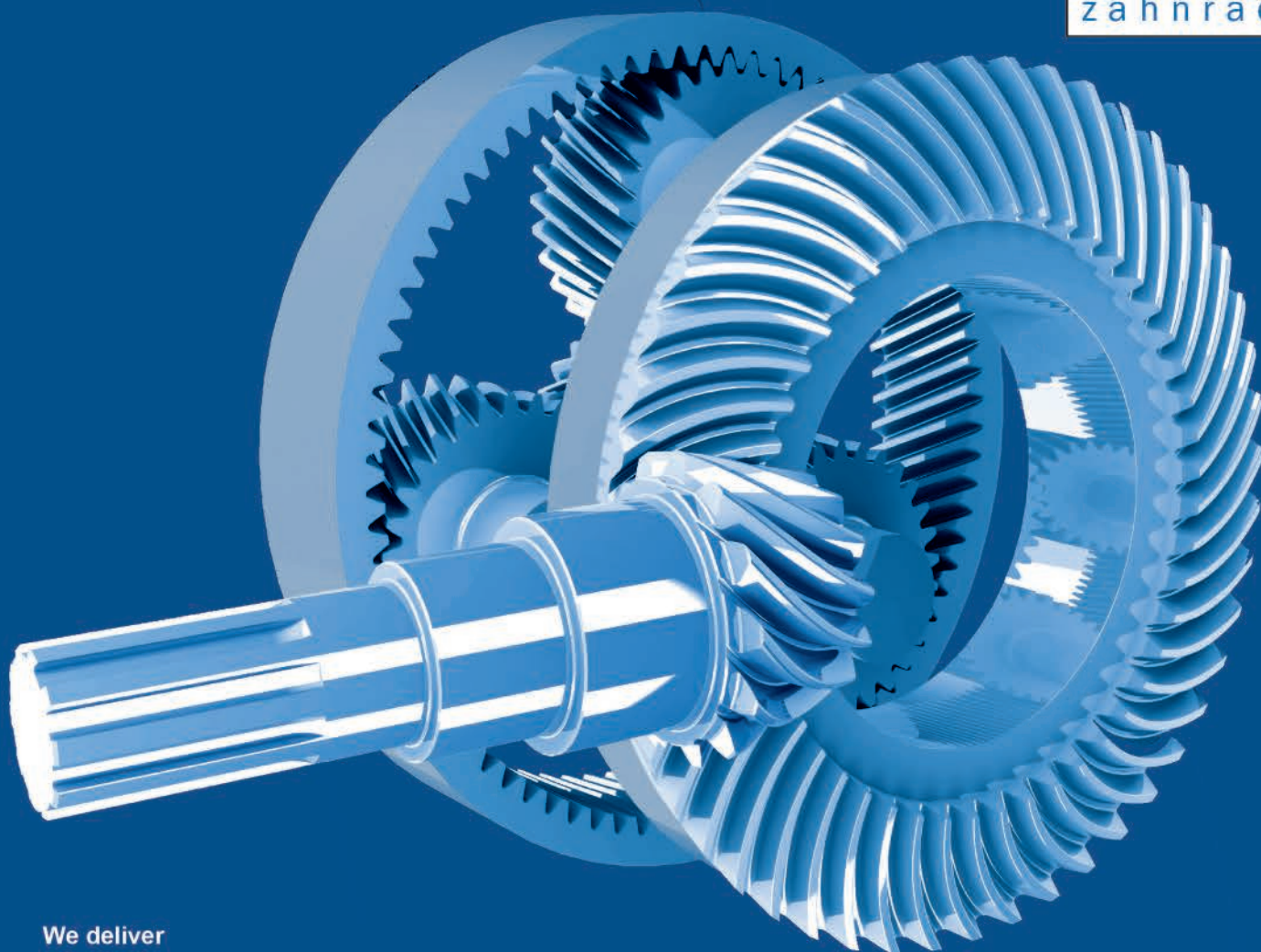


WELTER zahnrad China Works

威尔特齿轮（南京）有限公司

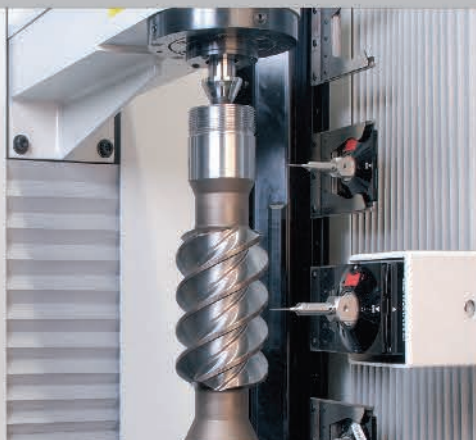
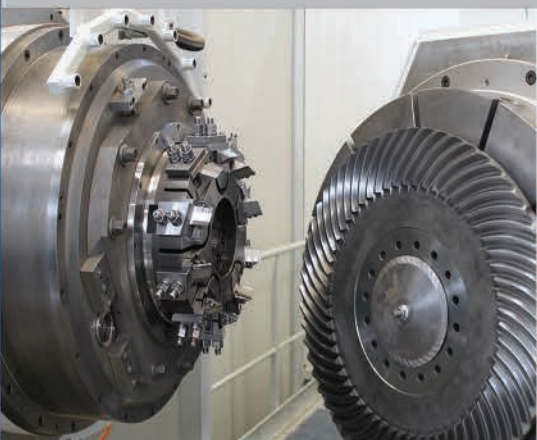


**We deliver
technologies for:**

Mining, Shipbuilding, Rolling Stock,
Construction Machines,
Production of Raw Materials,
Powder Grinding, and Machine Tools.

WELTER zahnrad China Works

www.welter-china.com



合作伙伴 Partners

海事船舶（推进器）： 罗尔斯-罗伊斯船舶，采埃孚，瓦锡兰集团，肖特尔，施拖克，维德，图马斯特
Shipbuilding (Propeller): Rolls-Royce Marine, ZF Marine (HRP), Wartsila, Schottel, Stork, Veth, Thrustmaster of Texas

矿山行业： 山特维克，卡特彼勒，艾柯夫，久益矿山，艾法史密斯

Mining: Sandvik, Caterpillar, Eickhoff, Joy Mining, FLSmidth

石油天然气能源： 曼柴油与透平公司，阿尔斯通，德国莱茵电力公司，科倍隆

Oil & Gas: Man Diesel & Turbo, Alstom, RWE, Coperion

钢铁行业： 蒂森克虏伯，西马克梅尔，西门子奥钢联，达涅利

Iron & Steel: Thyssenkrupp, SMS-MEER, Siemens VAI, Danieli

铁路轨道机车： 庞巴迪，西门子

Railways: Bombardier, Siemens

客户 Customer	应用领域 Application	型号 Type	国家 Country
ZF Marine(HRP) 采埃孚	Tunnel Thrusters 隧道推力器	Bevel Gears 伞齿轮	Netherland 荷兰
Veth 费特推进器	Thrusters 推力器	Spur Gears, Bevel Gears 直齿及伞齿轮	Netherland 荷兰
Wartsila 瓦锡兰集团（推进器）	Steerable Thrusters 可控式推进器	Bevel Gears 伞齿轮	Netherland 荷兰
Schottel 肖特尔	Rudder Propeller 舵桨推进器	Worm Gear Sets 蜗轮蜗杆组	Germany 德国
Stork 施托克	Marine Transmission 海事传动	Spur Gears, Bevel Gears 直齿，伞齿	Netherland 荷兰
Rolls-Royce Marine 罗尔斯-罗伊斯船舶（隧道推进器）	Tunnel Thrusters 隧道推力器	Bevel Gears 伞齿轮	UK 英国
Thrustmaster of Texas 美国德州驱动	Thrusters 推力器	Bevel Gears 伞齿轮	USA 美国
Voith Turbo 福伊特驱动	Turbo Machinery 涡轮增压机	Bevel Gears 伞齿轮	Germany 德国
Herrenknecht 海瑞克	Tunnel Boring Machines 隧道掘进机	Spur Gears, Helical Gears 直齿，斜齿	Germany, China 德国，中国
Sandvik 山特维克	Coal Mining 采矿	Bevel Gears 伞齿轮	Austria 奥地利
Caterpillar 卡特彼勒	Coal Mining 采矿	Bevel Gears 伞齿轮	Germany 德国
Eickhoff 艾柯夫	Coal Mining 采矿	Bevel Gears 伞齿轮	Germany 德国
Joy Mining 久益采矿设备	Coal Mining 采矿	Bevel Gears 伞齿轮	UK/China 英国/中国
FLSmidth 艾法史密斯	Coal Mining 采矿	Bevel Gears 伞齿轮	USA 美国
RWE Power 德国莱茵电力公司	Surface Mining 表层采矿	Spur Gears, Bevel Gears 直齿，伞齿	Germany 德国
Madras Cement 马德拉斯水泥（印度）	Cement 水泥	Bevel Gears 伞齿	India 印度
Halbach & Braun 哈尔巴赫·布劳恩	Mining Applications 采矿应用	Spur Gears, Bevel Gears 直齿，伞齿	Germany 德国
ThyssenKrupp Fordertechnik 蒂森克虏伯集团	Material handling 物料运输	Spur Gears, Bevel Gears 直齿，伞齿	Germany 德国
CITIC 中信重工	Vertical mill 立磨减速机	Bevel Gears 伞齿	China 中国
WTT 沃德传动	Reducer 减速机	Bevel Gears 伞齿	China 中国
NHI 北方重工	Hydraulic gyratory crusher 液压旋回破碎机	Bevel Gears 伞齿	China 中国
CITIC 中信重工	Hydraulic gyratory crusher 液压旋回破碎机	Bevel Gears 伞齿	China 中国
CONCH 海螺水泥	Vertical mill 立磨减速机	Bevel Gears 伞齿	China 中国
TIAN RUI 天瑞水泥	Vertical mill 立磨减速机	Bevel Gears 伞齿	China 中国
JIN FENG 金峰水泥	Vertical mill 立磨减速机	Bevel Gears 伞齿	China 中国



一、公司介绍 Company Profile



WELTER zahnrad GmbH
 Lahr/Black Forest



WELTER zahnrad China Works
 Nanjing, China



SPIROTEC S.A.R.L.
 Valf, France

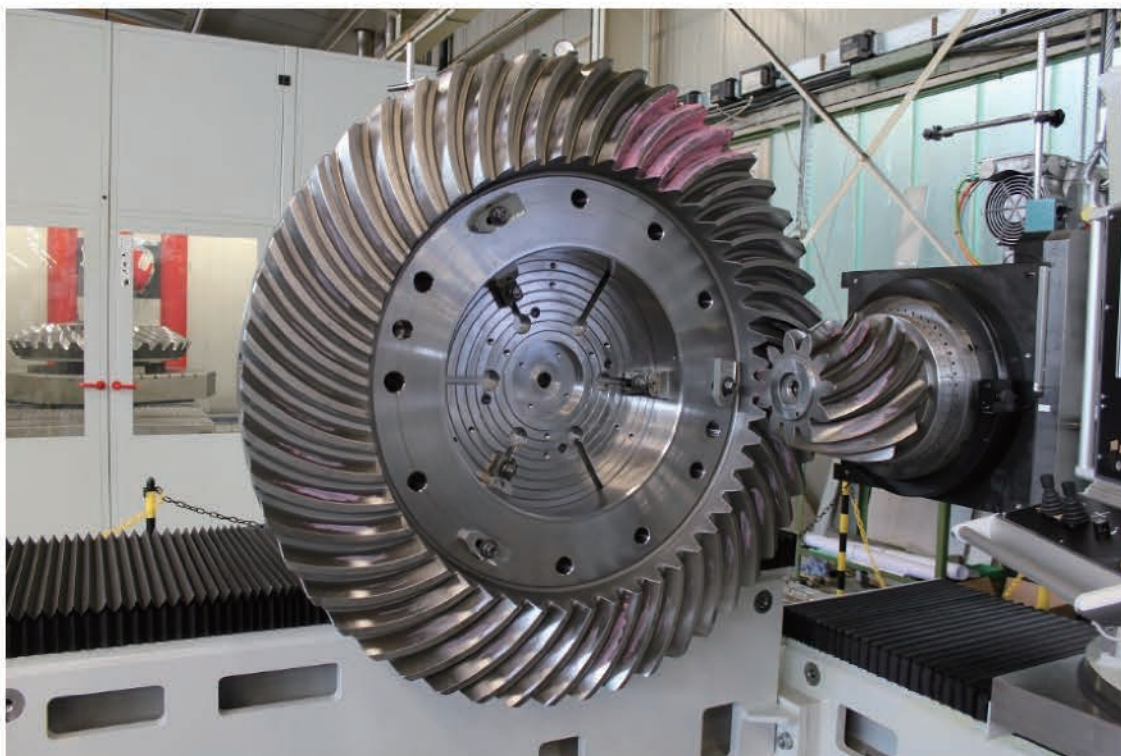


CAVEX GmbH & Co. KG
 Ofterdingen

WELTER GROUP（威尔特集团架构）：

- 1. WELTER Germany**
 （专业生产齿轮产品，超过75周年历史）
 (Over 75 Years of production Gear Products)
- 2. 威尔特齿轮（南京）有限公司**
 （负责亚洲地区业务）
 WELTER zahnrad China Works （For Asian Business）
- 3. SPIROTEC**
 （专业生产蜗轮蜗杆）
 (Specialized in Worm and Worm Gear)
- 4. CAVEX**
 专业生产尼曼齿蜗轮蜗杆，原隶属于西门子集团
 Specialized in Niemann Worm and Worm Gear, Formerly Affiliated to Siemens Group





WELTER集团专注于传动系统的研发制造，销售网络遍布全球。自1946年由工程师Richard Welter先生于德国创建了齿轮加工至今，几十年来，我们始终谨记、实践着其箴言“最高的质量，最优的性能”。如今，威尔特集团已成为传动、机械工程领域享有顶级盛名的企业之一。

我们的合作伙伴来自世界各行业顶级公司，如德国科倍隆、德国弗兰德、西门子等等，涉及领域包括减速机、轨道交通、核工业、石化、水泥、钢铁、船舶、能源、航天科技、机床等行业。

As a group company focuses on the R&D of drive system, WELTER spreads its sales network worldwide. The gear company was founded in 1946 by engineer Richard Welter in Germany. For decades, the company upholds and practices his philosophy “Best Quality and Best Performance”. Now, WELTER Group has grown into a renowned enterprise in drive and mechanical engineering industries.

WELTER keeps partnership with such top companies in the world as Coperion Germany, Flender Germany, and Siemens. Its business has spanned into such industries as gear box, rail transit, nuclear, petrochemical, cement, steel, marine vessel, power, aerospace technology, and machine tools.

关键齿轮部件加工 Processing of Major Gears

凭借近七十年来在传动技术和齿轮箱工程设计经验，得益于高素质的员工和最新的行业技术，我们能够按照世界著名的Klingelnberg Cyclo Palloid、Palloid、Gleason、Oerlikon、5-axis 齿轮加工工艺技术来生产螺旋伞齿和直伞齿轮，以及直径可达2800mm的圆柱齿轮等。

Thanks to over 70 years of expertise in drive technology and gearbox designing, WELTER owns high-quality employees and advanced industrial technologies. The company can produce spiral bevel gears and spur bevel gear according to such technologies as Klingelnberg Cyclo Palloid, Palloid, Gleason, Oerlikon, and 5-axis. With such technologies, diameter of cylindrical gears can reach 2800mm.

二. 业务范围 Business Scope

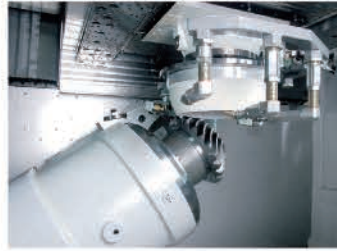
S1 齿轮 Gear

伞齿轮及伞齿轮副

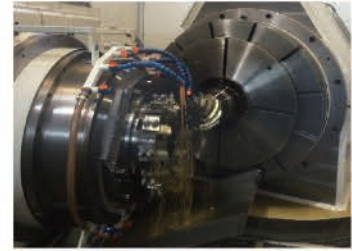
Bevel Gear And Bevel Gear Pair

伞齿轮齿制 Tooth System of Bevel Gears:

- Klingelnberg Cyclo Palloid
- Palloid
- Gleason
- Oerlikon
- 5-axis Machining



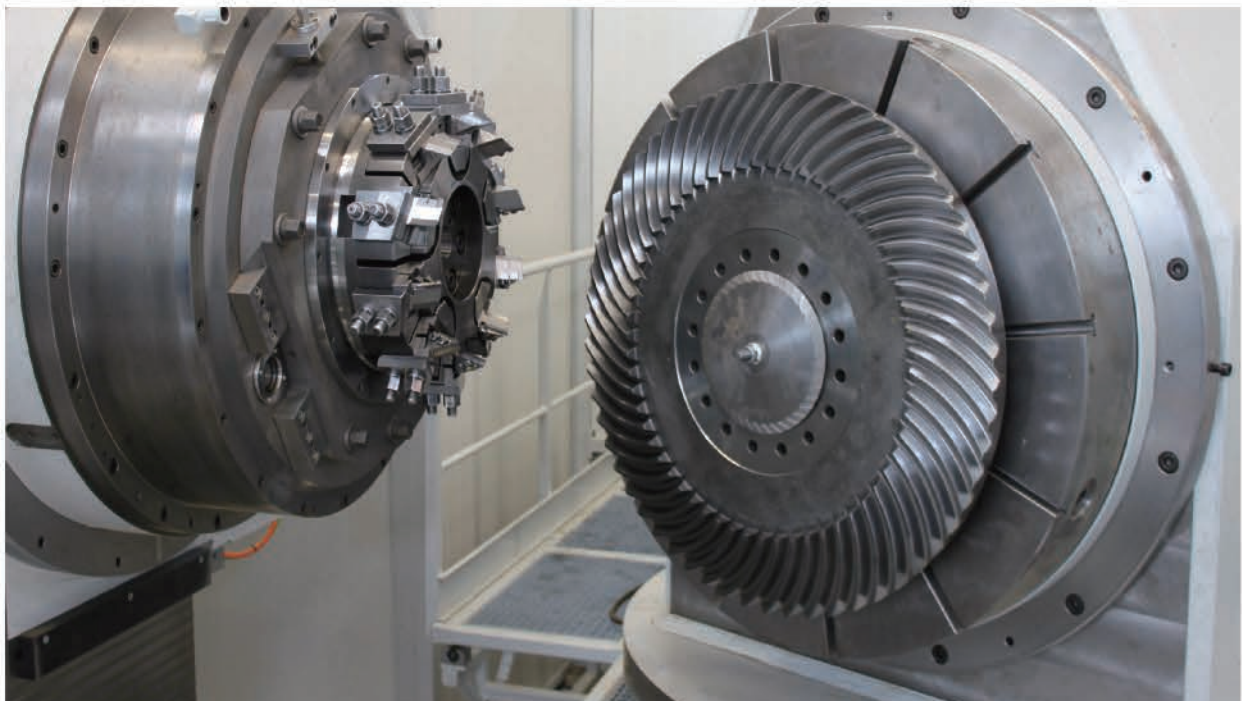
Klingelnberg G80
克林贝格 G80



Hard Cutting
硬切齿

凭借现代化的大型机床设备和领先的生产技术；威尔特生产的伞齿轮直径范围可达2800毫米，模数为2-任意模数值，螺旋伞齿及斜伞齿覆盖几乎所有技术应用领域的齿轮加工需求。

WELTER has implemented large-sized modern machine tools and leading technologies. The company can produce gears with tooth up to 2800mm and modulus of 2 or more. Spiral and helical gears from WELTER can be applied in nearly all industries.

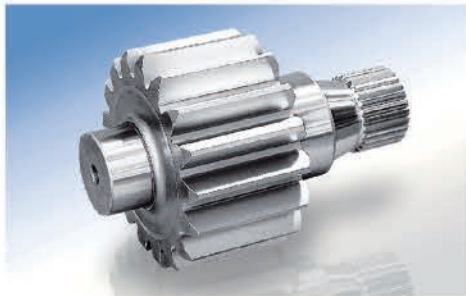


直齿轮和斜齿轮 Spur and Helical Gear

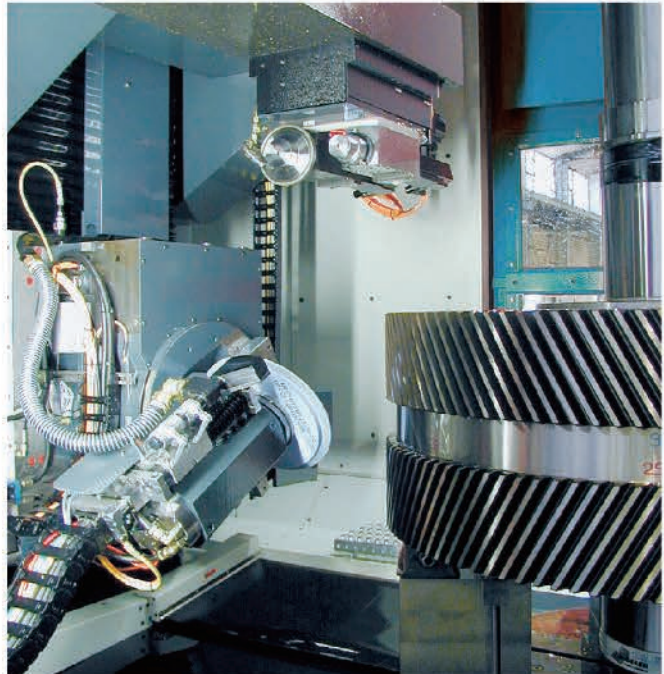
- 我们生产齿轮、齿轴、内外齿圈及各种特制齿。
WELTER produces gears, gear shafts, inner and outer gear rings, and gears with special tooth.
- 最大直径可达2800mm, 齿轮轴长度可达3000mm
Maximum Diameter 2800mm; Maximum Shaft Length 3000mm.



齿轮 Gear



齿轴 Gear Shaft



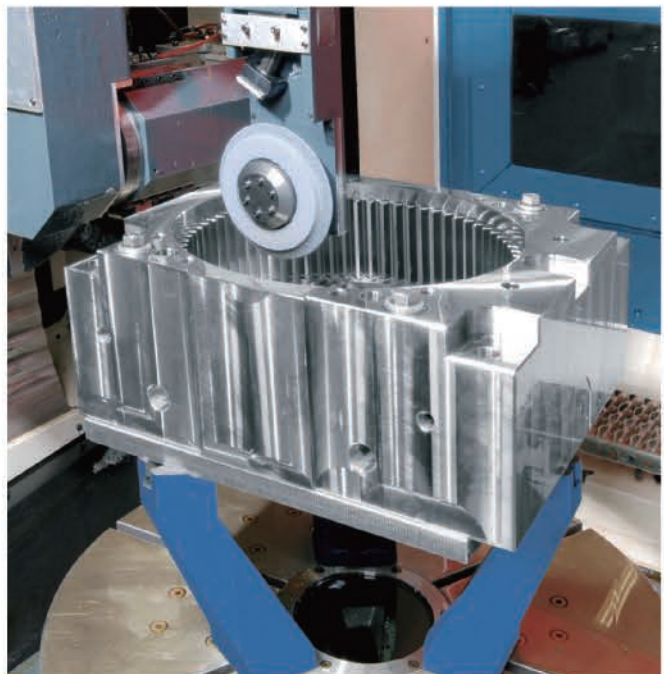
人字齿齿轮 Herringbone Gear



煤机专用齿轮 Gears for Coal Mills



煤机专用齿轮 Gears for Coal Mills



内轮 Inner Gear

其他齿轮和凸轮

Other Gears & Cams

WELTER集团擅长根据客户的要求，设计及制造特殊的高精度非标产品。无论订货数量的多少，威尔特齿轮始终如一的高品质标准均可满足客户对质量及产品型号的要求。

WELTER Group focuses on customization of precise gears. Whatever the quantity is, the company, under its constant pursuit of high quality, can meet your requirements for quality and models.

我们的齿廓修型，如全齿高修正、修缘/修根、过渡圆角修正等，能够确保齿轮实现最佳啮合及降低噪音，以满足客户对齿轮传动的更高标准要求。

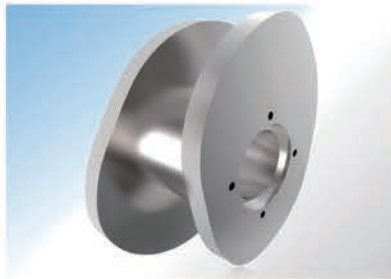
Considering higher requirements for gear driving, WELTER performs tooth modification such as overall rectification, edge/root rectification and transition fillet rectification, in a way to achieve the best gearing mesh and lower noise.



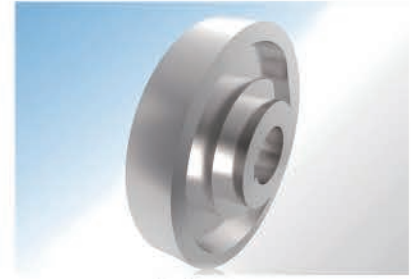
冠齿轮 Crown Gear



端面齿 Contrate Gear



凸轮 Cam



凸轮 Cam



直交轴端面齿轮副
Pair Gear for Direct Axis Meshing Gear



斜面体齿轮副 Pair Gear for Helical Gear



135°斜交轴齿轮副
Pair Gear for 135° Oblique Axis Gear



Klingelnberg 端面齿联轴器
Coupling for Klingelnberg Meshing Gear



煤机专用链轮 Sprocket for Coal Mill



煤机齿轨轮组
Gear Assembly for Rack Rail of Coal Mill

直交轴/平行轴减速机

Direct Axis/Parallel Axis Gearbox

我们生产各个领域应用的直齿、斜齿、伞齿、端面齿及齿轮箱。

WELTER produces spur gear, helical gear, bevel gear, contrate gear, and gearbox for various fields.

- | | |
|-------------------------------------|------------------------------------|
| ■ 风力能源
Wind energy | ■ 传输工程
Transmission Engineering |
| ■ 轨道工程
Track Engineering | ■ 水利工程
Water Conservancy |
| ■ 农业机械
Agriculture Machinery | ■ 工具机械
Tools and Machinery |
| ■ 环境工程
Environmental Engineering | |

我们擅长于根据客户的要求，设计及制造特殊的高精度非标产品。应用三维软件展示产品结构模型。减速机的重量在20kg-5000kg之间。同时，我们可以在实验平台验证产品的强度性能。

WELTER Group focuses on customization of precise gears. Product structures can be displayed with 3D software. Weight of gearboxes is between 20kg and 5000 kg. Meanwhile, strength of products can be verified in test labs.



单级斜齿减速机
Single-stage Helical Gearbox



变桨减速机
Pitch Gearbox



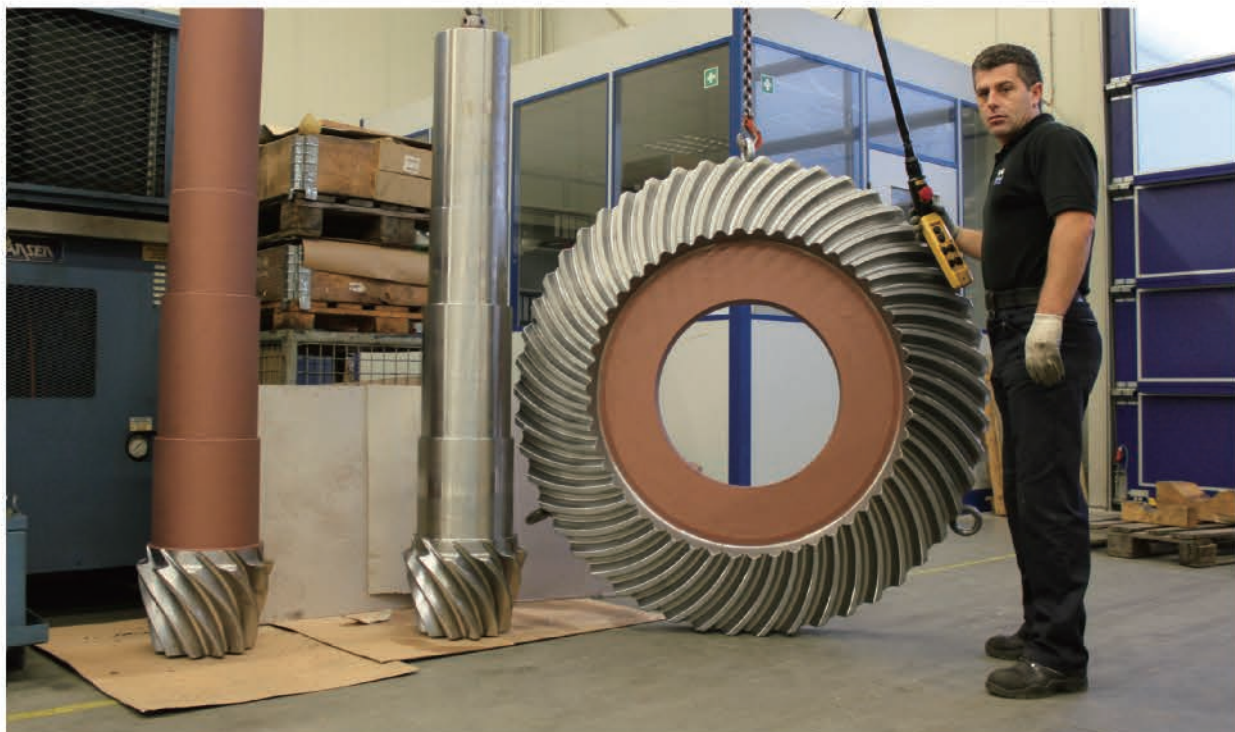
伞齿轮减速机
Bevel Gearbox



125KW带封闭循环冷却的试验平台
125KW Test Platform with Closed Circular Cooling System

加工能力表 Table of Processing Capability

加工种类 Tooth Type	加工能力 Processing Capability	机台设备 Models
螺旋伞齿 Spiral Bevel Gears 克林贝格 Klingelberg Cyclo Palloid	2-任意模数, 直径达 2800mm 2 Modulus or More, Diameter up to 2800mm 硬刮齿, 直径达1400mm HPG, Diameter up to 1400mm 磨齿, 直径达800mm Gear Modulus, Diameter up to 800mm	AMK250,AMK400,AMK630,AMK635, KNC60,AMK850,AMK852,KF1400, WNC30,G30,G80,DMU65,DMU100, MoriSeiki NT5400,HF2012,W800
Klingelberg(Palloid)	模数 Module 1.25-5 直径 Diameter 30-400mm	AFK201,AFK203切齿, 磨齿, 测试 Gear Cutting Machines,Tester and Lapper
Gleason 格里森	2-任意模数, 直径达 2800mm 2 or More Modulus, Max Dia 2800mm	DEPO, DMU100, DMU65, G30, G80
	外齿模数 Modulus of External Gears 2-40 直径达 Max Dia. 2800mm	Pfauter P400/P630/900 NC,Liebherr, Lorenz,Modul ZFWZ12 CNC, Maag SH100/SH180 CNC
直齿、斜齿 Straight/Helical Gears	内齿模数 Modulus of Internal Gears 直径 Diameter 30-1500mm	Lorenz S8,Maag SH180,WS650, WS1000,WS1250
	人字齿模数 Modulus of Herringbone Gears 2-40 (70) 直径达 Max Dia. 2800mm	Maag SH100/180 CNC;SH 180/300
磨齿工艺 Tooth(Profile)Grinding	外齿模数 Modulus of External Gears 2-32 直径达 Max Dia. 2800mm 齿面宽达 Max Tooth Surface 950mm 内齿模数 Modulus of Internal Gear 2-32 直径 Dia. 400-1600mm	Niles ZE630,Hofler Rapid 900 CNC, Gleason Pfauter P1600 CNC,2000CNC Niles ZE 630,Niles ZE 800, Gleason Pfauter P1600



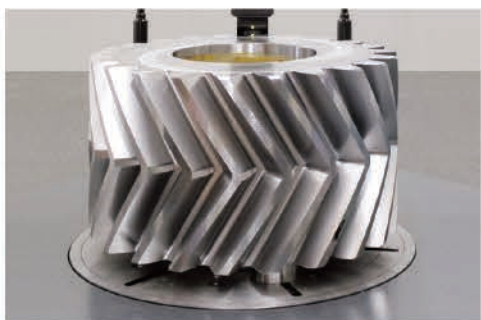
逆向工程 Reverse Engineering

对于减速机内部齿轮全部损坏或部分损坏的情况，我们依托威尔特德国总部及法国工厂先进的齿轮加工技术，可以提供更快、更高质量的齿轮配件或逆向工程服务（配模），同时享受齿轮原厂销售价格。此外，为了缩短维修时间，减少客户因设备维修带来的损失，我司提前准备的库存能帮您及时解决问题，高效恢复生产。

Thanks to advanced processing technologies from WELTER Germany and France factory, the company can conduct prompt and qualified paring and reverse engineering for wholly or partially damaged gears in gearboxes, while ensuring factory price. Meanwhile, abundant stock can help to resume production quickly, in a way of shorting maintenance time and reducing loss.



五轴加工中心 Five-axis Machining Center



■ 五轴加工为齿轮加工带来了新的选择，它可以加工先前几乎无法加工的高精度齿形。

5-axis machining offers new choices for gear processing; it can process highly-precise gears which were not possible before.

■ 结合最新的检测技术，新部件的齿形与现有齿轮的齿形可以完美的啮合。

With updated testing technologies, new gears can perfectly mesh with current gears.

热处理 Heat Treatment

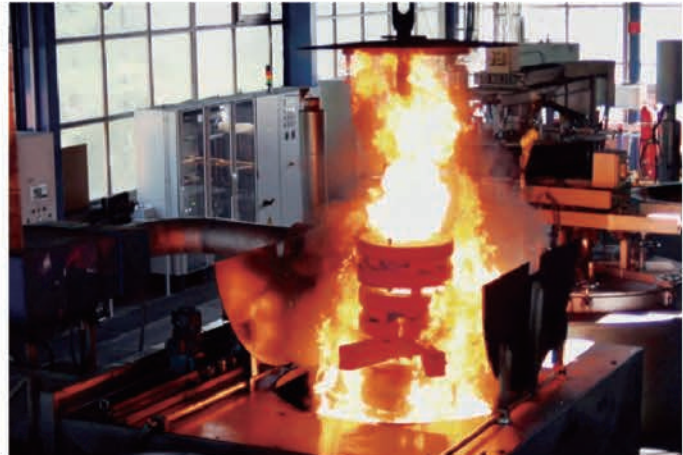
热处理是保证齿轮质量的基础，我们严格的选择供应商以满足我们的技术要求和过程控制。通过电脑规范和优化热处理各环节的时间和参数。并将热处理过程数据存储以供随时检查。热处理报告包含炉号、硬度曲线图，并保存15年。所有零件硬化后都会喷砂处理。

Heat treatment is the basis for gear quality. To meet technical requirements and process control, WELTER strictly select its suppliers. Time and parameters in each stage of heat treatment is standardized and optimized by computer. We stored data in different stages for checkup at any time. Report of heat treatment, including furnace No. and hardness curve, will be kept for 15 years. All components will be sandblasted after being hardened.

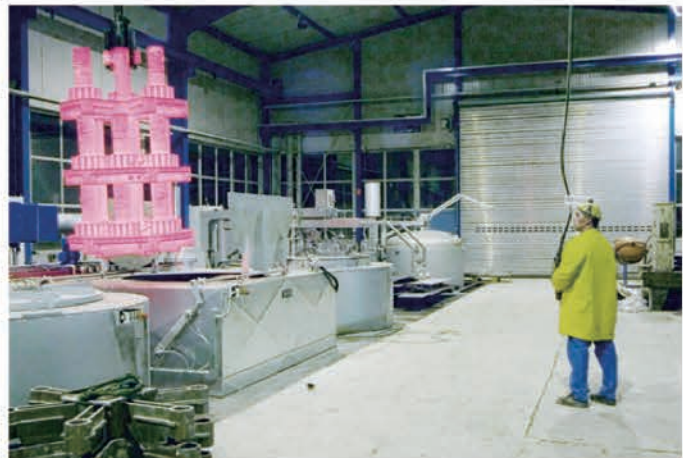
热处理方法:

Ways of Heat Treatment

- 正火、回火、淬火、退火
Normalizing, Tempering, Quenching, Annealing
- 渗碳、渗氮
Carburization, Nitriding
- 碳氮共渗
Carbonitriding
- 真空淬火、感应淬火
Vacuum Quenching, Induction Quenching
- 可实现较小变形量的模压淬火工艺
Quenching Technology with Little Deformation
- 热处理工件重量可达100吨
Weight of Heat-treated Pieces can Reach 100 Tons



油浴淬火 Oil Bath Quenching



批量油冷 Oil Cooling in Large Volume



淬火炉直径 Dia. for Quenching Furnace 1250mm

质量保证体系 Quality Assurance System

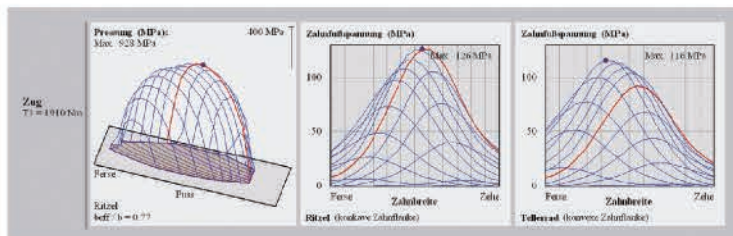
ISO 9001:2008 EN 9100:2009

DIN EN ISO 9001:2000



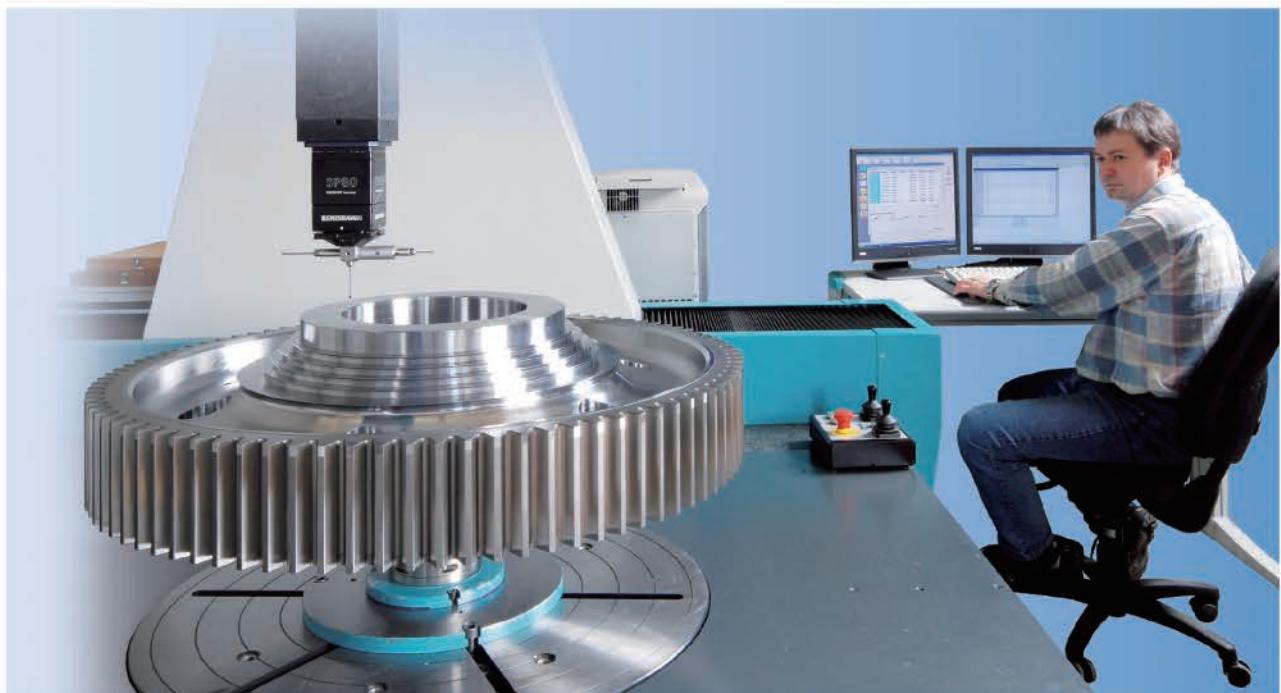
- DIN 50049-EN 10204-2.3钢原材料检验
- 热处理记录
- 尺寸检测记录
- 切削加工测量图
- 磁粉探伤检测；侵蚀燃烧检测
- 提供船级社认证，如 ABS, DNV, GL, BV, CCS等
- 齿轮啮合在线检测(在线啮合检测设备)
- DB质量检测I级证书

- DIN 50049-EN Check of Steel Raw Material
- Heat Treatment Record
- Dimensional Inspection Records
- Survey Map for Cutting
- Magnetic Particle Inspection; Erosive Burning Test
- Certification from Classification Society, like ABS, DNV, GL, BV, and CCS.
- Online Test of Gear Meshing (Equipment for Online Meshing Test)
- DB Class I Certificate



对于各式应用要求，不仅载荷计算是重要的一环，而且齿面几何的设计更是影响温度和噪音的因素。

Besides load calculation, geometric design of tooth surface can be a major factor to temperature and noise.



S2 CAVEX 蜗轮蜗杆 CAVEX Worm gear and Worm

我们可以根据客户图纸进行常见标准齿形的设计。此外，常规产品一般采用滚齿或铣齿加工，我们的产品采用特殊的自由成型铣工艺。

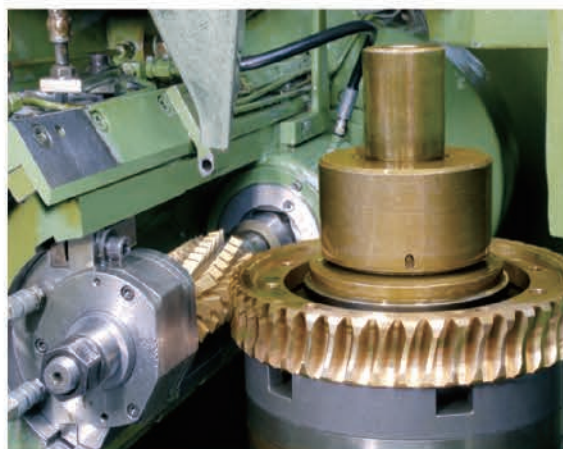
我们的尼曼齿蜗轮蜗杆副是在德国CAVEX公司生产，由于蜗杆凹面齿廓、硬化齿面和高品质的青铜材料性能的充分应用，使齿面压力显著减少、齿面啮合和润滑得到明显改善，中心距相同的情况下，相比其他常规蜗轮蜗杆传动系统，CAVEX产品有更高的负载能力和更长的使用寿命。而且，CAVEX齿形的齿根厚度更厚，可以承受更高的传动载荷，尤其是低速状态。

WELTER can manufacture gears of standard tooth according to supplied drawings. Normal products are generally processed by hobbing and milling. For WELTER products, free-from milling is applied.

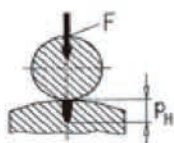
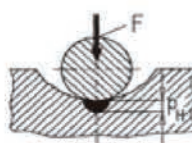
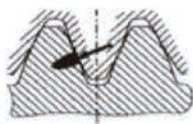
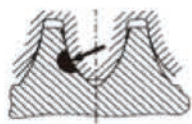
CAVEX worm gears and worms from WELTER are produced by CAVEX Germany. The products have adopted concave tooth profile, hardened tooth surface and high-quality bronze material, in a way to reduce pressure of tooth surface and improve meshing and lubrication. When center distances are the same, CAVEX products, compared with traditional ones, undertake more load and have longer lifespan. With thicker root, CAVEX gear can undertake more drive load, especially when running with low speed.



蜗轮蜗杆副 Worm Gear and Gear



蜗轮铣削 Milling of Worm Gear



CAVEX蜗轮蜗杆

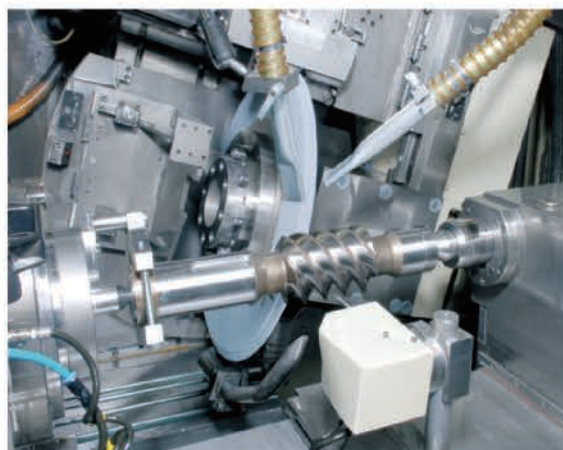
常规蜗轮蜗杆

CAVEX Worm Gear and Worm

Normal Worm Gear and Worm

CAVEX蜗轮蜗杆加工能力范围：

齿形 Tooth Type:	ZC, ZK, CAVEX尼曼齿, Duplex双导程
中心距Center Distance:	40-1400mm
速比 Speed Ratio:	1-180
模数 Modulus:	1-40
蜗杆头数: Number of Worm Threads:	1-12 高精度, 可调整的侧隙, 来图加工, 量身定制 High Precision, Adjustable Backlash, Customize with Supplied Drawings

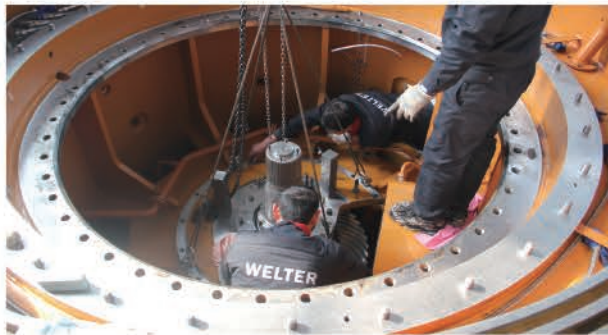


蜗轮研磨 Grinding of Worm Gear

S3 减速机保养维修 Maintenance of Gearbox

威尔特齿轮(南京)有限公司同时也专注于大型或特大型各品牌、各型号减速机的检查、状态监测、零部件更换、零部件测量、零部件供应等全方位服务，特别是进口标准减速机。先进齐全的维修设施和工具，经验丰富的专业维修队伍，完善的维修工艺是威尔特减速机维修的品质保证。

WELTER zahnrad China Works focuses on all-round service for gearboxes, especially for imported standard gearboxes. Among others, it provides checking, status monitoring, and measurement, replacement and supply of spare parts for large or extremely large gearbox of various brands and models. Qualified gearbox maintenance always lies in advanced and complete maintenance equipment and tools, experienced and professional team, and complete maintenance technologies.



我们对减速机的拆卸和安装有严格的标准要求，轴承间隙和齿轮啮合调整精确，每一台减速机必须经过空载试机确认运转良好方可交付，同时安排专业技术人员全程配合客户回装，确保客户设备运转无后顾之忧。

WELTER has strict standards and requirements for dismantling and installment of gearbox. Bearing gap and gear meshing shall be accurate; before delivery, each gearbox has to pass no-load test to ensure operation; professional technicians will be sent to support installation and care-free operation.

状态监测 Status Monitoring

减速机维修前或维修后，我司都将安排状态监测，持续跟进减速机运行状况。

我司将根据设备的状态监测数据以及工艺和设备结合的理念为客户提供解决问题的方案。

Before or after maintenance, WELTER will make status monitoring to gearboxes and follow their operation status. Based on data from status monitoring, technical process and equipment, WELTER will provide customized solutions for customers.

标准减速机供货能力和合作模式 框架协议式合作

Standard Gearbox Supply Capability and Framework Agreement Cooperation

减速机维修更换备件及维修、运输费用价格清单

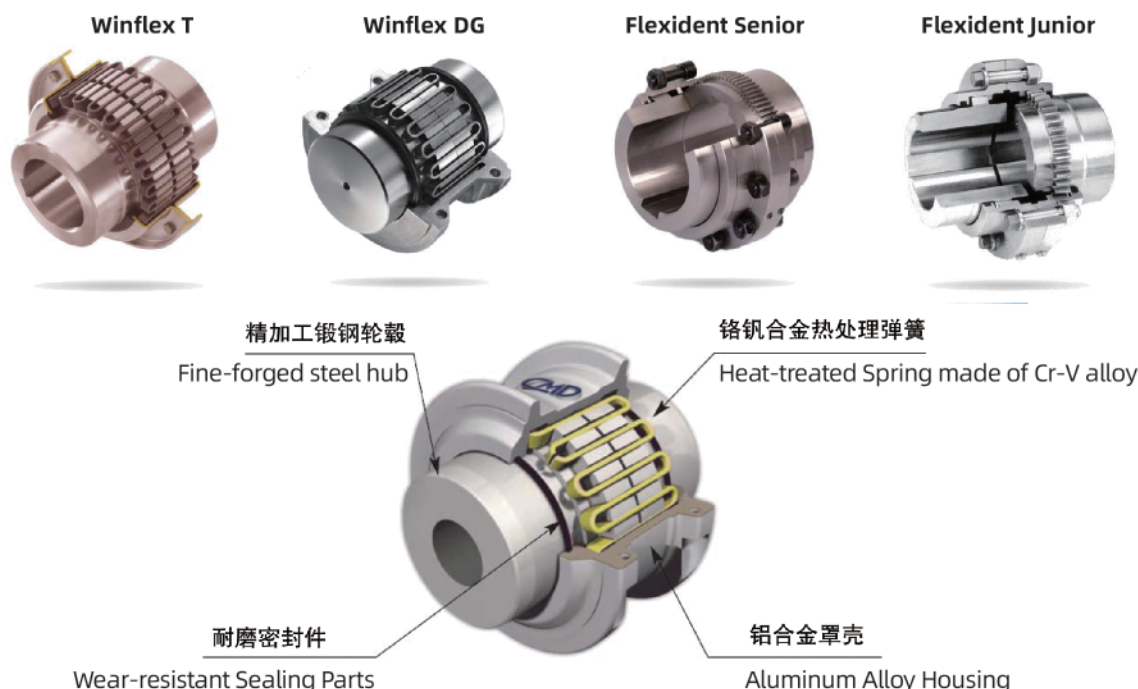
Gearbox Repair and Replacement Parts Price List, including Repair and Transportation Costs

B3DH9B/D, 速比i=50 Reduction Ratio i = 50									
序号 Item No.	备件名称 Part Description	位置号 Position Number	规格型号 Specification	材质/品牌 Material / Brand	装机数量 Qty	单位 Unit of Measure	单价(元) Unit Price (CNY)	单价税额(元) Tax/Unit (CNY, VAT %)	备注 Remark
1	齿轮轴 Gear Shaft	100			1	件 EA			
2	齿轮 Gear	102			1	件 EA			
3	轴承 Bearing	150			1	件 EA			
4	轴承 Bearing	151			1	件 EA			
5	油封 Shaft Seal	132			1	件 EA			
6	O型圈 O-Ring	128			1	件 EA			
7	密封环 Seal-Ring	135			1	套 SET			
8	齿轮轴 Gear Shaft	400			1	件 EA			
9	齿轮 Gear	402			1	件 EA			
10	轴承 Bearing	450			1	件 EA			
11	轴承 Bearing	451			1	件 EA			
12	齿轮轴 Gear Shaft	300			1	件 EA			
13	齿轮 Gear	302			1	件 EA			
14	轴承 Bearing	350			1	件 EA			
15	轴承 Bearing	351			1	件 EA			
16	输出轴 Output Shaft	200			1	件 EA			
17	PU衬套 PU Bushing	295			1	件 EA			
18	轴承 Bearing	250			1	件 EA			
19	轴承 Bearing	251			1	件 EA			
20	油封 Shaft Seal	232			1	件 EA			
21	油封 Shaft Seal	233			1	件 EA			
22	密封环 Seal-Ring	235			1	套 SET			
23	风扇 Fan	170			1	件 EA			
24	风扇罩 Fan Cover	171			1	件 EA			
25	空气滤清器 Air Filter	54			1	件 EA			
26	锁紧盘 Locking Assembly	290			1	件 EA			
27	逆止器 Backstop	481			1	套 SET			
28	超越离合器 Overrunning Clutch	901			1	套 SET			
29	辅传装置 Auxiliary Drive Device				1	台 UNIT			
30	维修费 Repair					台 UNIT			
31	往返运费 Cost Round-trip Cost					台 UNIT			

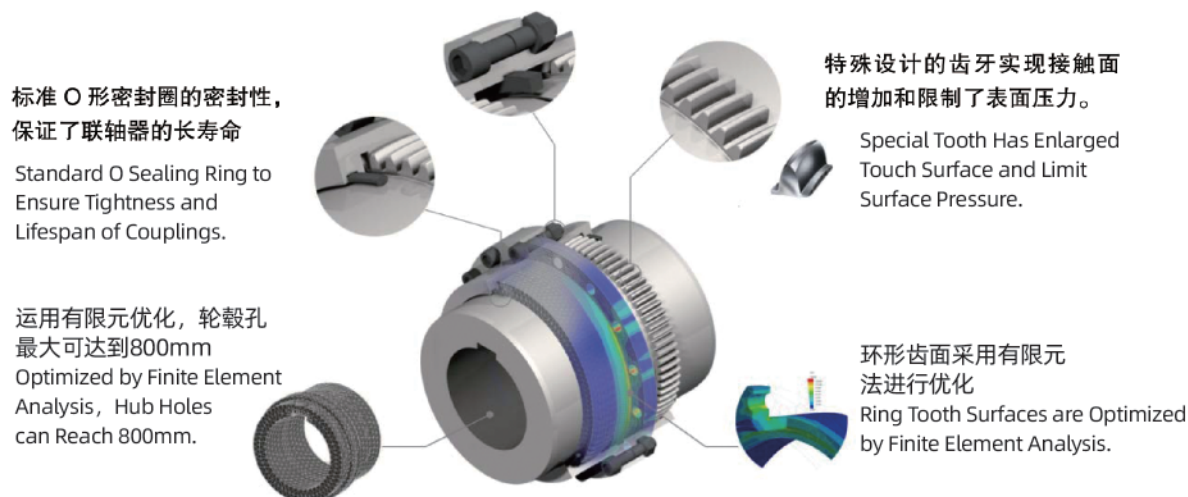
S4 CMD联轴器 CMD Coupling

法国CMD公司，由安得利-雪铁龙（André Citroën）创建，并于2005年加入CIF集团。公司自创建百余年来，一直是法国制造大型旋转设备机械传动的先锋，研发生产了20余种金属弹性联轴器。创新的Winflex蛇形弹簧联轴器确保了在严苛工业环境下，或是需要传递较高扭矩时依然能满足严格的技术要求。CMD以其世界顶尖大型数控机床确保了Flexident齿式联轴器的直径可达4.5米。CMD联轴器产品被广泛应用于水泥、钢铁、矿山、电力、制糖、造纸、化工等行业。2018年初，威尔特齿轮（南京）有限公司成为CMD公司在中国区域针对蛇形弹簧联轴器和齿式联轴器的授权总经销商。

Founded by Andre Citroen, CMD France joined CIF group in 2005. For over 100 years in France, the company has been a leading role in mechanical drive for large rotary equipment. The company has developed over 20 flexible mental couplings. Winflex, an innovative falk-flexible coupling, can meet strict technical requirements under harsh industrial conditions or situation requiring high torque. Thanks to its world-best large CNC machine tools, the diameter of Flexident coupling can reach 4.5 meter. Wide application of CMD products includes cement, steel, mining, power, sugar-making, paper-making, and chemical industry. From the beginning of 2018, WELTER zahnrad China Works has been accredited as exclusive agent for falk-flexible couplings and gear couplings in China.



12.9 等级紧固件传递扭矩 Transmission Torque of Class 12.9 Fasteners



三. 石化行业 Petrochemical Industry

加工能力

- 伞齿轮直径3000mm, 2-任意模数 (克林根贝格、格里森)
Dia. of bevel gears can reach 3000mm, 2 or more modulus. (KlingInberg, Gleason)
- 直齿、斜齿、人字齿直径2800mm
Dia. of spur gear, helical gear and herringbone gear can reach 2800mm.

供货范围

- 挤压机减速机齿件非标定制, 实现与旧件互换性
WELTER can customize gears for extruder gearbox and ensure compatibility.
- 挤压机减速机全套轴承 (WELTER德国直采)
Complete set of bearings for the extruder gearbox (directly purchased by WELTER Germany).
- 挤压机减速机专用密封、逆止器、离合器等配件
Special seals, backstops, clutches, and other accessories for the extruder gearbox.
- 挤压机组和主减速机检修服务 (ZSK320、ZSK350、ZSK380)
Maintenance for Extruder Units and Main Gearbox (ZSK320, ZSK350, ZSK380).
- 挤压机减速机状态监测服务
Status Monitoring for Extruder Gearbox.



轴承定制 Customized Bearings



齿轮定制 Gear Customization



挤压机组检修 Maintenance of Extrusion Unit

检修案例分享 Maintenance Case Sharing

客 户：浙江绍兴三圆石化有限公司

设 备：科倍隆ZSK320挤压机组

主减速机：FLENDER 261F200双螺杆挤出机减速机

检修范围：

- 主减速机检修，更换全套轴承密封，润滑系统检修
- 混炼挤压装置检修，螺杆抽出保养并做无损检测
- 电仪拆除和安装
- 开车阀、换网器、切粒装置检修
- 模板更换新刀盘

Client:

Zhejiang Shaoxing Sanyuan Petrochemical Co., Ltd

Equipment:

Coperion ZSK320 extrusion unit

Main Reducer:

FLENDER 261F200 Twin screw extruder reducer

Scope of maintenance:

- The main gearbox is overhauled, a full set of bearing seals is replaced, and the lubrication system is overhauled
- The mixing and extrusion unit is overhauled, and the screw is withdrawn for maintenance and non-destructive inspection
- Removal and installation of electrical instruments
- Start-up valve, screen changer, pelletizer maintenance
- Cutterhead replaced



切粒小车移位
Remove Pelletizer



刀盘拆解
Dismantle Cutterhead

检修案例分享 Maintenance Cases



换网器拆除保养
Dismantling and Maintenance of Screen Changer



开车阀拆除保养
Dismantling and Maintenance of Start-up Valve



螺杆抽出
Pull-out of Screw



螺杆清理检查
Cleaning and Check of Screw

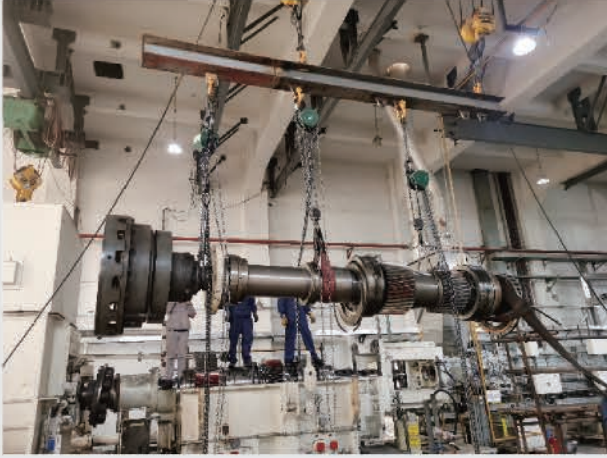


螺杆无损探伤
NDT of Screw



螺杆回装、调相位
Reinstall the Screw and Adjust Phase

检修案例分享 Maintenance Cases



减速机解体并清理检查
Dismantle Gearbox; Clean and Check

齿件吊出并移至维修车间
Lift Gears to Maintenance Workshop

齿件无损检测
NDT of Gears

轴承更换
Replacement of Gears

减速机回装试车
Re-installment and Commissioning of Gearbox



检修案例分享 Maintenance Cases



开车阀回装
Reinstall Start-up Valve

换网器回装
Reinstall Screen Changer

切粒小车复位
Put Pelletizer in Place

电仪复位
Reinstall Electrical Instruments

开车调试成功
Successful Start-up and Commissioning

主减速机做状态监测
Status Monitoring for Main Gearbox



备件照片 Photos of Spare Parts



全套轴承备件 Complete Sets of Bearing Spare Parts



全套轴承备件 Complete Sets of Bearing Spare Parts



100轴 No.100 Shaft



500轴 No. 500 Shaft



502低速齿轮 No. 502 Low-speed Gear



507内齿套 No. 507 Inner Gear Sleeve

石化业绩 Petrochemical Performance

序号 Item	客户名称 Customer Name	减速机 Gearbox	型号 Type	供货范围 Description of the supply	日期 Year
1	三圆石化 Sanyuan Petrochemical	ZSK320	261F200	检修整包服务。 Comprehensive maintenance and repair service.	2021
2	中景石化 Zhongjing Petrochemical	ZSK350	292F311	1、备件供货：齿件+全套轴承+密封+小件； 2、检修技术指导服务。 1. Spare parts supply: gear components + complete set of bearings + seals + small parts. 2. Technical guidance services for maintenance.	2021
3	海伟石化 Haiwei Petrochemical	ZSK320	261F200	备件供货：齿件+轴承+密封+小件。 Spare parts supply: gear components + bearings + seals + small parts.	2022
4	华北石化 Huabei Petrochemical	ZSK177	146F27.2	备件供货：小件。 Spare parts supply: small items.	2022
5	中安联合 Zhong'an United	ZSK350	292F311	备件供货：齿件+全套轴承+密封+小件+旋转接头+软管+600轴连接体。 Spare parts supply: gear components + complete set of bearings + seals + small parts + rotary joints + hoses + 600-axis connectors.	2022
6	恒力石化 Hengli Petrochemical	ZSK380	316F311	1、状态监测服务。 2、备件供货：100轴+500轴、小件。 1. Condition monitoring service. 2. Spare parts supply: 100-axis + 500-axis, small parts.	2023 2024
7	富德能源 Fude Energy	ZSK380	316F311	1、检修技术指导服务； 2、备件供货：齿件+超越离合器； 3、备件供货：500轴系轴承+小件、密封。 1. Maintenance technical guidance service; 2. Spare parts supply: gear parts + overrunning clutch. 3. Spare parts supply: 500 bearings for shafting + small parts, seals.	2022 2023 2025
8	东华能源 Donghua Energy	ZSK380	316F311	1、备件供货：齿件+100轴系轴承+500轴系轴承+全套小件、密封； 2、检修技术指导服务。 1. Spare parts supply: gear components + 100 sets of shaft bearings + 500 sets of shaft bearings + complete set of small parts, seals. 2. Technical guidance services for maintenance.	2023
		ZSK380	316F200	备件供货：500轴系轴承+小件。 Spare parts supply: 500 shaft bearings + small parts	2025
9	华泰盛富 Huatai Shengfu	ZSK350	292F311	1、备件供货：100轴系轴承+500轴系轴承+全套小件、密封； 2、检修技术指导服务。 1. Spare parts supply: 100 sets of shaft bearings + 500 sets of shaft bearings + complete set of small parts and seals. 2. Technical guidance services for maintenance.	2023
10	蒲城清洁能源 Pucheng Clean Energy	ZSK350	292F311	1、备件供货：500轴+轴承+小件。 2、检修技术指导服务。 1. Spare parts supply: 500 axles + bearings + small parts. 2. Technical guidance services for maintenance.	2023 2024
11	久泰能源 Jiutai Energy	ZSK380	316F222	1、备件供货：齿件+轴承。 2、检修技术指导服务。 1. Spare parts supply: gear components + bearings. 2. Technical guidance services for maintenance.	2024
12	北方华锦 Beifang Huajin	ZSK320	261F200	备件供货：100轴系轴承+500轴系轴承+小件、密封。 Spare parts supply: 100 sets of shaft bearings + 500 sets of shaft bearings + small parts, seals.	2025
13	上海赛科 Shanghai SECCO	ZSK320	261F200	熔融泵减速机备件，主减速机261F200轴承。 Spare parts for the gear reducer of the melting pump, including the bearing for the main gear reducer 261F200.	2025
14	联泓新材 Lianhong New Materials	ZSK320	261F200	备件供货：100轴系轴承+500轴系轴承+小件、密封。 Spare parts supply: 100 sets of shaft bearings + 500 sets of shaft bearings + small parts, seals.	2026
15	金能化学 Jinneng Chemical	ZSK380	316F311	备件供货：旋转接头，空冷岛减速机维修。 Spare parts supply: rotary joint, air cooling island reducer maintenance.	2026
16	宁波金发 Ningbo Kingfa	ZSK350	292F311	备件供货：齿件(100轴、117齿套)+全套轴承+密封+小件。 Spare parts supply: gear components (100-axis, 117-tooth sleeve) + complete set of bearings + seals + small parts.	2026
17	华泰盛富 Huatai shengfu	ZSK350	292F311	备件供货：200+300+400轴系轴承及小件、密封。 Spare parts supply: 200+300+400 shaft bearings, small parts, and seals.	2026
18	中景石化 Zhongjing Petrochemical	ZSK350	292F311	备件供货：齿件(100轴、500轴、503齿轮)+全套轴承+密封+小件。 Spare parts supply: gear components (100-axis, 500-axis, 503 gear) + complete set of bearings + seals + small parts.	2026

诚信经营/质量领先

Integrity in Work / Leadership in Quality



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