CITIC IC
中实重机

CITIC IC LUOYANG HEAVY MACHINERY CO., LTD

Benefit/ Efficiency / Standard / Technology

Win-win and pragmatic-CIC International Trustworthy

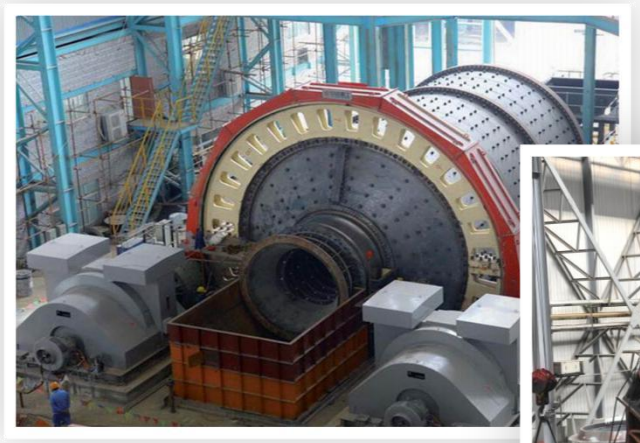
CITIC IC ADVANTAGES

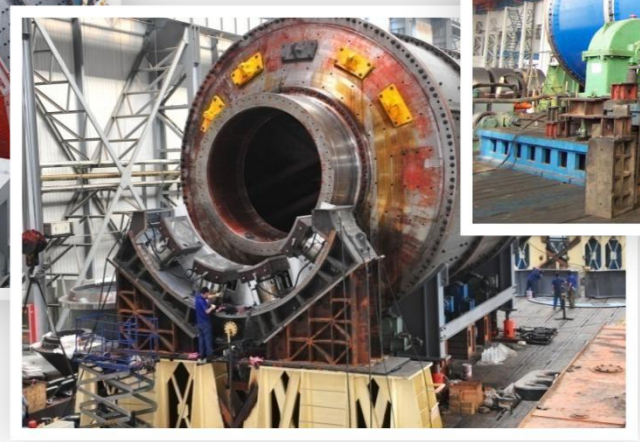
Foreword: Brief introduction of mill and grinding technology

1. Process Selection and Design Development
2. Manufacturing Equipment and Supporting System
3. Quality Control and Quality Inspection Methods
4. Packaging & Transportation:Multi-Function, Multi-Program, Customized
5. Case
6. Service

CITIC IC
中实重机

MILL





MILL STATUS

The mill is a kind of grinding machine, and it has a mixing effect at the same time. Up to now, in some fields, it has a crushing function, which can replace the crushing equipment of a certain link.

CITIC IC
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Main types of mill

BALL MILL

COLUMN MILL

TUBE MILL

ROD MILL

AUTO MILL

VERTICAL MILL

DMC MILL

OTHERS

An equipment manufacturer and a mineral processing service provider

The predecessor of CITIC IC Luoyang Heavy Machinery Co.,Ltd was Luoyang Mining Machinery Factory, located in Luoyang City, Henan Province, which is known as the "13th dynasty ancient capital". It was built in 1954 and is China's largest mining machinery manufacturing enterprise. The research institute affiliated to the company is the largest comprehensive research and development institution for mining machinery in China, and has the qualification of Grade A mechanical engineering design.

After 64 years of industry accumulation, it has provided a total of 3 million tons of complete technical equipment and technical service products for mining, building materials, metallurgy, power, nonferrous metals, chemical industry, environmental protection and other industrial fields.

The company's products are exported to more than 20 countries and regions in Asia, Africa, Europe, America and Australia.

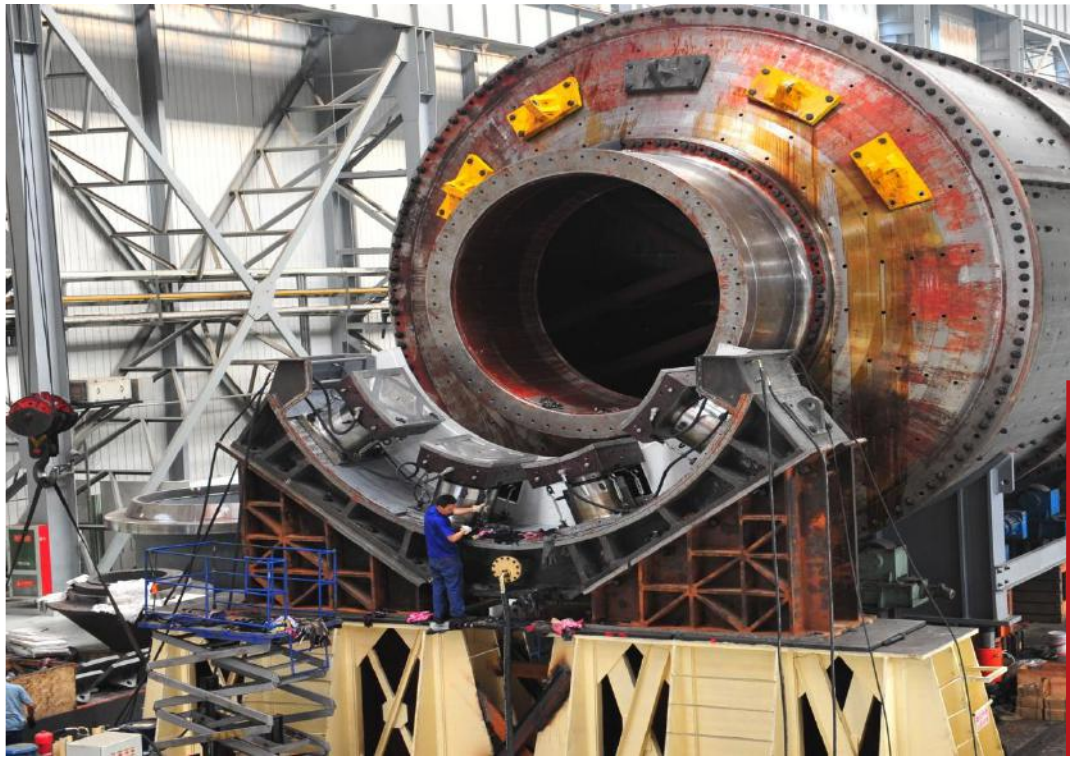




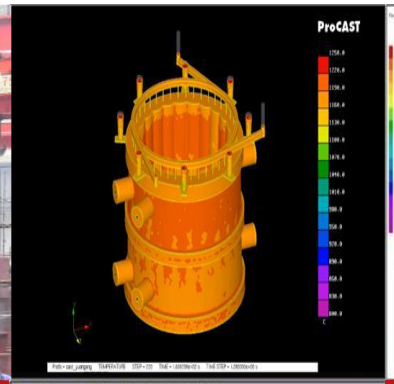
Grinding Technology Concept

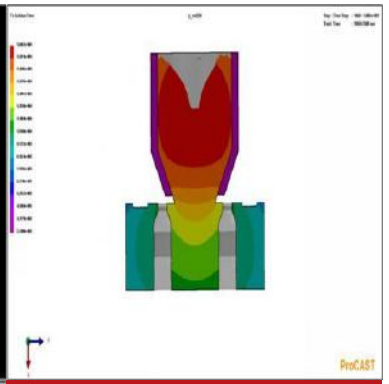
Grinding technology is an experimental science, which requires a wealth of experience as an accumulation. Through repeated debugging and verification, our grinding technology development experience is rich, drawing on and absorbing the international advantages of well-known international brands, combined with our own unique thinking and practice. We have the clear understanding and feeling of our users.

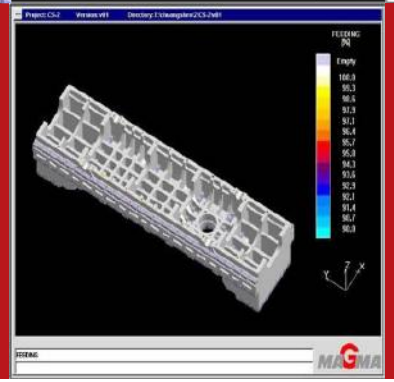
Process selection and development design



Process selection







develop ment and design

Process selection and development design

Process selection

The importance of process selection

According to the processing capacity, the diameter and length of the mill can be determined.

According to the nature of the material can determine the form of mill (Ball mill, bar mill or other)

Process selection and development design

Process Selection

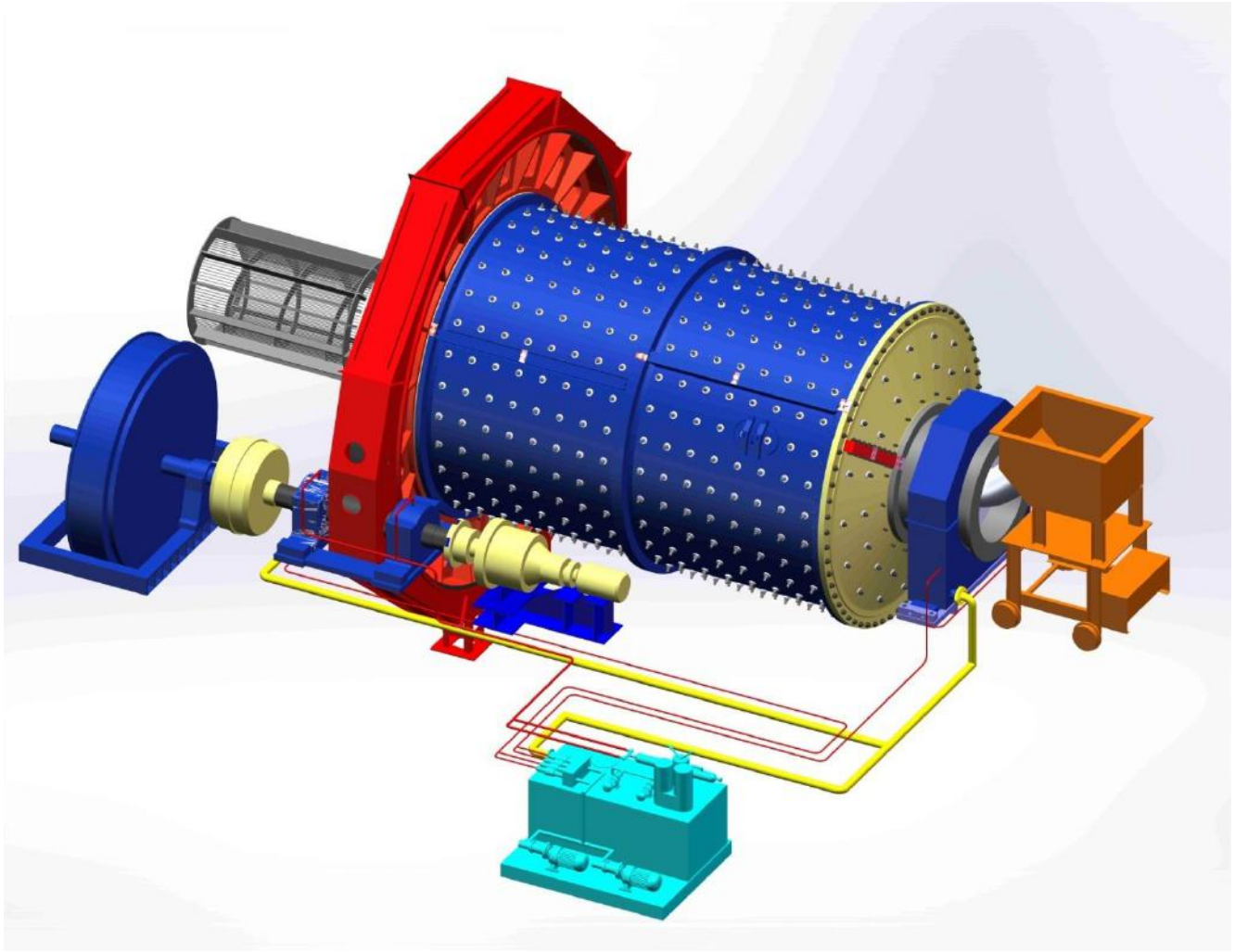
1 Process Selection
According to the ore sample provided by the customer, the parameters of ore crushing and grinding are measured.
Through the simulation of JKSimMet computer software ,the best semi-self-mill, self-mill,
Ball mill specifications and parameters are settled.
1 strength
Finite element analysis is commonly used to calculate the strength of the mill barrel, end cover, and hollow shaft to determine the optimal structural parameters.
Transmission
According to the power and working conditions, you can choose:
1.Single motor gear drive
2.Dual motor gear drive
Perform torsional vibration analysis of the transmission system to avoid resonance.

1 Main bearing
According to the mill specifications and load conditions, three types of dynamic and static pressure, static pressure and sliding shoe bearings can be selected, and the corresponding special lubrication station can be configured.
1 Auxiliary machine
1.Optimization of the structure of the feeding and discharging device (feeding trolley, discharge drum screen)
2.Use liner simulation software to study the geometry of liner
3.High-strength bolt strength calculation by software
Improved reliability and service life.
1 Control
Through PLC control, touch screen display and operation, as well as the measurement and monitoring of temperature, vibration, oil pressure, oil flow, oil film thickness and other parameters, and the use of DCS system, the reliability of operation is improved
1 Supporting
The preferred domestic and foreign well-known supporting suppliers provide the best configuration for the mill.

Process selection and development design

MILL MAIN BODY STRUCTRUE

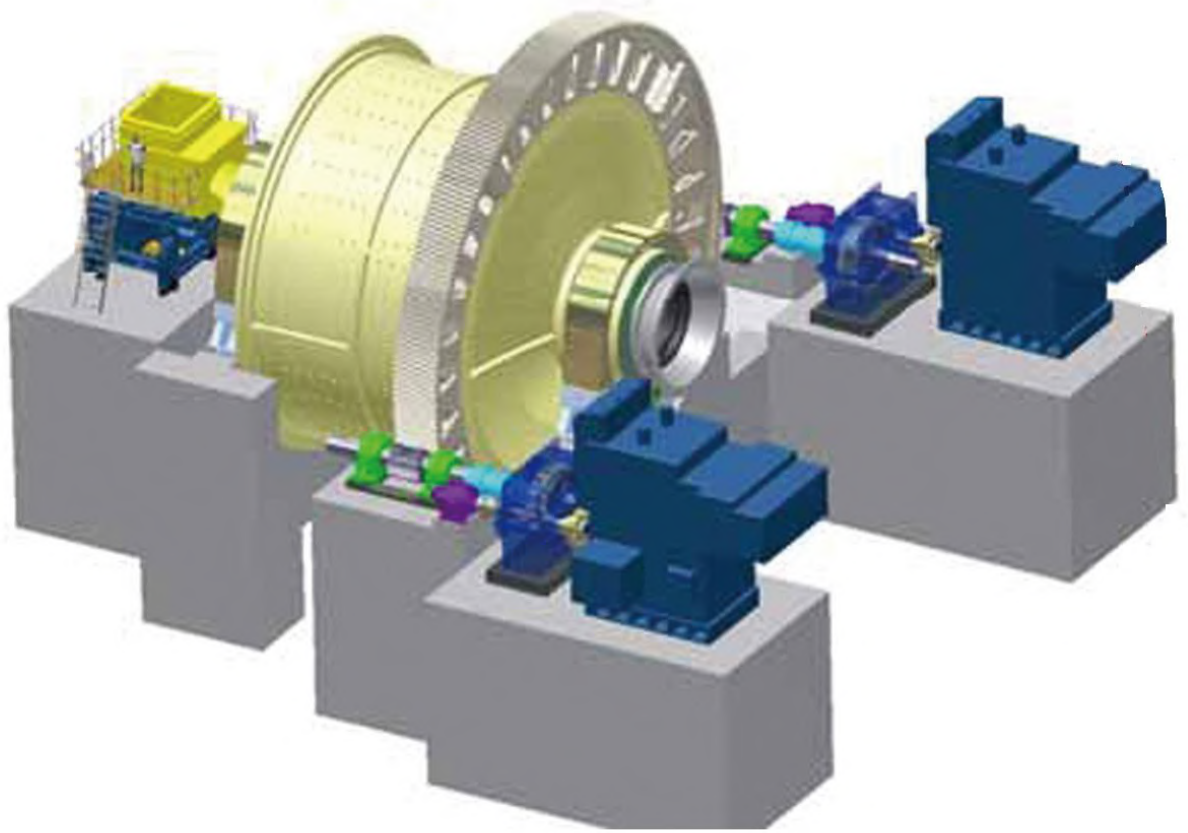
- SHELL ASSY.
  (liner、end cover、shell etc.)
- DRIVING SYSTEM
  (girth gear & pinion、pinion、main motor etc)
- LUBRICATE SYSTEM
  (main bearing、girth gear & pinion、reducer etc)
- ELECTRIC CONTROL SYSTEM
- BASEMENT



Process selection and development design

ANALYSIS AND DESIGN OF CORE COMPONENTS

- FEA
  ANSYS、STRAND
- Material simulation software
  JMATPRO
- Casting simulation software
  DEFORM、MAGMA
- Welding simulation software
  SYSWELD
- Simulation Software-Assembly simulation，Operation simulation。
  SOLID WORK，JKSIMMET，I-DEAS



Process selection and development design

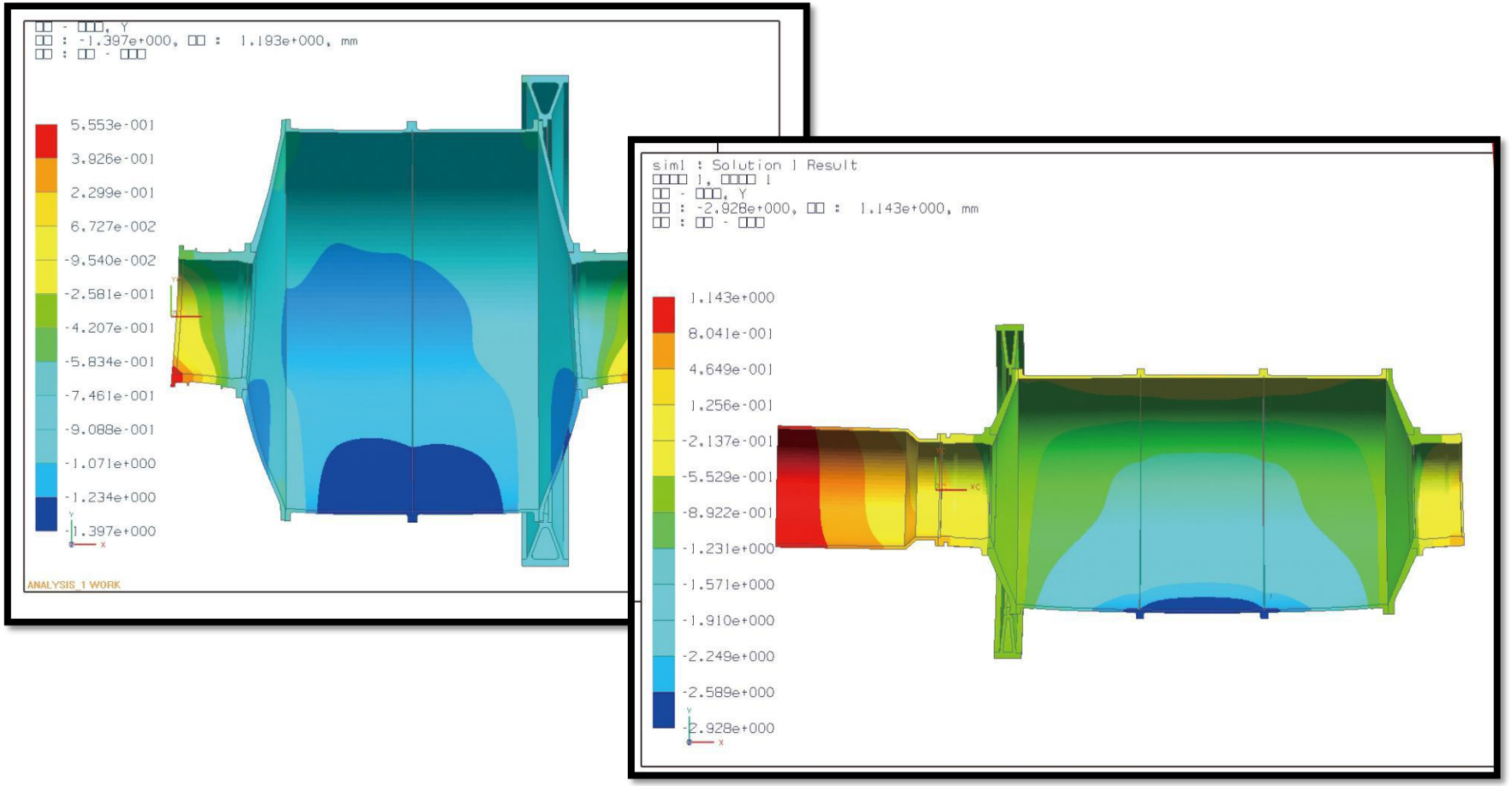
FEA

ANSYS

Decompose first, then merge, and decompose by meshing, transforming qualitative difficulties into quantitative complexity!

In essence, a difficult problem is transformed into a superposition of several simple problems!

Purpose: Obtain the overall parameters of a simulated mill

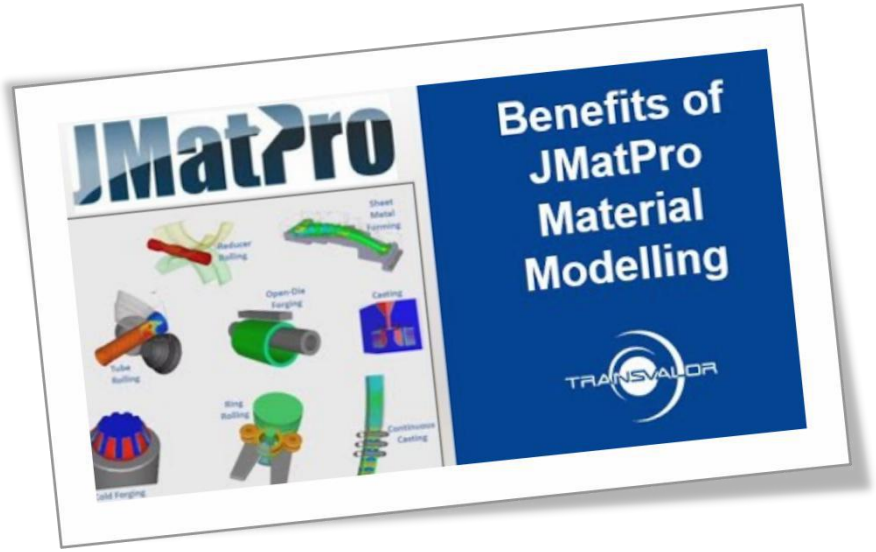


Process selection and development design

Material simulation software

JMATPRO
Originated from the UK， Simulate the microstructure, composition, process and performance of materials based on computer simulation

Significance: To verify the feasibility of the raw material performance in manufacturing mill



Process selection and development design

Casting simulation software

DEFORM、MAGMA

The process of casting is complicated, Castings are also prone to defects such as shrinkage cavity, shrinkage porosity, sand washing, and insufficient pouring,cold shut. In the traditional foundry industry, process design and casting quality control often rely on experience, the flow state of the molten metal during the casting process and the temperature and stress state during solidification cannot be intuitively expressed.。

With the development of computer technology, the application of computer computing technology can simulate the changes in the stress field, temperature field, and flow field during the casting process, as well as the growth and growth of microstructure grains and the visualization of morphology.

The application of numerical simulation technology can reduce laboratory research work, shorten the research cycle, optimize the casting process parameters, and obtain better quality castings.

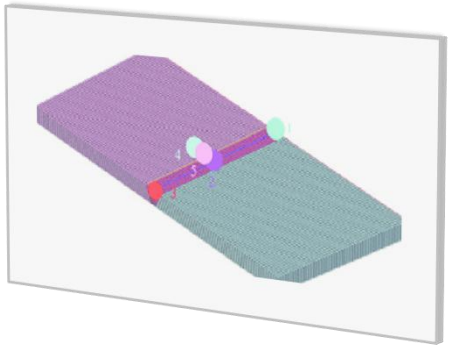
Process selection and development design

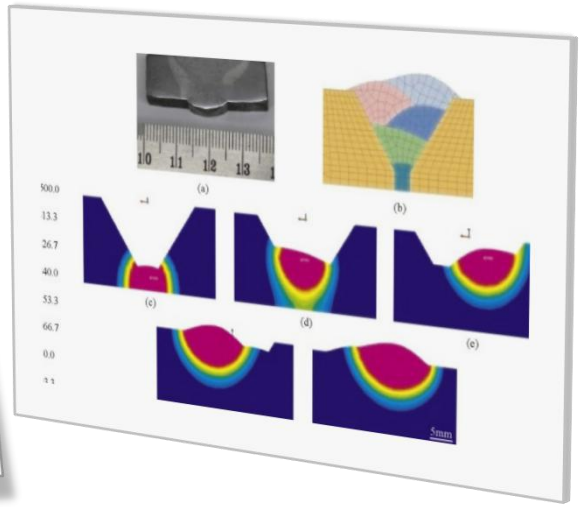
Welding process simulation software

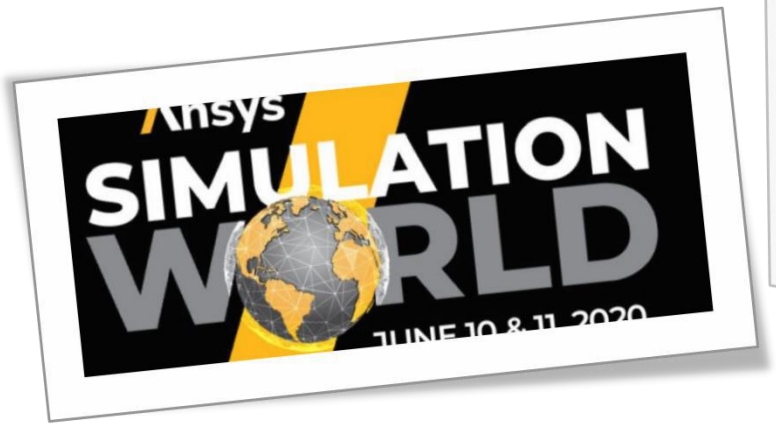
SYSWELD

Welding is a process in which the material(same or different) of the workpiece to be welded is used by heating or pressurizing or both, and with or without filling materials, so that the material of the workpiece can be bonded between atoms to form a permanent connection. Welding is a complex physical-chemical process. It is impractical, costly, and time-consuming to understand and control the welding process based on accumulated process experimental data. With the development of computer technology, computer simulation methods have created favorable conditions for the development of welding science and technology.

The welding thermal process runs through the entire welding process. It can be said that all welding physical and chemical processes occur and develop during the thermal process. The welding thermal process is local, the heating is extremely uneven, and has the characteristics of instantaneity, complexity and instability. The welding field temperature determines the welding stress field and strain field. It is also inseparable from metallurgy, crystallization, and phase change, making it one of the main factors affecting welding quality and productivity. Accurate calculation and measurement of welding thermal process is the prerequisite for welding metallurgical analysis, welding stress and strain analysis and control of the welding process.







Process selection and development design

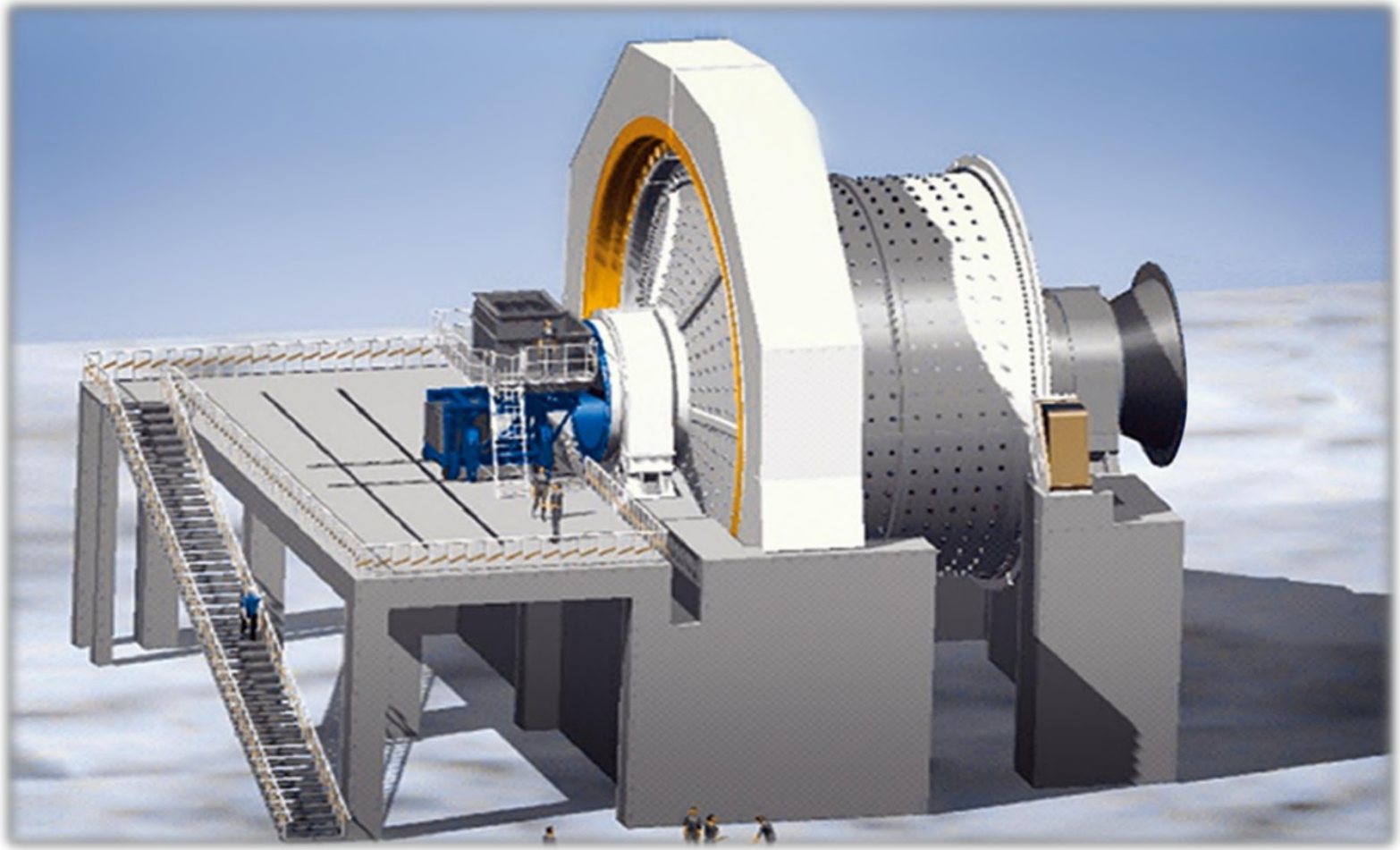
Simulation Software

- Simulation Assembly
- Simulation Operation

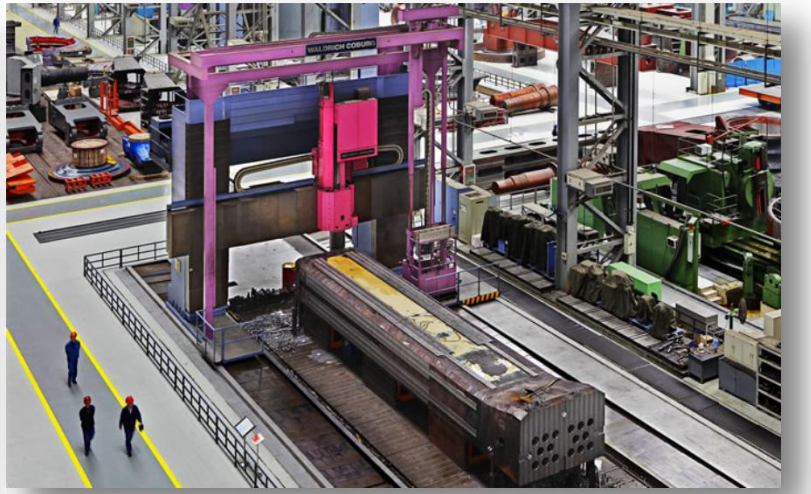
SOLIDWORK , JKSIMMET

Simulation assembly: computer simulation assembly of all parts of the mill to verify the parameters
Simulation operation: dynamic display effect to verify the matching degree between parameters and performance of each component in operation state

ENSURE MANUFACTURING QUALITY
REDUCE ERROR
IMPROVE EFFICIENCY



Process selection and development design



Excellent Design Capability and Manufacturing Capability

0**Word-Class Equipment System** 0**Main Parts Are Manufactured In the Factory** 0**World Famous Partner** 0 **64 Years History**

Manufacturing equipment and supporting system

FORGING EQUIPMENT

◆ 4000T oil press
4000T 油压机

◆ 8400T water press
8400T 水压机

◆ 5m ring rolling mill
5m 轧环机

Manufacturing equipment and supporting system

CASTING EQUIPMTNT

◆ 80t Vacuum Degassing Furnace

◆ 75t Ladle Refining Furnace

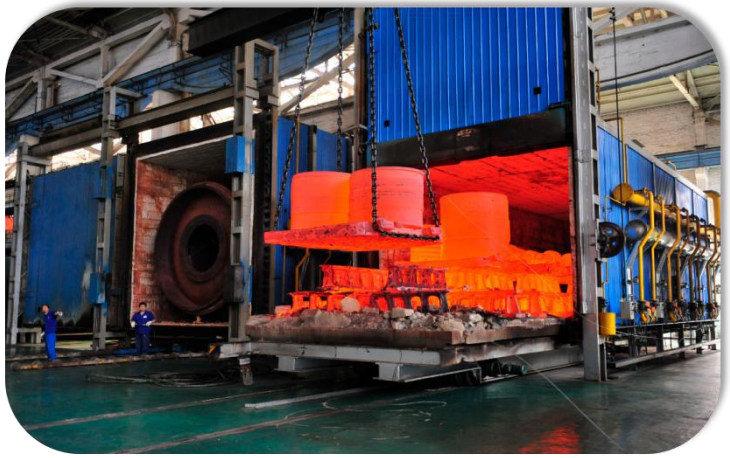
◆ 20t Electric-arc Furnace

◆ 60t Electric-arc Furnace

◆ 5t Electric Furnace

Manufacturing equipment and supporting system

HT EQUIPMENT



◆ 14×8×5.5m Heattreatment Furnace

◆ 9×4×3m Heattreatment Furnace

◆ 5×2×2m Heattreatment Furnace

◆ φ5 ×2.5m Well Heattreatment Furnace

◆ 3X6.3m Heattreatment Furnace

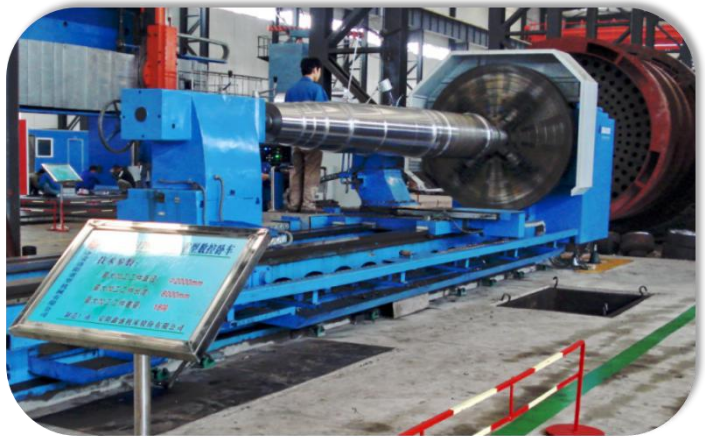
◆ 5X15m Heattreatment Furnace

Manufacturing equipment and supporting system

PROCESSING EQUIPMENT

◆ 8m CNC Vertical Lathe

◆ 220 CNC Miller



◆ 2X10m CNC Horizental Lathe

◆ 5m CNC Vertical Lathe

◆ 9X30m Plane Milling and Boring Machine

◆ 6X20m CNC Heavy Horizontal Lathe

Manufacturing equipment and supporting system

PROCESSING EQUIPMENT

◆ 8m Hobbing Machine

Hobbing Machine

◆15m

Manufacturing equipment and supporting system

CUTTING AND WELDING EQUIPMENT

◆ 100X3200mm Rolling Machining

◆ CNC Flame Cutting

◆ Submerged Arc Welding

Manufacturing equipment and supporting system

LOADING EQUIPMENT（No. of travelling crane and loading capacity）and PLACE

◆ 75t Manned cranceX4

Manufacturing equipment and supporting system

SUPPORTING ABILITY

◆ Electric Control System

◆ Lubrication System

◆ Reducer

Quality Control

Main standards for mill design, manufacturing and inspection

1、National Standard

JB/T1406-2002 《球磨机、棒磨机》
JB/T5000.1-1998 《产品检验通用技术条件》
JB/T5000.2-1998 《火焰切割件通用技术条件》
JB/T5000.3-1998 《焊接件通用技术条件》……

2. International Standard

BS7608	筒体疲劳分析
AWSD1.1	焊接
ASTM A609	UT
ASTM E709 OR ASTM E1444	MT
VDI 2230 and BS7608	联接螺栓分析
AGMA6004-F88	开式齿轮强度计算

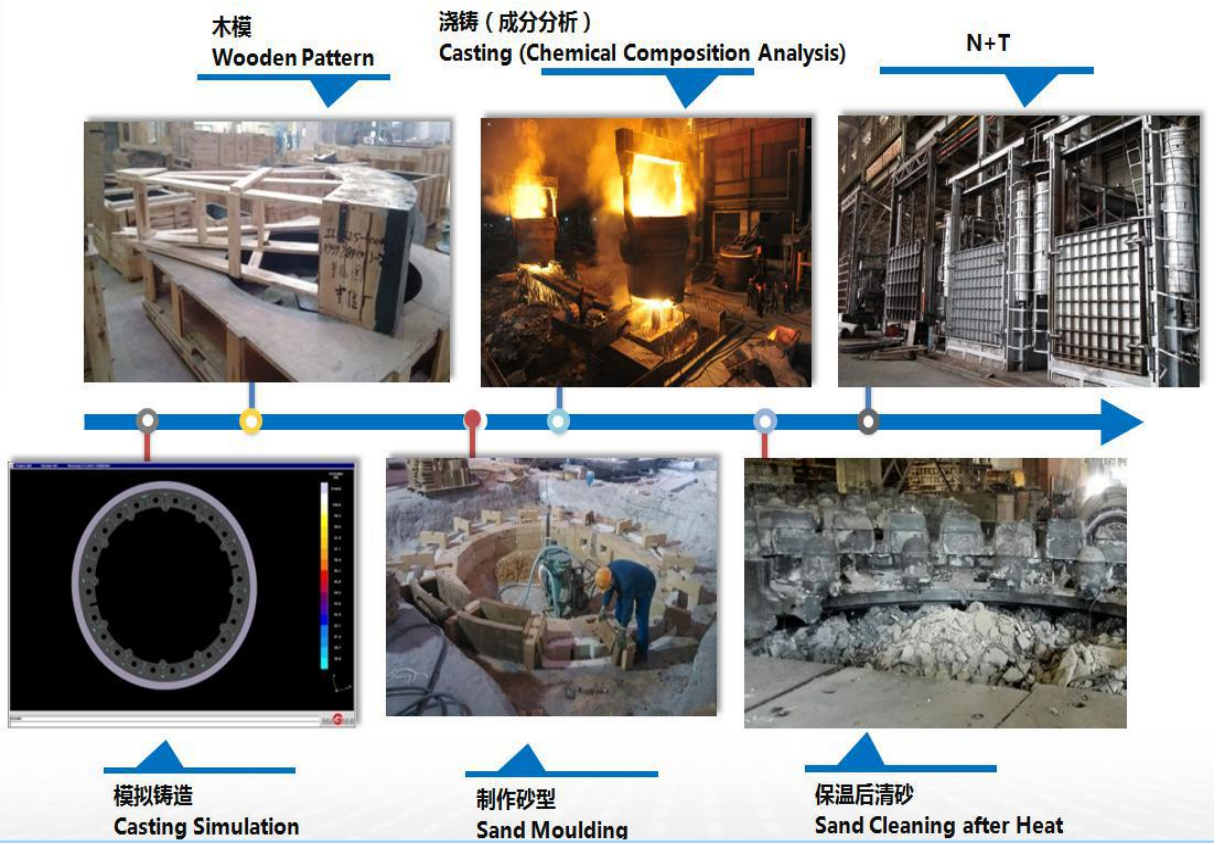
3. Company Standard

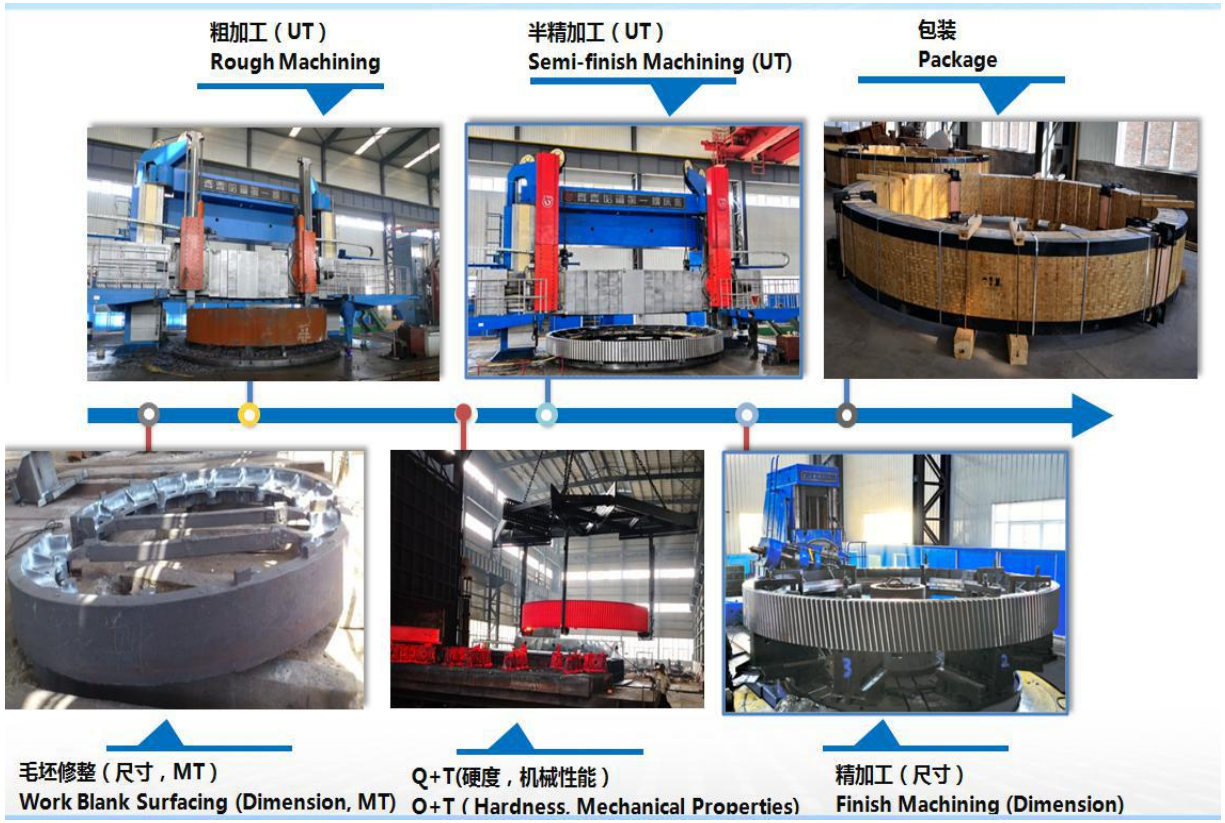
Q/HM 708 — 2007	磨机筒体焊接制造及检验要求
Q/HM 973 — 2007	磨机铸钢件规范
Q/HM 1014 — 2007	矿用磨机铸钢斜齿轮技术规范
Q/HM 1016 — 2007	大型磨机衬板制造规范

Quality Control

Manufacturing process
And quality control points
Cylinder

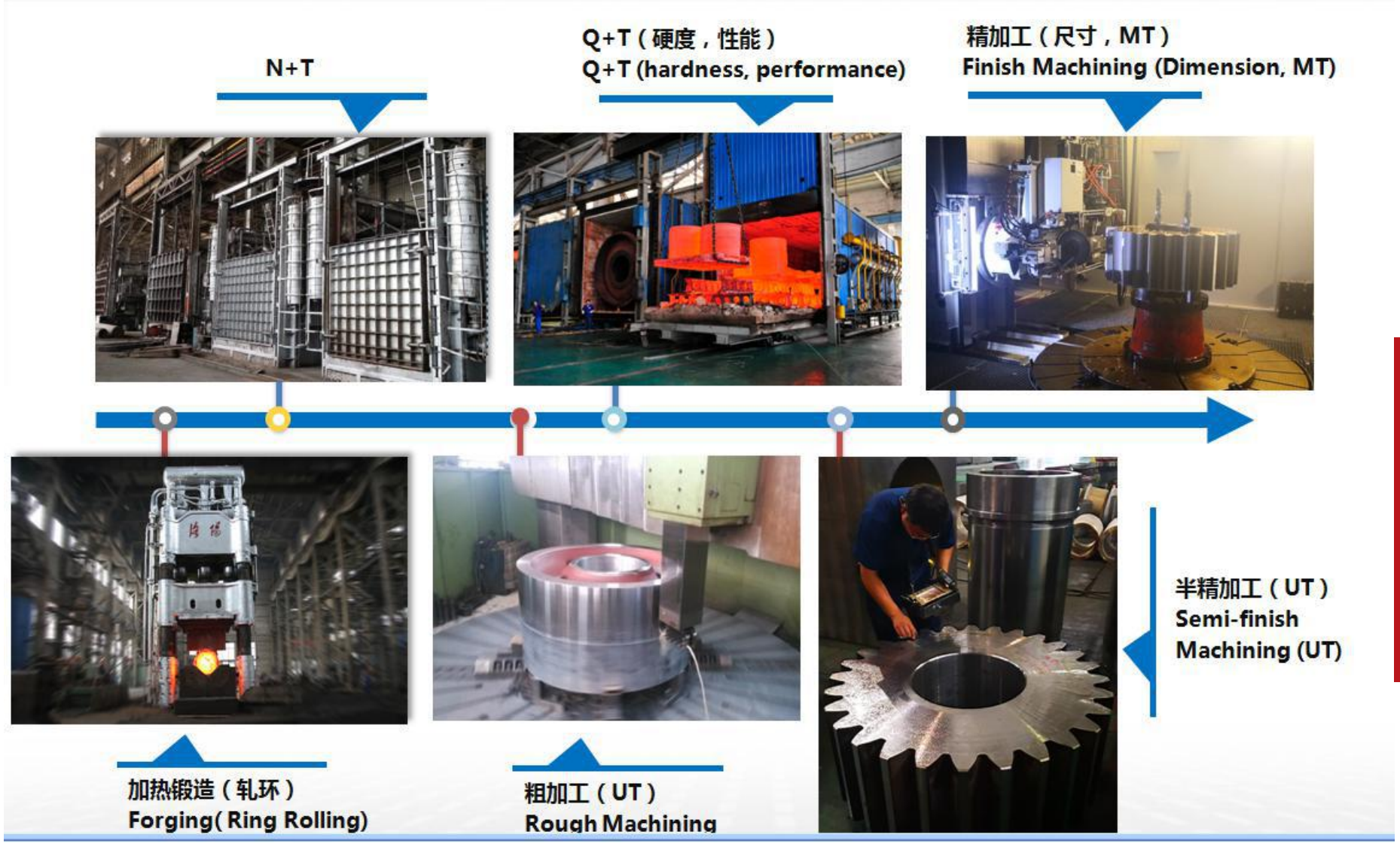
Quality Control





Manufacturing process and quality control points—Girth Gear

Quality Control



Manufacturing process
And quality control points
Pinion

Quality Control

检验

Girth Gear Testing

End Cover Testing

Pinion Testing

Liner Testing

Quality Control

TESTING EQUIPMENT

Mechanical properties tensile testing machine

Mechanical properties impact testing machine

Direct reading spectrometer

Defectometer

Durometer

Quality Control

End Cover ITP-QAP

中实重机 CIC Heavy Machinery

KHD 磨机端盖 END COVER

订单号/KHD-PO-No.: 517669 / M15 图号/KHD drawing No.: 308-040-000069 / 308-040-000070

No.	工序 Process		特性/检查内容 Inspection Items	验收标准 Inspection Report	质量记录 Applicable Standards	检查 inspection test			备注 Remarks
						1-CIC	2-KHD	3-Client	
1	铸造工艺 Casting Design	确认合同、图纸 Confirm contract & drawings	合同及图纸要求 Requirement of contract & drawing	双方确认 Confirm by two parties	合同评审记录 Contract assessment record	H	–	–	
		确认铸造工艺方案 Confirm casting process plan	工艺合理性 Process rationality	符合本公司生产条件且客户认可 Fit with production situation and confirmed by client	会议纪要 minutes of meeting	H	–	–	
2	模型 Wood pattern		按模型工艺图纸检验模型尺寸、形状等。 size and shape	工艺图纸 Process drawing	木型检验记录 Wooden pattern record	H	–	–	
3	造型 Moulding		按铸造工艺图纸检检查型腔尺寸，产品标识代码等	工艺图纸	砂型检验记录 Sand mold shape record	H	–	–	
4	浇注 Pouring	浇注方案 Pouring plan	与铸造车间沟通 Negotiating with casting workshop	双方认可 Confirm by two parties	会签 Singature	H	–	–	
		浇注 pouring	浇注温度 pouring temperature	浇注方案 Pouring plan	浇注记录 Pouring record	H	–	–	
		取样 sampling	浇注过程取样 Sampling during the casting	工艺规程 Process planning	桶样化学分析报告	H	R	–	
5	清理 cleaning	落砂 cleaning	落砂温度 cleaning temperature	工艺规程 Process planning	–	H	–	–	
6	正火 Normalizing		温度、时间 Temperature and time	热处理工艺 HT process	热处理记录 HT record	H	R	–	
7	切冒口 Cutting rizer		控制温度、留量 Control the temperature and the allowance	切冒口工艺 Rizer cutting process	打点记录 record	H	–	–	
8	回火 tempering		温度、时间 Temperature and time	热处理工艺 HT process	热处理记录 HT record	H	R	–	
9	Mechanical Property 机械性能试验		屈服强度，延伸率 Yield stress, elongation	Yield stress≥275MPa , elongation≥15%	机械性能报告 mechanical property report	H	R	–	

Quality Control

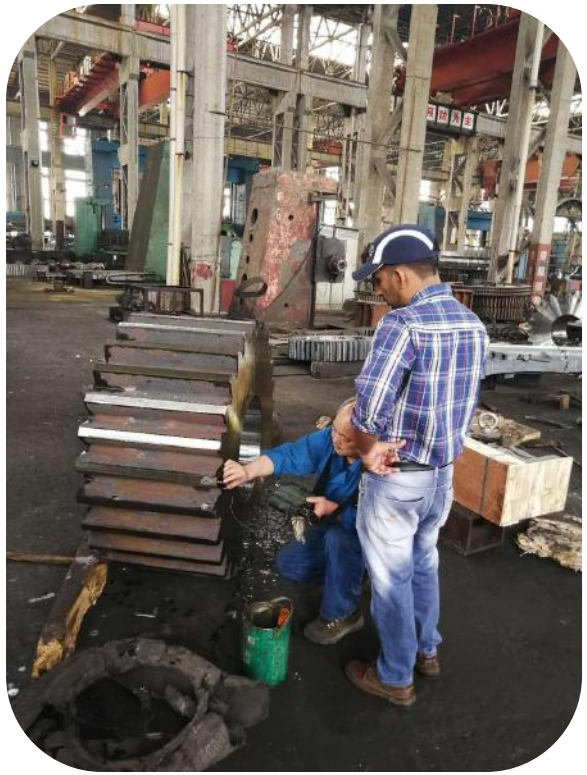
Pinion ITP-QAP

中实重机 CIC Heavy Machinery

KHD 小齿轮 Forged Pinion

订单号/KHD-PO-No.：517669 / M15 图号/KHD drawing No.：308-081-000040

No.	工序 Process	特性/检查内容 Inspection Items	验收标准 Inspection Report	质量记录 Applicable Standards	检查 inspection test			备注 Remarks
					1-CIC	2-KHD	3-Client	
1	熔炼&钢锭制作 Melting & Fabrication of steel ingot	钢水化学成分分析 Chemical composition analysis of the liquid steel	工艺 specification	化学成分报告 Chemical composition	H	R	--	
2	加热锻造 Heated forging	初步的 UT Primary UT test	图纸、工艺 drawing, specification	锻造记录 Forging record	H	—	--	
3	粗车 Rough machining	超声波探伤 UT	LV 413-010 5.4.4 DIN EN 10228-3 II	UT 报告 UT Report	H/N	H/W/R	--	发 UT 检验通知给洪堡 for UT Inspection Call to KHD required.
4	粗开齿 Rough hobbing	外观、尺寸检验 Visual and dimensional inspection	图纸、工艺 drawing, specification		H	—	--	
5	热处理 Heat treatment	淬火&回火 Quenching & Tempering	图纸、工艺 drawing, specification	热处理曲线 heat treatment curve	H	R	--	
6	性能测试 Chemical & Mechanical	机械性能 Mechanical property,	LV 413-010 5.3.3/5.4.3	机械性能 Mechanical property,	H/N	H/W/R	--	发检验通知给洪堡 Inspection Call to KHD required.
7	半精加工 semi-finishing machining	超声波探伤、尺寸、硬度 UT, Dimension, hardness	LV 413-010 5.4.4 DIN EN 10228-3 II LV 413-010 5.3.3	超声波探伤报告、尺寸报告、硬度报告 UT Report, Dimension report, hardness report	H	R	--	
8	半精滚齿 Semi-final hobbing	尺寸 MT, Dimension	图纸、工艺 drawing, specification	磁粉检测报告 MT report	H	R	--	
9	精加工 finishing machining	磁粉、尺寸、齿面硬度、粗糙度 MT, dimension test, hardness on teeth surface, roughness	LV 413-010 5.4.5/5.4.6 DIN EN 10228-1 LV 413-010 5.3.3	磁粉波探伤报告、尺寸报告、硬度报告、粗糙度报告 MT Report, Dimension report, hardness report, roughness report	H	R	--	



Quality Control

Girth Gear ITP-QAP

中实重机 CIC Heavy Machinery

KHD 磨机齿圈 Mill Girth Gear

订单号/KHD-PO-No.: 517669 / M15 图号/KHD drawing No.: 308-081-000044

No.	工序 Process		特性/检查内容 Inspection Items	验收标准 Inspection Report	质量记录 Applicable Standards	检查 inspection test			备注 Remarks
						1-CIC	2-KHD	3-Client	
1	铸造工艺 Casting Design	确认合同、图纸 Confirm contract & drawings	合同及图纸要求 Requirement of contract & drawing	双方确认 Confirm by two parties	合同评审记录 Contract assessment record	H	–	–	
		确认铸造工艺方案 Confirm casting process plan	工艺合理性 Process rationality	符合本公司生产条件且客户认可 Fit with production situation and confirmed by client	会议纪要 minutes of meeting	H	–	–	
2	模型 Wood pattern		按模型工艺图纸检验模型尺寸、形状等。 size and shape	工艺图纸 Process drawing	木型检验记录 Wooden pattern record	H	–	–	
3	造型 Moulding		按铸造工艺图纸检查型腔尺寸，产品标识代码等	工艺图纸	砂型检验记录 Sand mold shape record	H	–	–	
4	浇注 Pouring	浇注方案 Pouring plan	与铸造车间沟通 Negotiating with casting workshop	双方认可 Confirm by two parties	会签 Singature	H	–	–	
		浇注 pouring	浇注温度 pouring temperature	浇注方案 Pouring plan	浇注记录 Pouring record	H	–	–	
		取样 sampling	浇注过程取样 Sampling during the casting	工艺规程 Process planning	桶样化学分析报告	H	R	–	
5	清理 cleaning	落砂 cleaning	落砂温度 cleaning temperature	工艺规程 Process planning	–	H	–	–	
6	正火 Normalizing		温度、时间 Temperature and time	热处理工艺 HT process	热处理记录 HT record	H	R	–	
7	切冒口 Cutting rizer		控制温度、留量 Control the temperature and the allowance	切冒口工艺 Rizer cutting process	打点记录 record	H	–	–	
8	焊拉筋 Welding stiffener		–	–	–	H	–	–	
9	割开，分为半齿圈 Cutting to two half parts		划线割开 cutting	图纸工艺 Drawing	–	H	–	–	
10	回火 tempering		温度、时间 Temperature and time	热处理工艺 HT process	热处理记录 HT record	H	R	–	

Quality Control

Liner ITP-QAP

中实重机 CIC Heavy Machinery

产品质量控制计划（ITP） Product quality inspection test plan

项目 Project	QAL	工令号 Work No.	1988-011	版次 Rev. No.	0
客户 Client	FFFAustralia	产品名称 Product Name	Liner	日期 Date	2019-09-10
制造商 manufacturer	CIC. China	编制 Prepared By	Shunli Si	页码 Page	1/2

No.	工序 Process		特性/检查内容 Inspection Items	验收标准 Inspection Report	质量记录 Applicable Standards	检查 inspection test			备注 Remarks
						1-CIC	2- Client	3-	
1	铸造工艺 Casting Design	确认合同、图纸 Confirm contract & drawings	合同及图纸要求 Requirement of PO& drawing	双方确认 Confirm by two parties	合同评审记录 Contract assessment record	H	–		
		确认铸造工艺方案 Confirm casting process plan	工艺合理性 Process rationality	符合本公司生产条件 Fit with production situation	会议纪要 minutes of meeting	H	–		
2	模型 Wood pattern		检验模型尺寸、形状等。 size and shape	工艺图纸 Process drawing	木型检验记录 Wooden pattern record	H	–		
3	造型 Moulding		按铸造工艺图纸检查型腔尺寸，产品标识代码等	工艺图纸 Process drawing	砂型检验记录 Sand mold shape record	H	–		
4	浇注 Pouring	浇注 pouring	浇注温度 pouring temperature	浇注方案 Pouring plan	浇注记录 Pouring record	H	–		
		取样 sampling	浇注过程取样 Sampling during the casting	工艺规程 Process planning	桶样化学分析报告 Chemical analysis report	H	R		
5	清理 cleaning	落砂 cleaning	落砂温度 cleaning temperature	工艺规程 Process planning	–	H	–		
6	去除冒口 Remove riser		控制温度、留量 Control temperature and allowance	去冒口工艺 Riser remove process	–	H	–		
			尺寸检查 Dimension	图纸 Drawing	–	H	–		
7	退火 annealing		温度、时间 Temperature and time	热处理工艺 HT process	热处理记录 HT record	H	–		
8	调质 Quenching + Tempering		1.淬火+回火 Q+T	热处理工艺 Heat treatment process	热处理记录 HT record	H	-		
			2.本体硬度 Hardness of base material,	HB350-400	硬度检验报告 Hardness report	H	–		

浇筑

造型

Quality Control

Finished Product Testing Before

厂内试车

厂内试装

Packing and shipping

Multi-function & Customized

Packing and shipping

Multi-function & Customized

0 Suitable package for transfer and lifting

—Assy unit

0 Multiple protection—

Packing and shipping

Multi-function & Customized

0 Shell

Packing and shipping

Multi-function & Customized

0 End Cover

Packing and shipping

Multi-function & Customized

O Girth Gear&Pinion

Packing and shipping

Multi-function & Customized

0 Liner

Case

- Φ4X6.0m Ball Mill

- Φ5.5×8.8m Ball Mill

Case

- Φ3.2×4.8m Rod Mill

- Φ4.2×13m Shoe-mounted ball mill

Case

- Φ5.5×3.6m SAG

- 7.5X2.8 SAG

CASE

Domestic Case

半自磨	Φ9.75×4.57m	云铜集团普朗铜矿
半自磨	Φ9.15×5.03m	鞍钢集团矿业公司
半自磨	Φ8.5×3.8m	广东大宝山矿业有限公司
半自磨	Φ8.2×5.4m	紫金矿业集团紫金山金铜矿
半自磨	Φ7×3.5m	江铜集团银山矿业（铜矿）
半自磨	Φ7.5×3.2m	云南华联锌铟股份有限公司
半自磨	Φ7.32×4.27m	攀钢集团有限公司白马铁矿
溢流型	Φ6.5×11	北京首钢国际工程技术有限公司
溢流型	Φ6.2×9.5	中国黄金集团公司内蒙古矿业有限公司铜钼矿
球磨机	Φ6.2×9.5	铜陵有色金属集团股份有限公司冬瓜山选厂
溢流型	Φ5.8×8.3	中钢设备有限公司
球磨机	Φ5.5×7.5	黑龙江铜山矿业有限公司
半自磨	Φ5.03×5.8m	贵州锦丰矿业有限公司（黄金）
溢流磨	Φ4.8×7m	洛阳栾川钼业集团股份有限公司
棒磨机	Φ4.6×3.2	云南锡业股份有限公司
原料磨	Φ4.6×8.5+3.5m	吉林亚泰水泥有限公司
溢流型	Φ4.27×7.3	都兰金辉矿业有限公司
水泥磨	Φ4.2×11m	安徽海螺集团
球磨机	Φ3.8×5	中国铝业公司中州分公司
水泥磨	Φ3.6×9	云南华昆工程技术股份公司
溢流磨	Φ3.6×8.5m	中国铝业长城分公司

Abroad Case

半自磨	Φ7.5×2.8m	俄罗斯（黄金）矿业
棒磨机	Φ6.3×4.5	CuDeco Ltd. 澳大利亚Rocklands铜矿
溢流型	Φ6.2×9.5	老挝Ban Houayxai铜金项目 - PanAust
溢流型	Φ6.1×12.5	巴西Samarco-P4P铁矿项目
半自磨	Φ5.6×6	塔吉克斯坦泽拉夫金矿
益流磨	Φ5.5×6.5	蒙古国额尔登特（Erdenet）矿业公司
半自磨	Φ5.5×3.6m	俄罗斯JSC Priisk Solovievskiy
棒磨机	Φ5.4×8	印度伊萨公司（ESSAR）铁矿
溢流型	Φ5.03×8	赞比亚KCM铜矿
半自磨	Φ4.9×10.29m	加拿大埃尔拉多矿业
球磨机	Φ4.6×6m	俄罗斯JSC Priisk Solovievskiy
水泥磨	Φ4.6×14m	意大利Colacem水泥集团
原料磨	φ4.6×10+3.5m	香港金运硅(十堰)有限公司
溢流磨	Φ4.2×8.8m	南非Bateman
球磨机	Φ4.2×6.7	沙特 Jabal Sayid - Barrick黄金
溢流型	Φ4.2×5.32	Selinsing Gold
溢流型	Φ4.2×11	日本栗本
水泥磨	Φ3.8×6m	丹麦史密斯公司
格子型	Φ3.8×5.8	Bakoudou/ Magnima
溢流型	Φ3.6×6	土耳其Eldorado金矿
溢流型	Φ3.25×4.27	秘鲁HIERRO铁矿

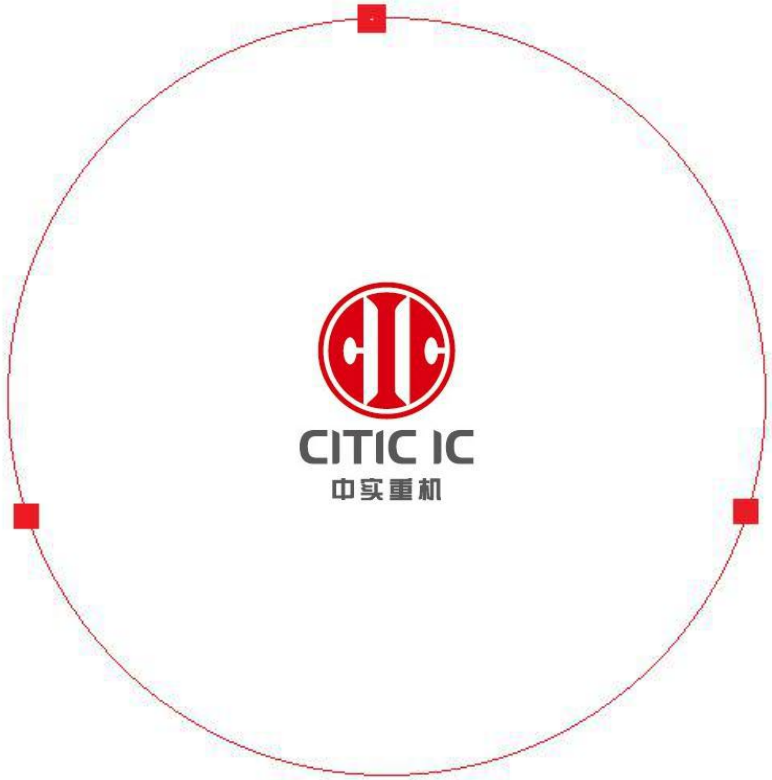
Service

Regular on-site visit

On-site Installati

Service

R&D



Manufacture&
Transformation

Mineral Product analysis-
Environmental protection recycling and utilization

CITIC IC
中实重机

THANK YOU

BENEFIT/ EFFICIENCY/ STANDARD/ TECHNOLOGY

B-E-S-T

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