- **Professional Testing Institute**

CIC Quality Control Department as the specialized department, being responsible for the product quality. What's more, CIC cooperates with the national authorized testing institutes, such as the CITIC IC Engineering Design Institute, ZYS Luoyang Bearing Science & Technology Institute, the Luoyang Ship Material Research Institute (known as the 725 Institute), and etc., taking them as the third party testing institute and their testing seriously as part of the testing procedure.

Maintenance and Repair



CIC will track the whole process of the products sold, and regularly summarize the after-sales service problems, treatment results and cause analysis of the products. On the one hand, CIC will complete the maintenance work of the products through the training of the owner's personnel. On the other hand, CIC's professional technical maintenance team will carry out on-site inspection and repair for the problems that customers are difficult to handle by themselves, as well as follow up the whole process of repair. We will record and sort out major or frequent quality problems in combination with product maintenance feedback information and establish complete quality files for each product and corresponding problems.



Repair & Maintenance On Site

