



一期工厂鸟瞰图
Aerial view of phase 1 of the factory

COMPANY INTRODUCTION

Qingdao Paguld Intelligent Manufacturing Co., Ltd was founded in 2012, (stock code: 301456) is a joint-stock enterprise integrating R&D, manufacturing and sales. Paguld is committed to developing centralized lubrication systems and hydraulic system with independent intellectual property rights and core competitiveness, and provide competitive overall solutions for domestic and oversea customers.

As a professional enterprise, Paguld has obtained for a number of national invention patents. Our products are widely used in wind power equipment, wheel flange, railway, engineering machinery, commercial vehicle, large-scale machinery in mining, ports and other fields.

Paguld has passed ISO9001, IATF 16949, IRIS (ISO/TS 22163) quality management system certification and the certification of CE,ETL,PED etc for products and obtained CNAS L16139 laboratory accreditation certificate.

Upholding the business philosophy of "dedicated research & development, lean production, excellent quality and sincere cooperation", Paguld has brought in the first-class talents and become the customer's trustworthy partner.

公司介绍

青岛盘古智能制造股份有限公司(股票代码:301456)创建于2012年,是一家集研发、生产、销售为一体的股份制企业。公司致力于发展具有自主知识产权和核心竞争力的集中润滑系统和液压系统技术,为国内外客户提供经济高效的整体解决方案。

盘古智能作为专业的集中润滑系统和液压系统研制企业,已申请多项国家发明专利,产品广泛运用于风电设备、机车润滑、轨道润滑、工程机械、商用车辆、港口设备等领域。

公司已通过ISO9001、IATF 16949、IRIS (ISO/TS 22163)质量管理体系认证,产品通过CE、ETL、PED等认证,获得CNAS L 16139实验室认可证书。

公司本着“精心研发、精益生产、精湛品质、精诚合作”的经营理念,凝聚一流的人才,成为客户值得信赖的合作伙伴。

100 亩

园区占地

The factory occupies an area of approximately 16.5 acres

44000 m²

一期建筑面积

Phase 1 of the factory: 44000m²

40000 m²

二期建筑面积

Phase 2 of the factory: 40000 m²



二期工厂效果图
Rendering of phase 2 of the factory

集中润滑系统

Centralized Lubrication System



集中润滑系统优点

The advantages of centralized lubrication system

- 定时、定点、定量、定序加注润滑脂
 - 避免人工加脂遗漏润滑点
 - 润滑周期准确，定量给脂精确，节省油脂，减少对环境的污染
 - 系统压力高，用脂范围宽
 - 结构紧凑、性能优异、便于安装、易检查维修
 - 对设备零件的有效润滑，提高其使用寿命，降低了维修成本
 - 具有故障报警功能，对润滑系统进行全程监控
 - 节省油脂，保护环境
-
- Grease or oil injection according to fixed time, position, quantity and sequence
 - Missing lubrication point through artificial injection can be avoided
 - Precise grease or oil injection schedule and quantity, reduced lubricant consumption and environment pollution
 - High-pressure system and grease or oil species with wide range
 - Compact structure, excellent performance, easy to install and easy to maintenance
 - Effective lubrication for equipment components, improved equipment service life, reduced cost of maintenance
 - Fault alarm function and full-time monitoring for lubrication system
 - Save lubricant and protect the environment

递进润滑系统

Progressive lubrication system

递进式润滑系统由电动润滑泵、递进式分配器、管路附件、控制部分组成。分配器在泵压的作用下，将润滑剂以递进方式输送到各个润滑点。系统注油量准确，可高压、定量、间隙式在较大的温差下工作，且便于安装、调整和维护。

It is composed of electric lubrication pump, progressive distributor, pipeline accessories and control parts. The distributor delivers the lubricant to each lubrication point in a progressive way under the pump pressure. With an accurate amount of grease injection, the system can perform high- pressure, quantitative intermittent work under relatively large temperature difference. It is also convenient for installation, adjustment and maintenance.



单线润滑系统

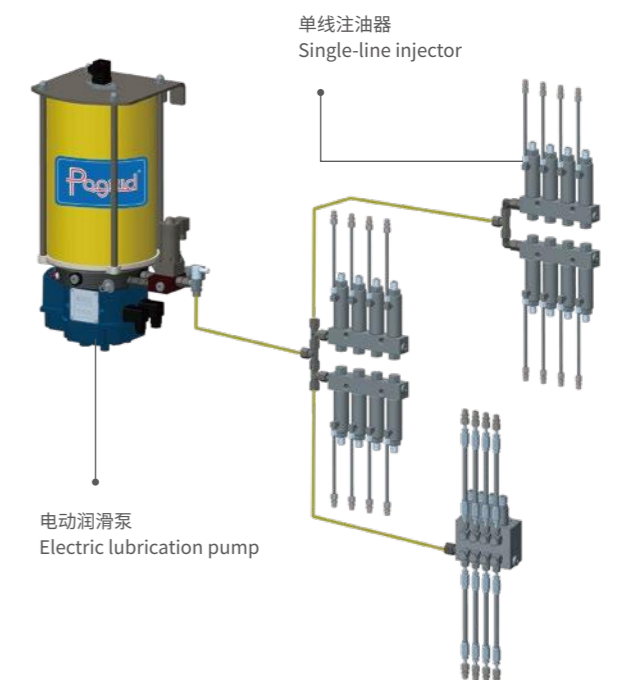
Single-line lubrication system

Paguld单线集中润滑系统由电动润滑泵、控制系统、单线注油器、管路附件等构成。

一条主管路，各注油器相对独立，局部润滑支路失效不影响其它支路正常工作；易于安装和操作，可以方便地进行系统扩展。

It is composed of electric lubrication pump, control system, single-line injector, pipeline accessories, etc.

A main line, each injector is relatively independent, local lubrication branch failure does not affect the normal operation of other branches; easy to install and operate, can be convenient for system expansion.



Paguld齿面油脂喷射系统 Paguld gear grease spray system

Paguld齿面油脂喷射系统由电动润滑泵、控制系统、齿面油脂喷射组件、管路附件等构成。齿面油脂喷射系统的核心在于独特的喷射单元设计。通过内置的蓄能器实现主动喷射，相对于传统的喷射系统无需气源辅助，结构简单，安装调试更加便捷，易于维护。主要用于解决齿轮啮合点磨损严重问题。

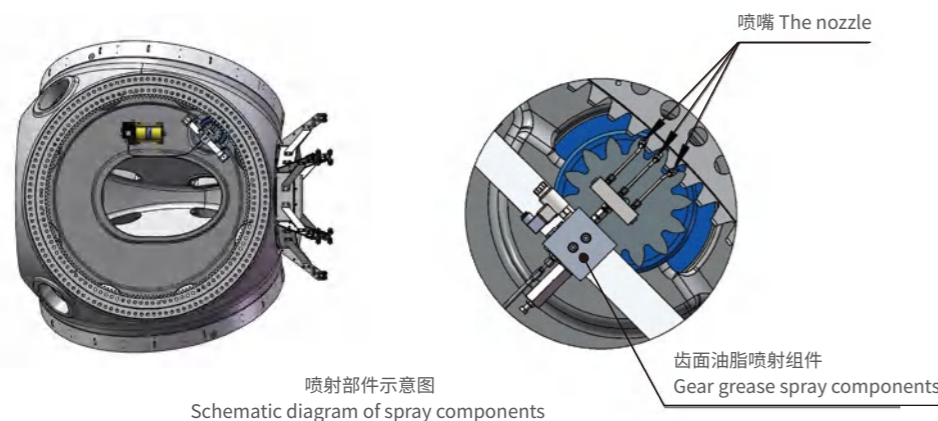
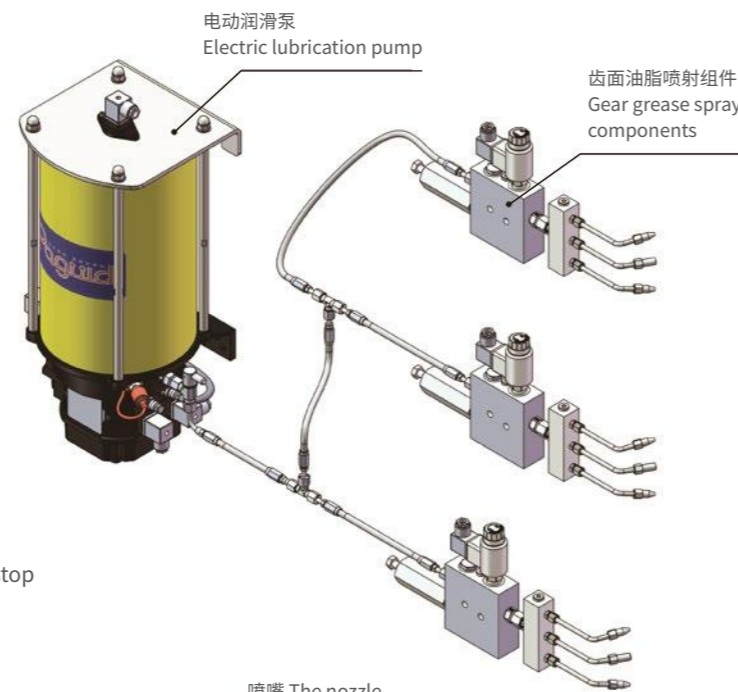
Paguld gear grease spray system is composed of electric lubrication pump, control system, gear grease spray components, pipeline accessories, etc. Gear grease spray system is the unique spray unit design. Through the built-in accumulator to achieve active spray, compared with the traditional spray system without air source assistance, the advantage is simple structure, installation and debugging more convenient, maintain easily. It is mainly used to solve the problem of severe wear at the gear meshing point.

齿面油脂喷射系统特点

- 润滑剂精准喷射
- 少量的润滑剂消耗
- 无过度润滑, 无污染
- 无需其他部件驱动
- 齿轮啮合和停止时, 亦可喷射润滑剂
- 准确检测润滑剂的使用情况

Features of gear grease spray system

- Lubricant precision injection
- Small amount of lubricant consumed
- No excessive lubrication, no pollution
- No other components are required to drive
- Lubricants can also be sprayed when gears engage and stop
- Accurately detect the use of lubricants



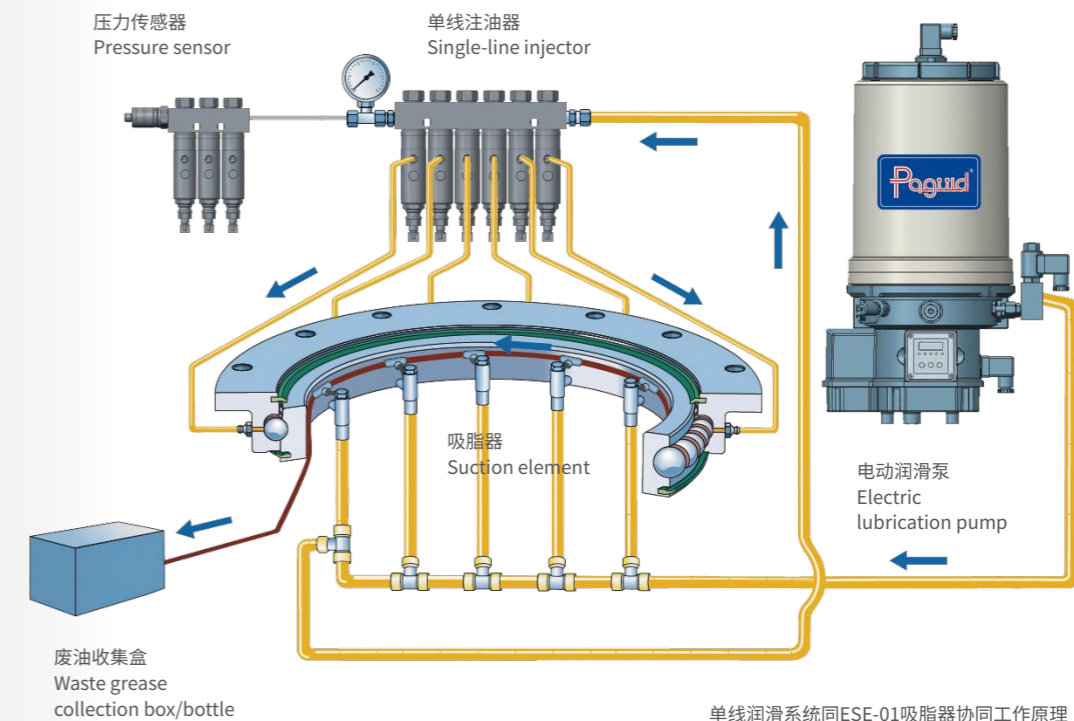
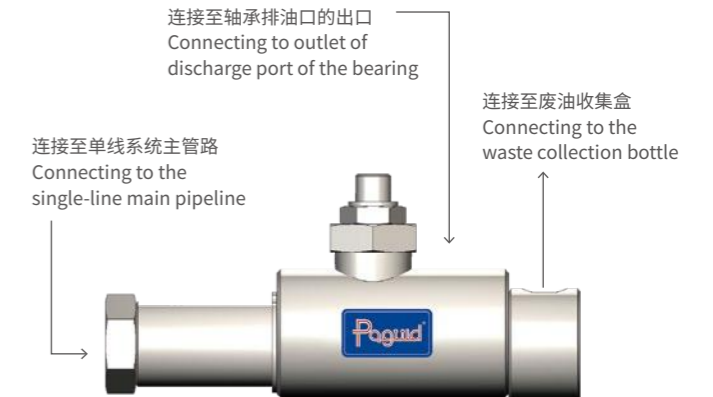
单线及废油脂辅助回收系统 Waste grease auxiliary recovery and single-line system

吸脂器

ESE-01吸脂器专门开发用于MW级风力发电机组的轴承, 同单线润滑系统配套, 吸取轴承内的废旧油脂。

Suction Element

ESE-01 suction element is specially developed and applied to the generator bearing of MW grade wind turbine. It absorbs the waste grease in the bearing, along with the single-line lubrication system.



单线润滑系统同ESE-01吸脂器协同工作原理
Cooperative working principle of single-line system and ESE-01 suction

电动润滑泵PG203系列 PG203 Series of Electric Lubrication Pump

PG203电动润滑泵是一台性能优良的中央自动集中润滑泵，最多可支持3个泵芯单元，适用于递进式集中润滑系统中，适用于风电机组发电机集中润滑系统。

通用性强，结构小巧紧凑，工作性能优异，采用一体化泵座主壳，以其极高的经济性使得PG203电动润滑泵得到广泛应用，同时可选配低油位报警、堵塞报警和控制单元，极大扩展了PG203电动润滑泵的行业应用范围。

The PG203 electric lubrication pump is an automatic centralized lubrication pump with excellent performance that can support up to three pump elements. Suitable for centralized lubrication system of wind turbine generator.

It boasts strong versatility, a compact structure, and excellent working performance. The integrated pump base makes it highly economical and widely used. Besides, the system can be equipped with a low-level alarm, a blockage alarm, and a control unit, which greatly expands the industry application scope of the PG203 electric lubrication pump.



技术参数 Technical Parameters

系统压力 System pressure	35MPa						
储油罐容积 Volume of reservoir	1L、2L、4L、8L						
工作电压 Operating voltage	12VDC、24VDC、230VAC						
泵芯单元 mL/分钟 Pump element mL/minute	K5	K6-2.5	K6	K7	K8	KR7	KR8
	2.0	2.5	2.8	4.0	5.0	0.7-3	1.3-5
泵芯数量 Number of pump element	1-3个 1-3 pieces						
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread						
工作温度 Operating temperature	-40°C ~ +80°C						
防护等级 Protection class	IP65						
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#						

电动润滑泵PG230系列 PG230 Series of Electric Lubrication Pump

PG230电动润滑泵是一台性能优良的中央自动集中润滑泵，最多可支持4个泵芯单元，适用于递进式集中润滑系统中，常用于风电机组变桨、主轴、偏航等部位的集中润滑系统。

主体采用高强度轻质金属，产品具有优良的环境适应能力，模块化设计，规格可以灵活选择，同时可选配低油位报警、堵塞报警和控制单元，极大扩展了PG230电动润滑泵的行业应用范围。

The PG230 electric lubrication pump is an automatic centralized lubrication pump with excellent performance that can support up to 4 pump elements. It is suitable for progressive centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine Pitch, main bearing, yaw and other parts.

Its pump base made of high-strength lightweight metal further improves the seismic performance, Products have excellent environmental adaptability, modular design, specifications can be flexibly selected. Besides, it can be equipped with a low-level alarm, a blockage alarm, and a control unit, which greatly expand the industry application scope of the PG230 electric lubrication pump.



技术参数 Technical Parameters

系统压力 System pressure	35MPa						
储油罐容积 Volume of reservoir	4L、6L、8L、10L、12L、15L、20L、25L、30L、40L						
工作电压 Operating voltage	12VDC、24VDC、230VAC						
泵芯单元 mL/分钟 Pump element mL/minute	K5	K6-2.5	K6	K7	K8	KR7	KR8
	2.0	2.5	2.8	4.0	5.0	0.7-3	1.3-5
泵芯数量 Number of pump element	1-4个 1-4 pieces						
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread						
工作温度 Operating temperature	-40°C ~ +80°C						
防护等级 Protection class	IP65						
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#						

电动润滑泵PG231系列 PG231 Series of Electric Lubrication Pump

PG231电动润滑泵是一台性能优良的中央自动集中润滑泵，最多可支持4个泵芯单元，适用于递进式集中润滑系统中，常用于风电机组变桨、主轴、偏航、发电机等部位的集中润滑系统。

通用性强，工作性能稳定，泵座和壳体采用一体化设计，结构更加小巧紧凑，同时可选配低油位报警、堵塞报警和控制单元，极大扩展了PG231电动润滑泵的行业应用范围。

The PG231 electric lubrication pump is an automatic centralized lubrication pump with excellent performance that can support up to 4 pump elements. It is suitable for progressive centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine Pitch, main bearing, yaw, turbine and other parts.

It boasts strong versatility, a compact structure, and excellent working performance. The pump base and housing are integrated design, making the structure more compact and compact. Besides, it can be equipped with a low-level alarm, a blockage alarm, and a control unit, which greatly expand the industry application scope of the PG231 electric lubrication pump.



技术参数 Technical Parameters

系统压力 System pressure	35MPa						
储油罐容积 Volume of reservoir	1L、2L、4L、6L、8L、10L、12L、15L						
工作电压 Operating voltage	12VDC、24VDC、230VAC						
泵芯单元 mL/分钟 Pump element mL/minute	K5	K6-2.5	K6	K7	K8	KR7	KR8
	2.0	2.5	2.8	4.0	5.0	0.7-3	1.3-5
泵芯数量 Number of pump element	1-4个 1-4 pieces						
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread						
工作温度 Operating temperature	-40°C ~ +80°C						
防护等级 Protection class	IP65						
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#						

电动润滑泵PG230-PLUS系列 PG230-PLUS Series of Electric Lubrication Pump

PG230-PLUS电动润滑泵是一台性能优良的中央自动集中润滑泵，最多可支持4个泵芯单元，适用于单线式集中润滑系统中，适用于风电机组变桨、主轴、偏航等部位的集中润滑系统。

PG230-PLUS电动润滑泵采用分段式设计，采用高强度轻质合金加工，产品具有优良的环境适应能力。泵芯单元通过泵座内部油路贯通，外部布置简洁美观，便于更换和维护。适配单线式润滑系统具有极高的可靠性，对于要求高可靠性和难以维护的设备特别适用。

The PG230-PLUS electric lubrication pump is an automatic centralized lubrication pump with excellent performance that can support up to four pump elements. It is suitable for single-line centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine Pitch, main bearing, yaw and other parts.

PG230-PLUS electric lubrication pump adopts a segmented design and high-strength light alloy, which give the whole structure excellent working performance. The pump elements are connected with each other through an internal grease circuit in the pump base; the simple exterior layout makes it to be replaced and maintained. The outlet of the electric lubrication pump is provided with a pressure monitoring unit and a pressure relief unit for pressure control, ensuring the normal lubrication of the whole system.



技术参数 Technical Parameters

系统压力 System pressure	35MPa	
储油罐容积 Volume of reservoir	4L、6L、8L、10L、12L、15L、20L、25L、30L、40L	
工作电压 Operating voltage	12VDC、24VDC、230VAC	
泵芯单元 Pump element	3K7、3K8 (常规配置) 3K7、3K8 (General configuration)	
	12mL/分钟、15mL/分钟 12mL/minute、15mL/minute	
泵芯数量 Number of pump element	3-4个 3-4 pieces	
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread	
工作温度 Operating temperature	-40°C ~ +80°C	
防护等级 Protection class	IP65	
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#	

电动润滑泵PG230M系列 PG230M Series of Electric Lubrication Pump

PG230M电动润滑泵是一台性能优良的中央自动集中润滑泵，最多可支持4个泵芯单元，不仅适用于递进式集中润滑系统，通过模块更换也可以适用于单线式或双线式润滑系统，常用于风电机组主轴、偏航等部位的集中润滑系统。

主体均采用金属材质，产品具有优良的环境适应能力，模块化设计，规格可以灵活选择，同时可选配低油位报警、堵塞报警和控制单元，极大扩展了PG230M电动润滑泵的行业应用范围。

The PG230M electric lubrication pump is an automatic centralized lubrication pump with excellent performance that can support up to 4 pump elements. It is suitable for progressive centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine Pitch, main bearing, yaw and other parts.

Its pump base made of high-strength lightweight metal further improves the seismic performance, Products have excellent environmental adaptability, modular design, specifications can be flexibly selected. Besides, it can be equipped with a low-level alarm, a blockage alarm, and a control unit, which greatly expand the industry application scope of the PG230 electric lubrication pump.



技术参数 Technical Parameters

系统压力 System pressure	35MPa			
储油罐容积 Volume of reservoir	30L、40L、50L、80L、100L			
工作电压 Operating voltage	24VDC、230VAC			
泵芯单元 mL/分钟 Pump element mL/minute	K5 2.0	K6-2.5 2.5	K6 2.8	K7 4.0
泵芯数量 Number of pump element	1-4个 1-4 pieces			
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread			
工作温度 Operating temperature	-40°C ~ +80°C			
防护等级 Protection class	IP65			
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#			

电动润滑泵GLP系列 GLP Series of Electric Lubrication Pump

GLP系列润滑泵采用模块化设计方案，其实用性非常广泛，不仅能够适用于递进式润滑系统，而且通过相对简单的柱塞泵模块更换就可以适用于单线式或双线式润滑系统。

GLP 润滑泵主体采用全金属设计，传动轴上布置有螺旋输送机构，能够有效将高粘度油脂输送至泵芯，专门为严苛工况开发。

GLP series of lubrication pump adopts modular design with high degree of generalization, it can not only be applied to progressive lubrication systems, but also can be applied to single-wire or double-wire lubrication systems through relatively replacement of simple piston pump module.

The main body of the GLP lubrication pump adopts an all-metal design, a screw conveyor mechanism is equipped on transmission shaft, can effectively transport high viscosity grease to the pump element. This product is specially designed for harsh operating conditions.



技术参数 Technical Parameters

系统压力 System pressure	40MPa
储油罐容积 Volume of reservoir	15L、30L、60L、80L
工作电压 Operating voltage	400VAC/690VAC
泵芯单元 mL/分钟 Pump element mL/minute	K8:11.2mL/分钟 K8:11.2mL/minute
泵芯数量 Number of pump element	1-6个 1-6 pieces
出油口螺纹 Grease outlet thread	G1/4内螺纹 G1/4 inner thread
工作温度 Operating temperature	-40°C ~ +80°C
防护等级 Protection class	IP54
使用润滑剂 Grease	NLGI 2#及其以下润滑剂 Up to NLGI 2#

电动润滑泵ELP2系列 ELP2 Series of Electric Lubrication Pump

ELP2电动润滑泵是一台性能优良的中央自动集中润滑泵,适用于单线式集中润滑系统,用于风电机组主轴部位的集中润滑系统。
ELP2电动润滑泵采用模块化设计,集成有电动泵、大容量储油罐、电气盒、单线注油器等部件,产品具有优良的环境适应能力。同时可选配低油位报警、堵塞报警及控制单元,极大扩展ELP2电动润滑泵的行业应用范围。大容量、高稳定性的特点,使其特别适用于可靠性要求高和难以维护的设备。

The ELP2 electric lubrication pump is an automatic centralized lubrication pump with excellent performance. It is suitable for single-line centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine main bearing.

ELP2 electric lubrication pump adopts modular design, integrated with electric pump, large capacity reservoir, electrical box, single line injector and other components, the product has excellent environmental adaptability. At the same time it can be equipped with low grease level alarm, blockage alarm and control unit, which greatly expands the industry application scope of ELP2 electric lubrication pump. The characteristics of large capacity and high stability make it especially suitable for equipment with high reliability requirements and difficult maintenance.



技术参数 Technical Parameters

系统压力 System pressure	35MPa
储油罐容积 Volume of reservoir	220L
工作电压 Operating voltage	24VDC
注油器每口排量 Injector's displacement of each outlet	0.1-0.7cc/cycle(Customizable)
工作温度 Operating temperature	-40°C ~ +80°C
防护等级 Protection class	IP65
使用润滑剂 Grease	NLG12#及其以下润滑剂 Up to NLGI2#

电动润滑泵EBP系列 EBP Series of Electric Lubrication Pump

EBP电动润滑泵是一台性能优良的中央自动集中润滑泵,适用于单线式集中润滑系统,用于风电机组主轴部位的集中润滑系统。

EBP电动润滑泵采用模块化设计,集成有电动泵、电气盒、压油盘等部件,产品具有优良的环境适应能力。同时可选配低油位报警、堵塞报警及控制单元,极大扩展EBP电动润滑泵的行业应用范围。使用180Kg的标准油桶,大大降低了项目成本和现场补脂的操作便利性。

The EBP electric lubrication pump is an automatic centralized lubrication pump with excellent performance. It is suitable for single-line centralized lubrication systems and is commonly used in the centralized lubrication system of wind turbine main bearing.

EBP electric lubrication pump adopts modular design, integrated with electric pump, electrical box, follower plate and other components, the product has excellent environmental adaptability. At the same time it can be equipped with low grease level alarm, blockage alarm and control unit, which greatly expands the industry application scope of EBP electric lubrication pump. The use of 180Kg standard grease drum greatly reduces the project cost and the operation convenience of on-site grease replenishment.



技术参数 Technical Parameters

系统压力 System pressure	35MPa
适用油桶规格 Applicable drum specifications	180Kg标准油桶 180Kg standard oil drum
工作电压 Operating voltage	24VDC
电动泵排量 Electric pump displacement	30 ~ 300cc/min
工作温度 Operating temperature	-40°C ~ +80°C
防护等级 Protection class	IP65
使用润滑剂 Grease	NLG12#及其以下润滑剂 Up to NLGI2#

电动多点泵MPG215系列 Electric Multi-point Pump MPG215 Series

MPG215 电动多点泵适用于多线式或者递进式集中润滑系统中。

该系列润滑泵最多可驱动 15 个泵芯进行泵送油脂，既可以直接向润滑点输送油脂，又可以作为大型递进式集中润滑系统的泵站使用。同时采用高效率的蜗轮蜗杆减速器，精巧的偏心驱动组件，优异的多量程驱动电机为润滑泵的可靠运行。

MPG215 electric multi-point pump is suitable for multi-line or progressive centralized lubrication system.

This series of lubrication pumps can drive up to 15 pump cores to pump grease. It can not only transport grease directly to the lubrication point, but also be used as a pumping station for large progressive centralized lubrication systems. At the same time, it adopts an efficient worm gear reducer, exquisite eccentric drive components, excellent multi-range drive motor for the reliable operation of the lubrication pump.



技术参数 Technical Parameters

系统压力 System pressure	35MPa
储油罐容积 Volume of reservoir	10L、30L、60L、100L
工作电压 Operating voltage	380-420VAC/50Hz 440-480VAC/60Hz
减速比 Reduction ratio	40:1/60:1/100:1 300:1/500:1
泵芯单元 Pump element	KR7: 0.1-0.34cc/cycle KR12: 0.29-1cc/cycle
泵芯数量 Number of pump element	1-15个
泵芯出油口螺纹 Pump core outlet thread	G1/4内螺纹(Female)
工作温度 Operating temperature	-40°C ~ +80°C
防护等级 Protection class	IP55
使用润滑剂 Grease	NLGI 2#及其以下润滑剂Up to NLGI2#

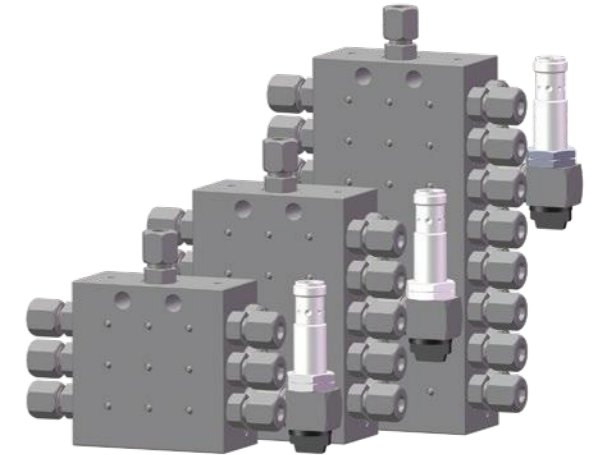
PG-SSV分配阀 PG-SSV Distributor

PG-SSV分配阀是一种单次供给定量油脂的柱塞式阀。该分配阀可以通过堵住一个出口，将被堵出口的油脂供给到下一个出口，从而使下个出口的油量翻倍，进而实现不同油脂需求量的目的。

PG-SSV分配阀最大的特点是各出口是递进关系，后一个出口必须等到前一个出口出脂后才能出脂，根据这一特点可以通过增加目视化装置或者电子监控装置判定分配阀工作状态。

分配阀出口数为6-24 (均为偶数)，可以使用最高NLGI 2#及其以下的油脂，或黏度大于40cSt的油脂。

PG-SSV分配阀在设计时，避免采用易于损坏的非金属密封结构；精巧的滑阀结构、耐高压的端面密封结构(金属接触密封)，可以满足高温、高寒等工况的应用需求。



The PG-SSV distributor is a piston valve that supplies a fixed quantity of grease each time. By blocking an outlet, it can be supplied to the following outlet, so that the next outlet grease quantity can be doubled and the different demands can be achieved.

A major feature of the PG-SSV distributor is each outlet is progressive, and the latter outlet must wait until the former outlet releases grease. Based on that, the working condition of the distributor can be checked by adding visualized monitors or electronic monitors. Each distributor has 6-24 (all even numbers) outlets and is able to deliver grease up to NLGI 2# or grease with a viscosity greater than 40cSt.

The PG-SSV distributor is made of non-fragile and non-metallic sealing materials. Its exquisite sliding valve and high pressure-resistant end sealing structure (metal contact seal) make it able to withstand high temperature, high cold, and other harsh working conditions.

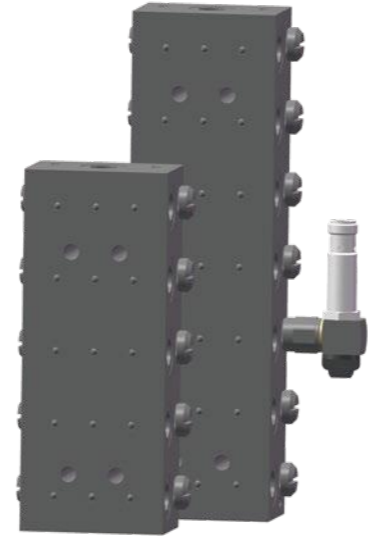
技术参数 Technical Parameters

出口数 Number of outlets	6-24口 6-24 outlets
最大工作压力 Maximum working pressure	350bar
出口间最大压差 Maximum pressure difference between outlets	100bar
每出口排量 Displacement of each outlet	0.2cc
进口螺纹规格 Inlet thread	G1/8" 内螺纹 G1/8" inner thread
出口螺纹规格 Outlet thread	M10x1 (需配置出口单向阀) M10x1 (Need to be equipped with an outlet one-way valve.)
材料 Material	碳钢, 镀锌镍合金 Carbon steel, galvanized nickel alloy
工作温度 Working temperature	-40°C ~ +80°C

PG-SSVL分配阀 PG-SSVL Distributor

PG-SSVL分配阀是一种递进式分配阀,后一个出口必须等到前一个出口出脂后才能出脂,根据这一特点可以通过增加可视化装置或者电子监控装置判定分配阀工作状态。PG-SSVL分配阀是为了适用复杂递进式润滑系统而设计,出入口空间更大,可以灵活安装多种型号的管路;分配阀出口数为6-14(均为偶数),可以使用最高NLGI 2#及其以下的油脂,或黏度大于40cSt的油脂。

PG-SSVL分配阀在设计时,避免采用易于损坏的非金属密封结构;精巧的滑阀结构、耐高压的端面密封结构(金属接触密封),可以满足高温、高寒等工况的应用需求。



The PG-SSV distributor is a progressive distributor valve, the last outlet must wait until the previous outlet before the grease can be discharged. According to this feature, the working state of the distributing valve can be determined by adding a visual device or an electronic monitoring device. The PG-SSV distributor is designed for complex progressive lubrication systems with larger inlet and outlet space and flexible installation of multiple types of pipelines; Each distributor has 6-14 (all even numbers) outlets and is able to deliver grease up to NLGI 2# or grease with a viscosity greater than 40cSt.

The PG-SSVL distributor is made of non-fragile and non-metallic sealing materials. Its exquisite sliding valve and high pressure-resistant end sealing structure (metal contact seal) make it able to withstand high temperature, high cold, and other harsh working conditions.

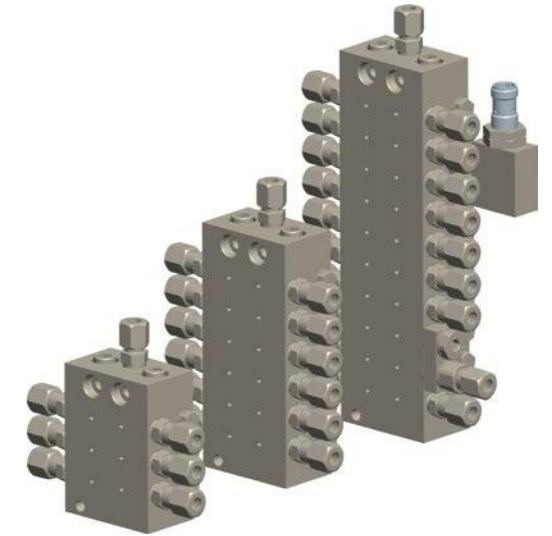
技术参数 Technical Parameters

出口数 Number of outlets	6-14口 6-14 outlets
最大工作压力 Maximum working pressure	350bar
出口间最大压差 Maximum pressure difference between outlets	100bar
每出口排量 Displacement of each outlet	0.2cc
进口螺纹规格 Inlet thread	G1/4" 内螺纹 G1/4" inner thread
出口螺纹规格 Outlet thread	M10x1 (需配置出口单向阀) M10x1 (Need to be equipped with an outlet one-way valve.)
材料 Material	碳钢, 镀锌镍合金 Carbon steel, galvanized nickel alloy
工作温度 Working temperature	-40°C ~ +80°C

PGMD-1000分配阀 PGMD-1000 Distributor

PGMD-1000分配阀采用模块化设计,通用化程度高,易于安装和维护,并带有循环指示器等特点。根据实际使用情况,一组分配器可选择不同组合的碟片数量(中间块最少为2片,最多为11片;末端块为1片),可相应选择向最多不超过24点的润滑点供油。

The PGMD-1000 distributor adopts a modular design with a high degree of generalization. It is easy to be installed and maintained; there is also a cycle indicator. Blocks can be combined based on the actual usage to form different distributors (the middle module needs at least 2 blocks and at most 11 pieces; the end module has one block). The PGMD-1000 distributor can deliver lubricant to up to 24 points.



技术参数 Technical Parameters

出口数 Number of outlets	6-24口 6-24 outlets
最大工作压力 Maximum working pressure	350bar
出口间最大压差 Maximum pressure difference between outlets	100bar
每出口排量 Displacement of each outlet	0.025cc/0.045cc/0.075cc/0.105cc
进口螺纹规格 Inlet thread	G1/8" 内螺纹 G1/8" inner thread
出口螺纹规格 Outlet thread	M10x1 (需配置出口单向阀) M10x1 (Need to be equipped with an outlet one-way valve.)
材料 Material	碳钢, 镀锌镍合金 Carbon steel, galvanized nickel alloy
工作温度 Working temperature	-40°C ~ +80°C

PG-SL-P单线注油器 PG-SL-P Single-line Injector

盘古PG-SL-P分配阀是专为高压单线润滑系统设计的,采用有模块化设计,结构紧凑,便于安装。

各出口出油量灵活可选,每组润滑点工作相互独立,个别注油点故障不会影响其他注油点的正常工作,大大提高了系统的可靠性,延长了系统的维护周期,对于要求高可靠性和难以维护的设备特别适用。



The Paguld PG-SL-P metering device is designed for use in high-pressure single-line lubrication systems, Modular design, compact structure, easy to install.

Each oil output is flexible and optional, each group of lubrication points work independently of each other, and the failure of individual oil points will not affect the normal work of other oil points, greatly improving the reliability of the system, extending the maintenance cycle of the system, especially for equipment requiring high reliability and difficult to maintain.

技术参数 Technical Parameters

出口数 Number of outlets	2-14口 2-14 outlets
最大工作压力 Maximum working pressure	350bar
每出口排量 Displacement of each outlet	0.1-0.7cc/循环 (可选) 0.1-0.7cc/ cycle (optional)
进口螺纹规格 Inlet thread	G 1/4 内螺纹 G 1/4 inner thread
出口螺纹规格 Outlet thread	M10*1内螺纹 M10*1 inner thread
材料 Material	碳钢, 镀锌镍合金 Carbon steel, galvanized nickel alloy
工作温度 Working temperature	-40°C ~ +80°C

电动补脂工具 Electric Grease Filling Tool

TP-05/TP-16电动加脂泵是以电源作为动力的加脂设备,借助直流无刷电机转动进而带动泵内柱塞运行,将润滑脂高压泵送出去。其特点是安全可靠,泵送排量大,操作简单;可加注NLGI 3#及其以下油脂。

The TP-05/ TP-16 grease filling pump is driven by electric power. With the help of the DC brushless motor, it rotates to drive the plunger in the pump and transports the grease out with high pressure. It is characterized by high safety and reliability, large displacement, and simple operation; it can deliver grease up to NLGI 3#.



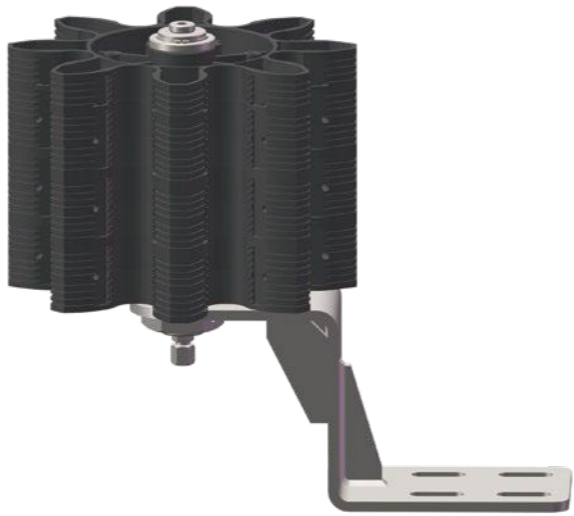
技术参数 Technical Parameters

工作电压 Operating voltage	24VDC/220VAC
电机功率 Motor power	500W
适用油桶 Grease barrels	5kg/15-20Kg标准油桶 5kg/15-20Kg standard barrel
出脂口规格 Outlet of grease specification	G1/4 inner thread
工作温度 Working temperature	-25°C ~ +80°C
防护等级 Protection class	IP54
减速比 Reduction ratio	8:1/20:1
最大排量 Maximum displacement	1.2L/分钟@泵芯x6 0.48L/分钟@泵芯x3 1.2L/minute@pump element *6 0.48L/minute@pump element *3

润滑齿轮 Lubricating Pinion

齿轮模块化设计,采用叠片式拼装结构,使得齿轮宽度灵活可选;齿轮通过内部结构实现定方向出脂,通过合理安装就可以实现润滑齿轮持续针对与之啮合面润滑,有效防止润滑脂的滴落,增加润滑效果。

Gear modular design, using laminated assembly structure, making the gear width flexible and optional; Gear through the internal structure to achieve the direction of grease, through reasonable installation can achieve continuous lubrication of the lubricating gear against the meshing surface, effectively prevent the grease dripping, increase the lubrication effect.



技术参数 Technical Parameters

齿轮模数 Module	12/14/16/18/20/22/24/25
齿轮宽度 Gear width	40mm-240mm (20整数倍即可) 40mm-240mm (Integer multiple of 20)
压力角 Pressure angle	20°
变位系数 Modification coefficient	0
齿数 Number of teeth	8
齿顶高系数 Addendum coefficient	1
工作温度 Working temperature	-40°C ~ +80°C

集油瓶 Grease Collection Bottle

集油瓶主要用于轴承内废旧油脂的收集,根据安装接口和安装空间有多种类型和规格可选;活塞式集油瓶大大增加了废油脂集中收集的便利性,避免环境污染。

The Grease Collection Bottle is mainly used for the collection of waste grease in the bearing, and there are many types and specifications to choose according to the installation interface and installation space; Piston type grease collecting bottle greatly increases the convenience of waste grease collection and avoids environmental pollution.



技术参数 Technical Parameters

螺纹规格 thread specification	M10*1/M12*1.5/M14*1.5/M16*1.5/M18*1.5/M22
集油瓶容积 volume	250mL/300mL/500mL/900mL/1000mL
集油瓶材质 Material	PE
气压平衡方式 Barometric balance	活塞式、透气套 Piston、Vent valve

PG-LC24智能控制器 PG-LC24 Intelligent Controller

PG-LC24智能控制器可以保证润滑系统能够得到有效控制，配有视觉和听觉故障通知。该控制器配置数码管显示，可以可视化识别润滑系统运行状态和设定参数，快速有效的解决润滑系统问题。

该控制器可广泛适用于递进式、单线式和双线式润滑系统中。

The PG-LC24 intelligent controller can guarantee that the lubrication system is effectively controlled and provided with visual and auditory failure notifications. It is equipped with a digital display, which can visually identify the operating status and be used to set parameters, so as to quickly and effectively solve problems.

This controller is suitable for progressive, single-line, and double-line lubrication systems.



技术参数 Technical Parameters

工作电压 Working voltage	10-30VDC
工作温度 Working temperature	-15°C ~ +50°C
最大输出电流 Maximum output current	7A
报警信号最大输出电流 Maximum output current of alarm signal	3A
过载保护 Overload protection	具备过载保护 Available
防护等级 Protection class	IP54
通讯接口 Communication interface	RS232/RS485

附件产品 Fitting and Accessories



油管接头
Hose Fitting



卡套类接头
Fitting



管夹
Pipe Clamp



单密封类快插接头
Single Seal Type Quick Plug Fitting



双密封类快插接头
Double Seal Type Quick Plug Fitting



回油装置
Grease Return Device



钢丝防护套
Steel Wire Protective Sleeve

螺旋防护套
Screw Sleeve

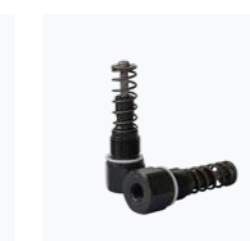
波纹管
Corrugated Pipe



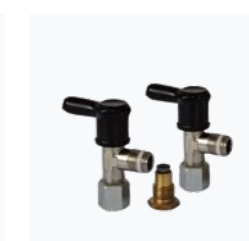
油管和尼龙管
Hose



手动黄油枪
Manual Grease Guns



润滑泵芯
Pump Element

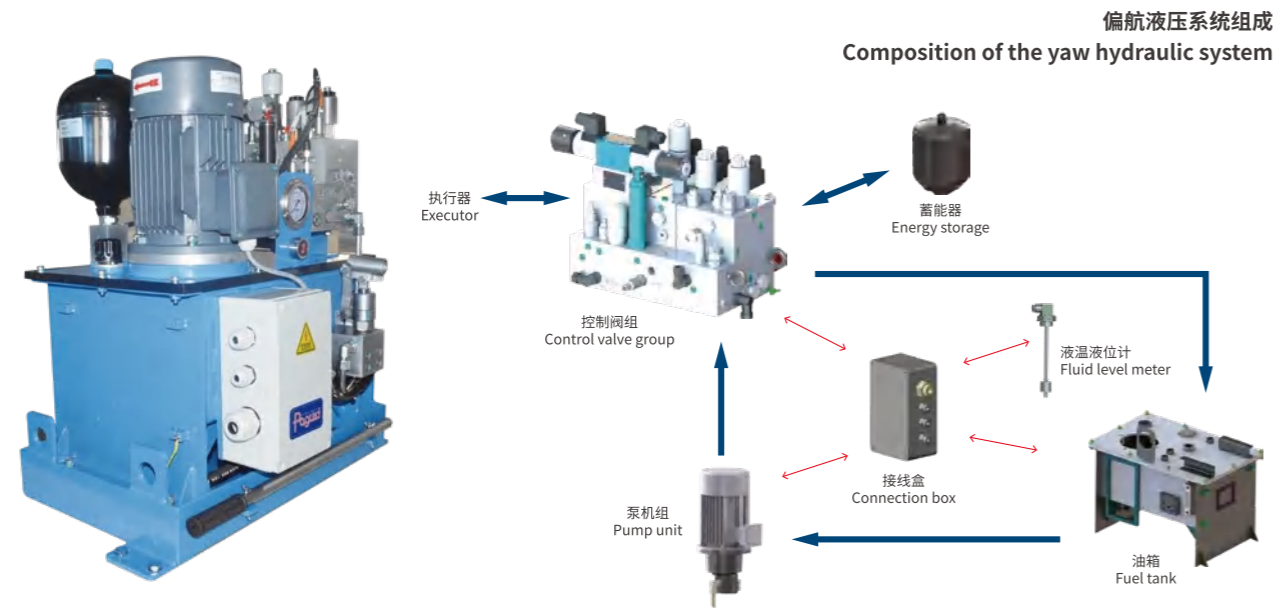


安全阀
Safety Valve



滤脂器
Grease Filter

主轴+偏航液压站 Main Shaft + Yaw Brake Hydraulic Station



功能特点:

为风力发电机组偏航制动器、发电机转子制动器、叶轮锁定销提供液压动力

- 在风机偏航时释放偏航制动器并保持一定的阻尼, 偏航结束时实现偏航制动器制动;
- 控制发电机转子制动器的制动和释放;
- 控制叶轮锁定销的锁定和释放;
- 保压性能好, 12h内压降 $\leq 5\text{bar}$;
- 防腐能力强, 油箱达到C4H级, 耐低温 -40°C ;
- 高可靠性、结构紧凑;
- 运行寿命长、低故障率、维护方便。

Functional Characteristics:

Provide hydraulic power for the wind turbine set yaw brake, generator rotor brake, and impeller locking pin

- Releases the yaw brake and maintains a certain damping during the fan yaw, and achieves yaw brake braking at the end of the yaw;
- Controls the brake and release of the generator rotor brake;
- Controls the locking and release of the impeller locking pin;
- Good pressure protection performance, internal pressure drop $\leq 5\text{bar}$ in 12h;
- Strong corrosion resistance, fuel tank reaches C4H, low temperature resistance -40°C ;
- High reliability and compact structure;
- Long operating life, low failure rate and convenient maintenance.

风电液压变桨系统 Pitch Systems in Wind Turbines

为适应风电市场, 公司开发多款液压变桨泵站, 为风电系统的偏航刹车、锁销、转子制动、变桨油缸等提供清洁、可靠、稳定的动力源, 功率密度大, 保压性能好, 流量输出稳定。

To adapt to the wind industry market, we has developed a variety of hydraulic pitch systems to provide clean, reliable and stable power sources, witch supply the power for the brake, rotorlock, and pitch cylinder. The power density is high and good pressure retention performance, and stable flow output.

主要优点:

- 适应严苛的风电温度使用环境—高温、低温环境;
- 适合恶劣的环境—海上, 沙漠, 高海拔地区; 防腐, 防尘等级要求严苛;
- 适应高频率周期性反复运动; 噪音小, 匹配稳压蓄能器, 运行平稳;
- 适应风电机舱空间要求, 体积小, 设计紧凑, 可定制化程度高;
- 适应风电长寿命, 高可靠性, 易维护等特点。

Main Advantage:

- Adapt to harsh wind power environment- good performance in high temperature and low temperature ;
- Suitable for harsh environments-offshore, desert, and high-altitude areas; strict anti-corrosion and dust-proof levels are required;
- Adapt to high-frequency periodic repetitive motion; low noise, matching with stabilized accumulator, stable operation;
- Adapt to the space requirements of the wind turbine cell, small size, compact design, and high degree of customization;
- Adapt to the characteristics of long life, high reliability and easy maintenance of wind power.



液压变桨 Hydraulic Pitch Systems

盘古整套液压变桨系统,高效率,高可靠性的液压泵站,匹配定制化控制阀组、执行元件采用带有位置反馈功能的专用油缸,配合电器系统,共同构成完整的液压变桨系统,能实现对桨片的精确角度控制,使风机在各种工况都能获得最佳性能。

Paguld manufactures a complete set of hydraulic pitch systems, which include high-efficiency, high-reliability hydraulic pump station; matching customized pitch block, Pitch cylinders with position feedback function, with an electrical systems, form a complete hydraulic pitch system. It can realize the precise angle control of the blades, so that the turbine can obtain the best performance in various working conditions.

产品特点:

- 响应速度快、可靠性高是我司液压系统的最大亮点;
- 功率密度大,但更小的尺寸设计,可输出更大扭矩,对大型机组来说,液压的变桨驱动能力是最优选择;
- 较少的机械零部件,方便检修、诊断和维护保养;
- 液压油具有更好的弹性,因而缓冲性能更佳;
- 紧急停机后可以快速重新启动;
- 陆上/海上风机的多种适应场景;
- 全寿命周期成本低,维护周期长,无需变速机构。

Product Features:

- Fast response speed and high reliability;
- The power density is large, but the smaller size design, can output more torque.
For large-scale units, the hydraulic pitch drive capability is the best choice;
- Fewer mechanical parts, convenient for overhaul, diagnosis and maintenance;
- Hydraulic oil has better elasticity, so the cushioning performance is better;
- It can be restarted quickly after emergency shutdown;
- Various adaptation scenarios for onshore/offshore wind turbines;
- The whole life cycle cost is low, the maintenance cycle is long, and the speed change mechanism is not required.

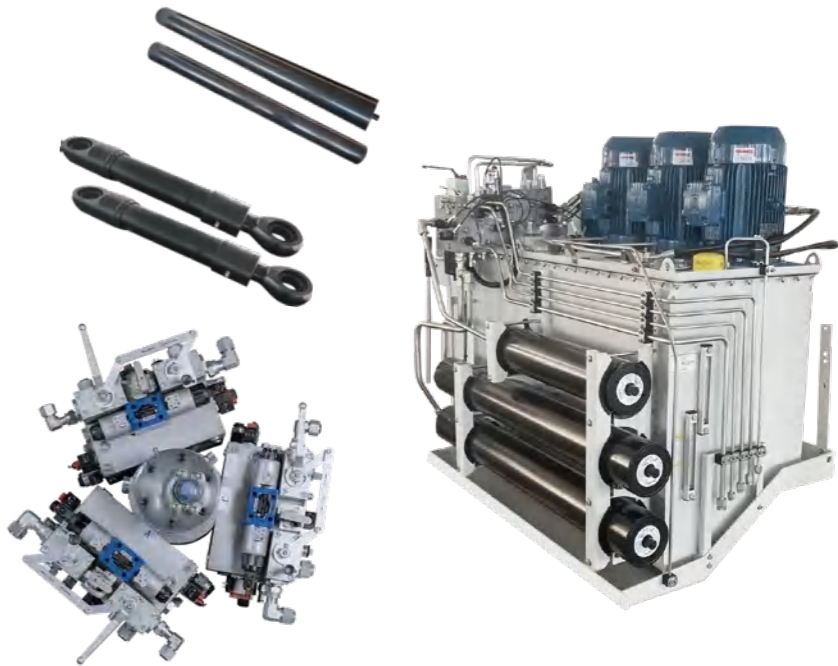
变桨系统的基本要求

What is a good pitch system?

- 可靠性和运行效率高
- 故障安全保护紧急停机
- 功率密度高
- 精准的变桨和强大的扭矩
- 变桨速度满足要求
- 针对强风的过载保护
- High reliability and availability
- Fail safe emergency stop
- High power density
- Accuracy and torque
- Speed in pitch operation
- Protection against high wind
- 发电效能的优化
- 最大功率的限制
- 适用于大型风机的周期性独立变桨
- 应对气候变化的挑战—高温、低温环境
- 适合恶劣的环境—海上,沙漠,高海拔地区
- 易于维护保养,低廉的总拥有成本
- Optimization of power production
- Curtailment of maximum power
- Performing cyclic pitch (large turbines)
- Climate challenges –high and low temperatures
- Rough conditions –offshore, sand, altitudes
- Easy to maintain and low Total Cost of Ownership (TCO)

液压变桨系统构成 System composition

液压站	Hydraulic power units
阀块	Manifolds
蓄能器	Accumulators
液压缸	Cylinders
液压滑环	Rotation unions
管路	Hoses and pipes
其他附件	Misc. equipment



变桨泵站 Pitch Power Package



◀ 6MW泵站 6MW Pitch Power Package

压力pressure: 280bar
流量 FLOW: 3X 24 L/MIN
电机功率 POWER: 3X11 KW
应急系统Emergency power: 11KW, 200bar
匹配散热功率Cooling systems power: 2X5KW



◀ 8MW泵站 8MW Pitch Power Package

压力pressure: 300bar
流量 FLOW: 3X 24 L/MIN
电机功率 POWER: 3X11 KW
匹配散热功率Cooling systems power: 2X5KW

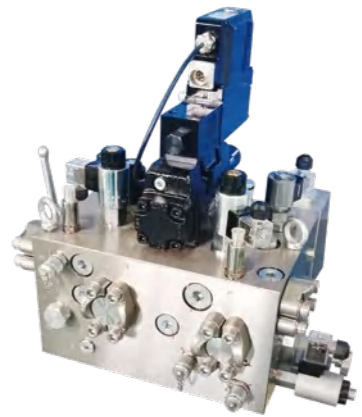
阀块总成 Pitch Manifold System

定制阀组 Custom Valve Group

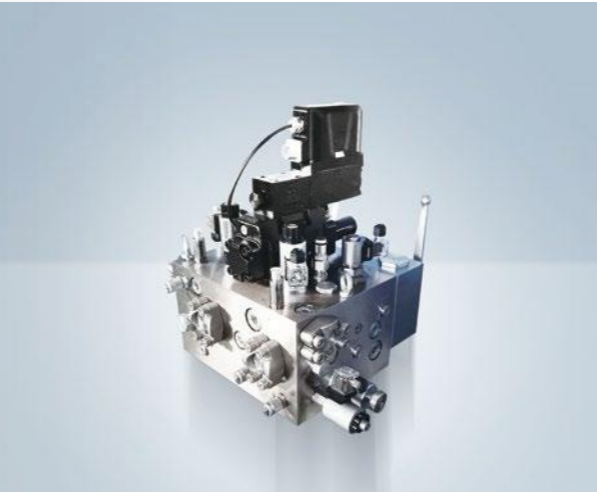


- 根据客户要求定制化解决方案
- 阀组占用空间小, 最经济的重量设计
- 整洁、高效的安装方案

变桨阀块 Pitch Manifold Block



- Customized solutions according to customer requirements
- The valve block occupies a small space and it's the most economical weight design
- Neat and efficient installation plan



液压锁销 Hydraulic Locking Pin

我们研发了风力发电设备上所使用的液压制动器, 广泛应用于风力发电机刹车制动系统。
Manufacture hydraulic brake elements, which are widely used in wind turbine braking systems.



转子锁油缸
Rotorlock cylinder

轮毂锁油缸
Rotor lock cylinder

叶片锁油缸
Pitch lock cylinder

液压系统 Hydraulic System



齿轮箱润滑系统 Gearbox lubrication system



电液控换向阀组 Electro-hydraulic directional valves



过滤阀组 Filter block



液压泵站 Hydraulic power unit

变桨油缸 Pitch Cylinder

使用环境:

- 设计温度: -40~+80°C。
- 适应IEC 61400-3-2009中规定的海上环境要求。

Use Environment:

- Design Temperature: -40~+80°C.
- Adapt to the marine environment requirements specified in IEC 61400-3-2009.



产品概述:

变桨油缸在风力发电机中是一个非常关键的执行元件, 该油缸为双作用油缸, 安装在变速箱后面, 用于调节风轮机叶片的位置, 使叶片的输入功率达到最优, 减小额定风速以上的输出功率, 起到气动制动器的作用。

我公司生产的变桨油缸具有高可靠性和长使用寿命等特点。产品设计及材质均按照DNV规范执行, 内部集成高精度位移传感器及伺服密封系统, 保证油缸的高频响应性及定位精度, 配合我公司生产的变桨系统实现风机叶片角度的准确控制。

Product Overview:

The pitch cylinder is a very critical executive element in a wind turbine. The cylinder is a double-acting cylinder, installed behind the gearbox, and used to adjust the position of the wind turbine blades to optimize the input power of the blades and reduce the rating. The output power above the wind speed acts as a pneumatic brake.

The pitch cylinder produced by our company has the characteristics of high reliability and long service life. Product design and materials are implemented in accordance with DNV specifications. The internal integrated high-precision displacement sensor and servo sealing system ensure the high frequency response and positioning accuracy of the oil cylinder, and cooperate with the pitch system produced by our company to achieve accurate control of the angle of the fan blades.

技术参数 Technical Parameters

缸径 Piston Diameter	200 mm
杆径 Rod Diameter	125 mm
行程 Stroke	890 mm
完全缩回时长度 Length when fully retracted	1401 mm
关节轴承直径 Joint bearing diameter	120 mm
大腔连接处厚度 Thickness of piston cavity joint	100 mm
小腔连接处厚度 Thickness of rod cavity joint	100 mm
设计压力 Design Pressure	350bar
油缸允许运行速度 Allowable Speed of Cylinder	600mm/s
液压介质 Hydraulic Medium	VG32

活塞式蓄能器 Piston Accumulator

产品概述:

风力发电设备上所使用的活塞式蓄能器, 广泛应用于风力发电机液压系统。

Product Overview:

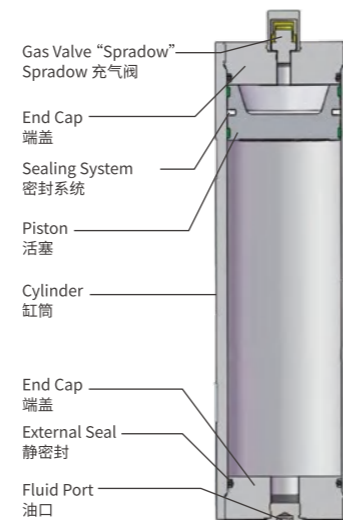
The Piston accumulator used in wind power equipment is widely used in the hydraulic system of wind power generator.

功能说明:

- 流体实际上是不可压缩的, 因此不能储存压力能;
- 气体(氮气)的可压缩性在液压蓄能器中用于储存流体。Paguld 活塞式蓄能器都是基于这个原理;
- 活塞式蓄能器由流体部分和气体部分组成, 活塞充当气密分离元件;
- 气体部分预先充入氮气;
- 流体部分连接到液压回路, 以便在压力增加和气体被压缩时活塞式蓄能器吸入流体;
- 当压力下降时, 压缩气体膨胀并迫使储存的流体进入回路。

Description Function:

- Fluids are practically incompressible and cannot therefore store pressure energy;
- The compressibility of a gas (nitrogen) is utilised in hydraulic accumulators for storing fluids.
Paguld piston accumulators are based on this principle;
- A piston accumulator consists of a fluid section and a gas section with the piston acting as a gas-tight separation element;
- The gas section is pre-charged with nitrogen;
- The fluid section is connected to the hydraulic circuit so that the piston accumulator draws in fluid when the pressure increases and the gas is compressed;
- When the pressure drops, the compressed gas expands and forces the stored fluid into the circuit.



技术参数:

- 内表面经过精密加工的壳体;
- 气侧和油侧端盖, O型圈密封;
- 浮动式钢制或铝制活塞, 重量轻, 易于加速;
- 适合特定应用领域的密封系统;
- 蓄能器工作温度范围可以达到-45-100°C, 压力可达到350Bar, 容积可达到200L;
- 蓄能器根据PED (2014/68/EU) 指南进行设计、制造和测试。

Technical Parameters:

- A cylinder with very finely machined internal surface;
- End caps on the gas side and the oil side, sealed with O-rings;
- A floating steel or aluminium piston which can easily be accelerated due to its low weight;
- A sealing system adapted to the particular field of application;
- Shell material options include alloyed steel, stainless steel, aluminium, titanium and composites;
- Accumulators operating from -45 to +100°C with pressures of up to 350 Bar and capacities of up to 200 litres;
- The accumulator is designed, manufactured and tested according to the PED (2014/68/EU) guidelines.

AC250-100系列 Series

型号 Model	容积 Volume(L)	设计压力 Design Pressure(bar)	工作温度 Working Temperature(°C)	L	D	d
AC250-100-014	1.4	250	-40~80	312	120	100
AC250-100-028	2.8	250	-40~80	490	120	100

AC350-140系列 Series

型号 Model	容积 Volume(L)	设计压力 Design Pressure(bar)	工作温度 Working Temperature(°C)	L	D	d
AC350-140-060	6.0	350	-40~80	552	160	140
AC350-140-100	10	350	-40~80	812	160	140
AC350-140-120	12	350	-40~80	942	160	140
AC350-140-150	15	350	-40~80	1136	160	140
AC350-140-160	16	350	-40~80	1200	160	140
AC350-140-200	20	350	-40~80	1460	160	140
AC350-140-250	25	350	-40~80	1795	160	140

AC350-150系列 Series

型号 Model	容积 Volume(L)	设计压力 Design Pressure(bar)	工作温度 Working Temperature(°C)	L	D	d
AC350-150-060	6.0	350	-40~80	510	170	150
AC350-150-100	10	350	-40~80	740	170	150
AC350-150-120	12	350	-40~80	850	170	150
AC350-150-150	15	350	-40~80	1020	170	150
AC350-150-160	16	350	-40~80	1078	170	150
AC350-150-200	20	350	-40~80	1302	170	150
AC350-150-250	25	350	-40~80	1585	170	150
AC350-150-299	29.9	350	-40~80	1865	170	150

