



PUMPSEEN
帕 普 生 泵 业

污水处理行业应用手册

Wastewater Treatment Industry Application Manual

输送/切割技术

Transportation/Cutting Technology



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PUMPSEEN PUMPS CO.LTD.



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Pumpseen Pumps

联系我们

地址：北京市通州区榆景东路5号

电话：010-62405101

邮箱：pumpseen@163.com

网址：www.pumpseen.com

Address: No. 5 Yujing East Road, Tongzhou District, Beijing

Phone: 010-62405101

Email: pumpseen@163.com

Website: en.pumpseen.com

企业简介

COMPANY PROFILE



帕普生，致力于成为全球一流流体输送设备供应商。

在北京设立营销中心，在上海设立研发中心，在安徽设立生产中心，并在全国各省会城市设立办事处，服务于全国各行业客户。

公司拥有完善的生产设施和研发体系，成套检测设备和泵测试平台，坚持以技术创新为动力，以前瞻性的战略眼光，对行业相关技术进行高投入的技术研发，以“创新”为使命，研发生产制造转子泵、螺杆泵、齿轮泵等系列产品。

创新
Innovate

技术
Technology

诚信
Integrity

Pumpseen is dedicated to becoming a world-class fluid transportation equipment supplier.

We have established a sales center in Beijing, an R&D center in Shanghai, a production center in Anhui, and offices in provincial capitals nationwide to serve customers across various industries.

The company boasts comprehensive production facilities and R&D systems, complete testing equipment, and a pump testing platform. We adhere to technology innovation as our driving force, investing heavily in R&D with forward-looking strategic vision, and manufacture a series of products including rotor pumps, screw pumps, and gear pumps.

21 世纪初，帕普生团队将转子泵相关技术引入中国，助力了转子泵在中国工业行业应用的新时代。近 10 年来，帕普生基于庞大的客户应用基础和对转子泵相关技术的深刻理解和掌握，持续加大创新力度，通过严把研发质量关，严把物料采购关，严把生产过程关，严把产品放行关，严把售后服务关，确保产品合格且高品质出厂。在高粘度，高温，高磨损性介质输送的相关技术领域不断攻坚，特别是耐磨损技术和机械密封技术不断突破，产品使用寿命延长，性能大幅提升。

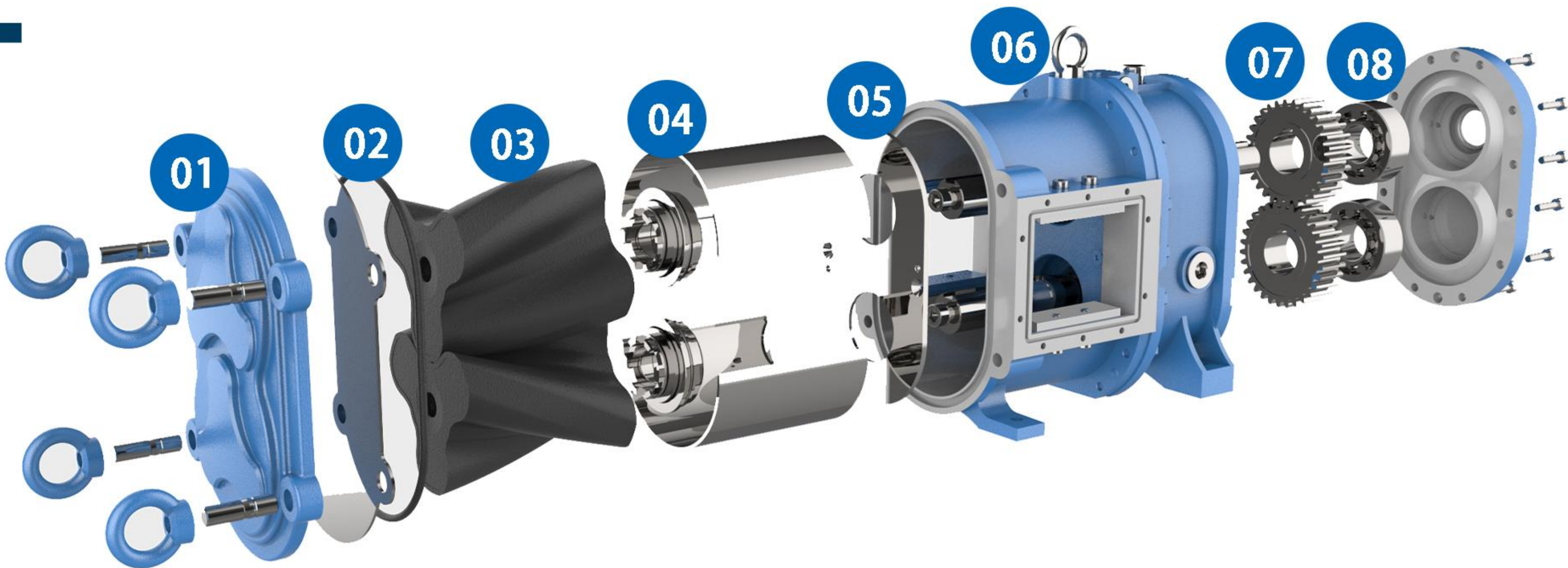
帕普生，专注为客户提供流体输送解决方案。我们在流体输送领域深耕细作，为客户提供定制化解决方案，为企业打造良好的合作体验，服务全球用户，助力客户成就未来。

In the early 21st century, the Pumpseen team introduced rotor pump technology to China, ushering in a new era for rotor pump applications in Chinese industry. Over the past decade, leveraging a vast customer application base and a profound understanding of rotor pump technology, Pumpseen has continuously intensified innovation. By strictly controlling R&D quality, material procurement, production processes, product release, and after-sales service, we ensure that products are of high quality and pass stringent standards. In the field of high-viscosity, high-temperature, and high-wear media transportation, we continuously tackle challenges, particularly in wear-resistant technology and mechanical seal technology, extending product life and significantly improving performance.

Pumpseen focuses on providing fluid transportation solutions for customers. We deeply cultivate the fluid transportation field, offering customized solutions and excellent cooperation experiences to enterprises, serving global users and helping customers achieve future success.

输送技术 Transportation Technology

帕普生转子泵



帕普生转子泵 Pumpseen Rotor Pump

帕普生转子泵，又称凸轮泵，是容积式泵家族里一个非常重要的角色。泵结构紧凑，占地面积小，广泛应用于多种行业工况，用于输送高含固率，高磨损，高粘度的介质。此外，转子泵具有较高的自吸能力，正反可逆的输送特点，流量大小与转速成正比的线性特性，转子的材质类型及泵的安装形式非常多样化，能满足多种需求。

Pumpseen rotor pumps, also known as lobe pumps, are a vital part of the positive displacement pump family. These pumps are compact, occupy a small footprint, and are widely used in various industries to transport high solid content, high-wear, and high-viscosity media. Additionally, rotor pumps feature high self-priming capability, reversible flow, and a linear relationship between flow rate and rotational speed. The material types and installation forms of the rotors are highly diverse, meeting a wide range of requirements.

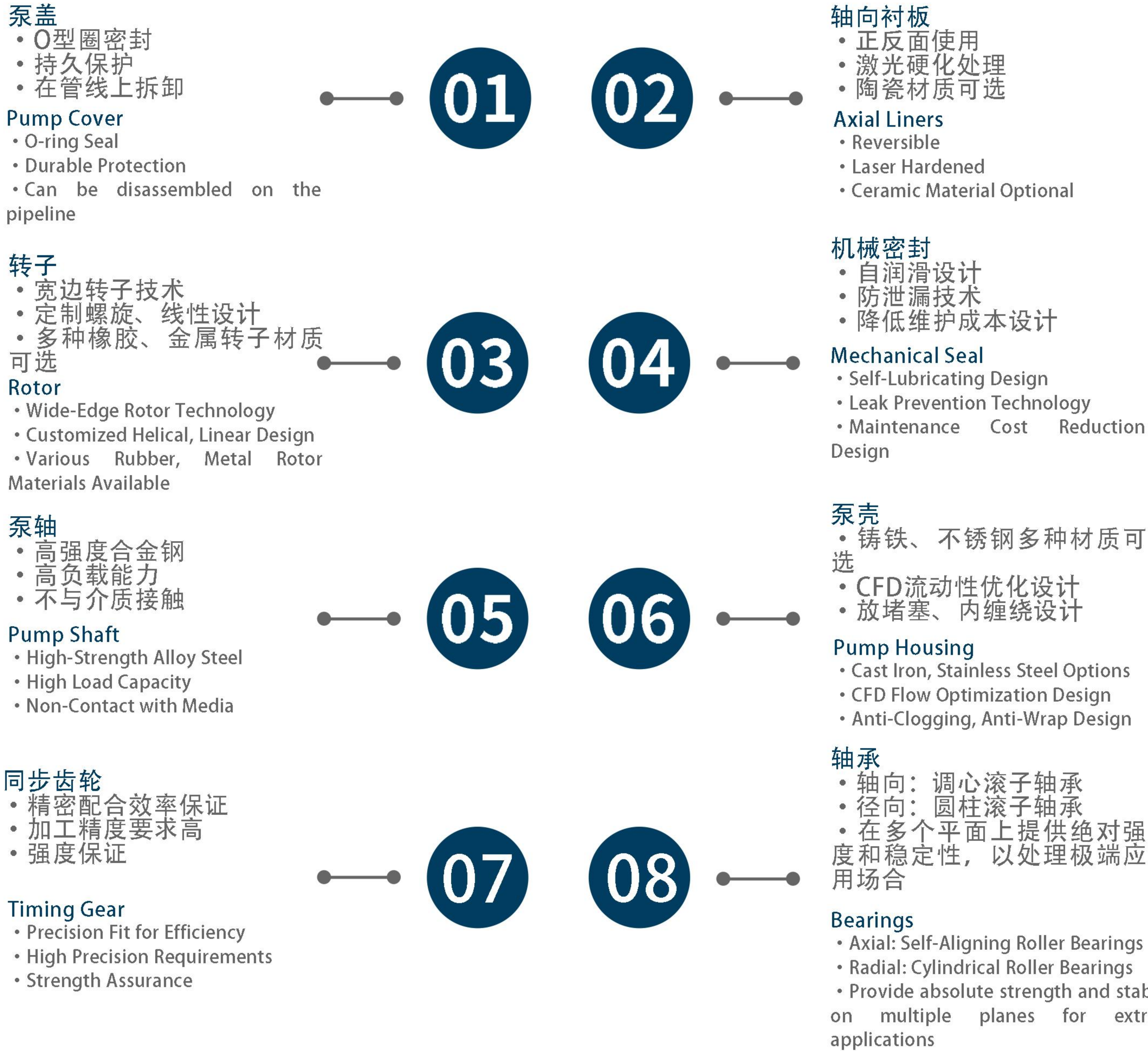
技术优势

- 宽边转子设计，多种材质、形式转子可选，满足不同的工艺要求
- 强自吸能力，启动无需灌液
- 结构对称，可正反双向运转，只需改变驱动旋转方向，即可改变输送方向
- 内衬陶瓷/不锈钢衬板，耐磨损、耐腐蚀
- 维修便捷，无需拆卸管路，减少停机维护时间及人力成本
- 多样化法兰连接形式、灵活的安装形式及管道连接设
- 流量与转速成正比关系，几乎不随压力变化，通过改变驱动转速，即可实现流量任意调节；
- 具有低脉动，低剪切，低扰动的输送特性，可输送对剪切敏感的介质；
- 转子抗纤维缠绕，不会堵死。

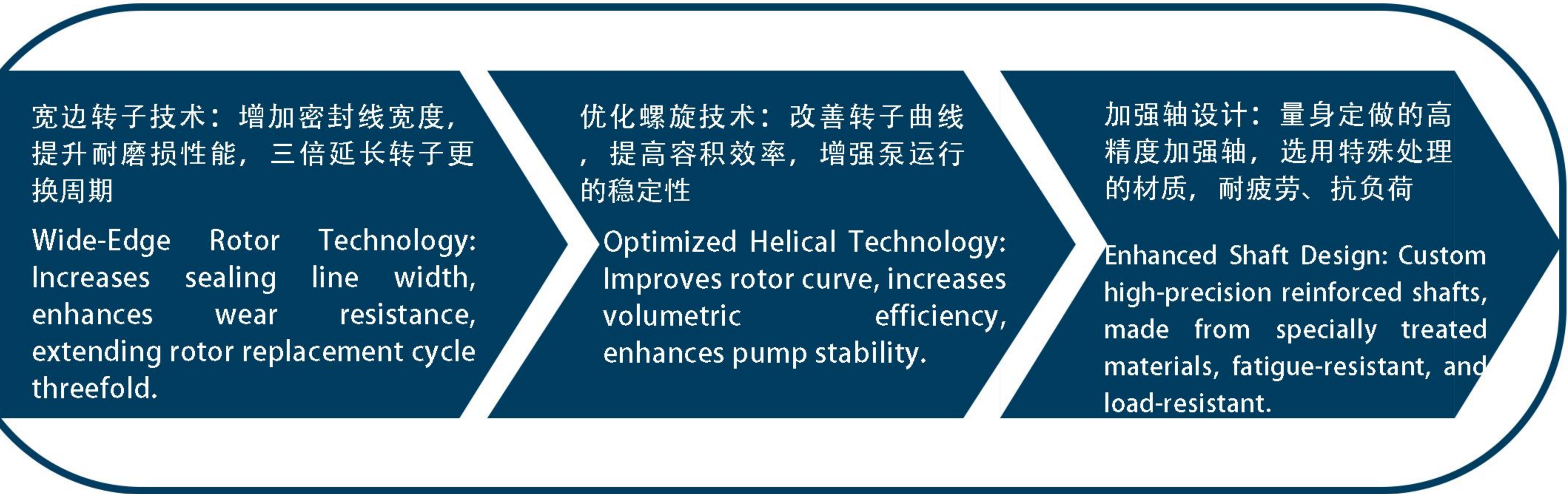
Technical Advantages

- Wide-Edge Rotor Design: Various materials and forms of rotors available to meet different process requirements.
- Strong Self-Priming Ability: No need for liquid filling to start.
- Symmetrical Structure: Allows for bi-directional operation by changing the drive rotation direction.
- Ceramic/Stainless Steel Liners: Wear-resistant and corrosion-resistant.
- Convenient Maintenance: No need to dismantle pipelines, reducing downtime and labor costs.
- Diverse Flange Connection Forms: Flexible installation and pipeline connection design.
- Proportional Flow Rate and Rotational Speed: Flow rate can be adjusted by changing the drive speed, almost unaffected by pressure changes.
- Low Pulsation, Low Shear, Low Disturbance: Suitable for transporting shear-sensitive media.
- Anti-Fiber Wrap Rotor: Prevents clogging.

结构配置 Structural Configuration



性能优势 Performance Advantages

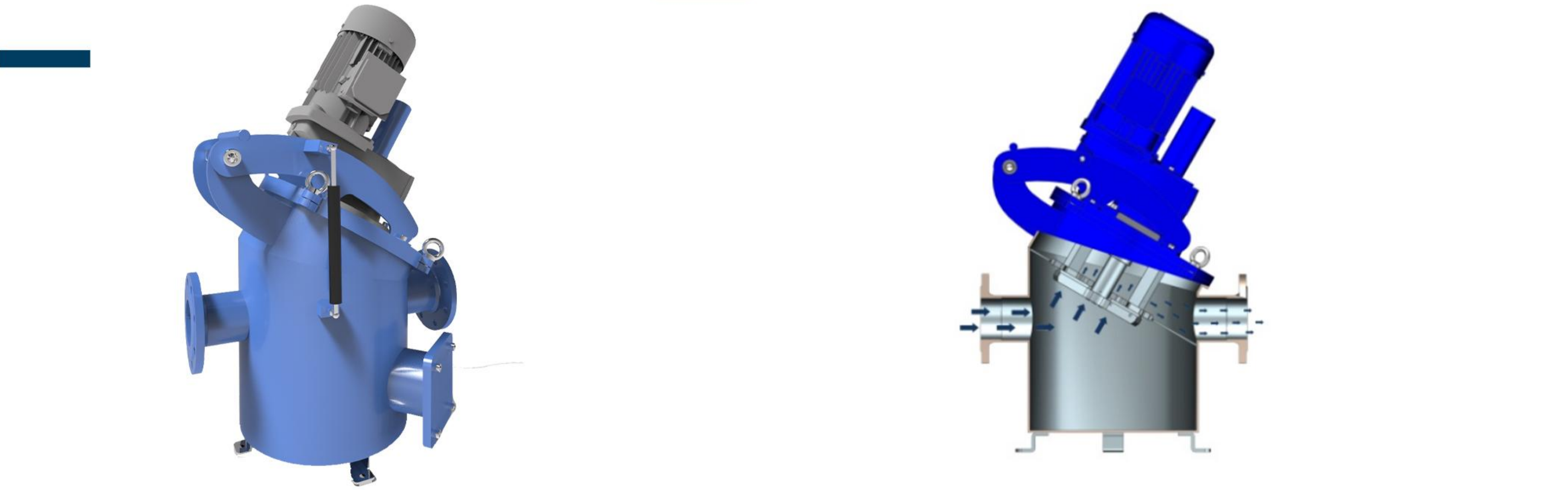


切割破碎技术

Cutting and Crushing Technology

帕普生切割破碎机

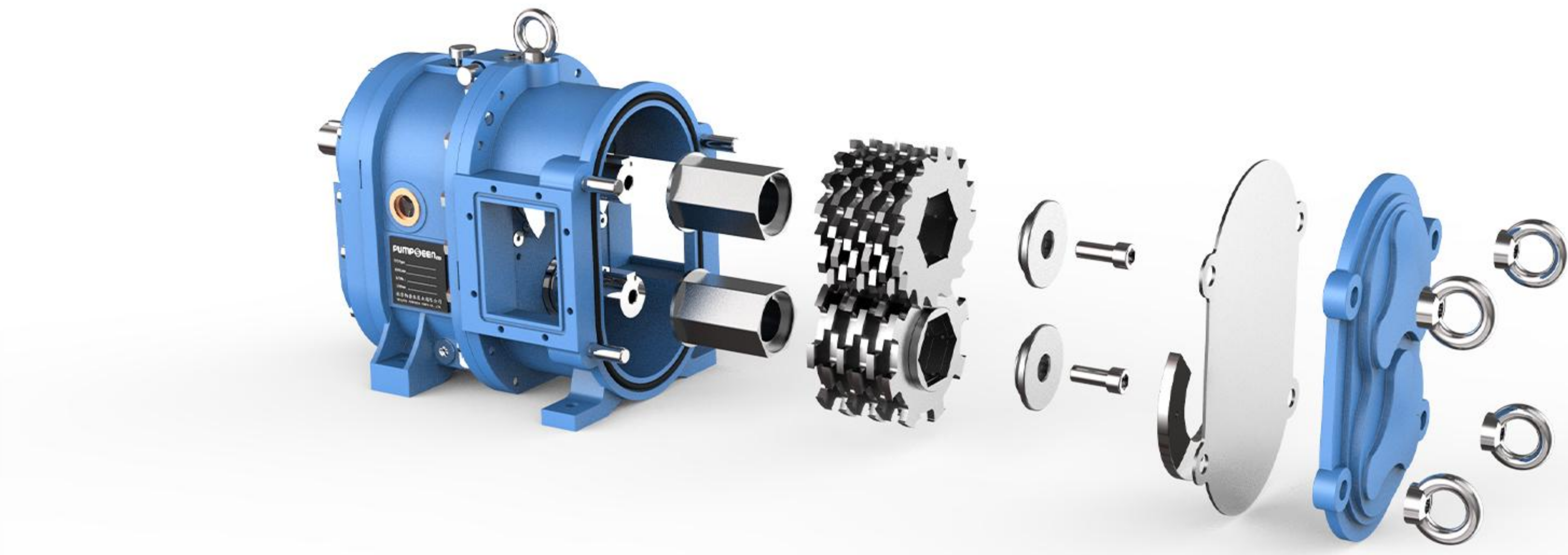
Pumpseen Crusher



帕普生破碎机用于破碎介质中的固体或纤维组分。有效保护泵和其他工艺设备，提高系统的可行性，延长设备寿命。破碎效果取决于处理量、转速以及刀盘设计。这些参数可以根据不同的工艺要求进行计算选型设计。帕普生破碎机广泛应用于污水、农业、建筑、食品饮料、废弃物处理等领域。

Pumpseen crushers are used to break solid or fibrous components in media. They effectively protect pumps and other process equipment, improve system viability, and extend equipment lifespan. Crushing effectiveness depends on throughput, speed, and cutter design. These parameters can be calculated and designed according to different process requirements. Pumpseen crushers are widely used in wastewater, agriculture, construction, food and beverage, and waste treatment industries.

- 多孔切盘型式
 - 重物收集箱
 - 流量最大达680m³/h
 - 不同的切盘及转速决定了不同的粉碎程度
 - 长服务寿命
 - 在线维护（MOS）
 - 低生命周期成本
 - 刀片调节通过在外部手动调整
 - 结构紧凑，低占地空间
 - 高度粉碎
 - 高密封安全性得益于缓冲腔设计
 - 管道式设计
 - 减速电机驱动
 - 切盘正反面可用
 - 选择不同的切盘-不同的粉碎效果
- Multi-Hole Cutter Discs
 - Heavy-Duty Collection Box
 - Maximum Flow Rate of 680 m³/h
 - Different Cutter Discs and Speeds for Various Crushing Degrees
 - Long Service Life
 - Online Maintenance (MOS)
 - Low Lifecycle Cost
 - Manual Adjustment of Blades from the Exterior
 - Compact Structure, Small Footprint
 - High Degree of Crushing
 - High Seal Security Thanks to Buffer Chamber Design
 - Pipeline Design
 - Driven by Reduction Motor
 - Cutter Discs Usable on Both Sides
 - Different Cutter Discs for Different Crushing Effects



帕普生切割机是一种高性能、被广泛使用的双轴式粉碎机器。其主要剪切部件由安装在两个独立轴上的两组切割刀片组成。独立工作的双轴是基于帕普生转子泵的设计理念而设计的。上下两轴上的刀片的形状不同，通过轴的旋转，刀片相互咬合，对介质进行剪切和破碎。

同时，上下两轴不同旋转速度保证了粉碎结果的最佳化，防止纺织纤维材料包裹于剪切叶片/切削刀上。

快速开启的端盖设计使得内部所有过流部件可以方便快捷的维护。

Pumpseen shredders are high-performance, widely used dual-axis shredders. The main cutting components are two sets of cutting blades mounted on two separate shafts. The dual-axis design is based on Pumpseen rotor pump principles. The blade shapes on the upper and lower shafts differ, and the blades interlock as the shafts rotate, cutting and crushing the medium.

Simultaneously, the different rotational speeds of the upper and lower shafts optimize the crushing result and prevent textile fibers from wrapping around the shear blades/cutting knives.

The quick-release end cap design facilitates easy and quick maintenance of all internal overcurrent components.



帕普生切割机可直接连接在转子泵进口端管道上。切割介质中的纤维、颗粒、毛发等杂物，确保大块固体被粉碎至可用帕普生转子泵输送的尺寸，有效的防止管路堵塞、缠绕或损坏后续设备。

Papusen shredders can be directly connected to the inlet end pipeline of rotor pumps. They cut fibers, particles, hair, and other debris in the medium, ensuring that large solids are crushed to sizes transportable by Papusen rotor pumps, effectively preventing pipeline blockages, entanglements, or damage to subsequent equipment.

污水处理

WASTEWATER TREATMEN

生活污水
Domestic Sewage



工业污水
Industrial Sewage



商业污水
Commercial Sewage



市政污水
Municipal Sewage

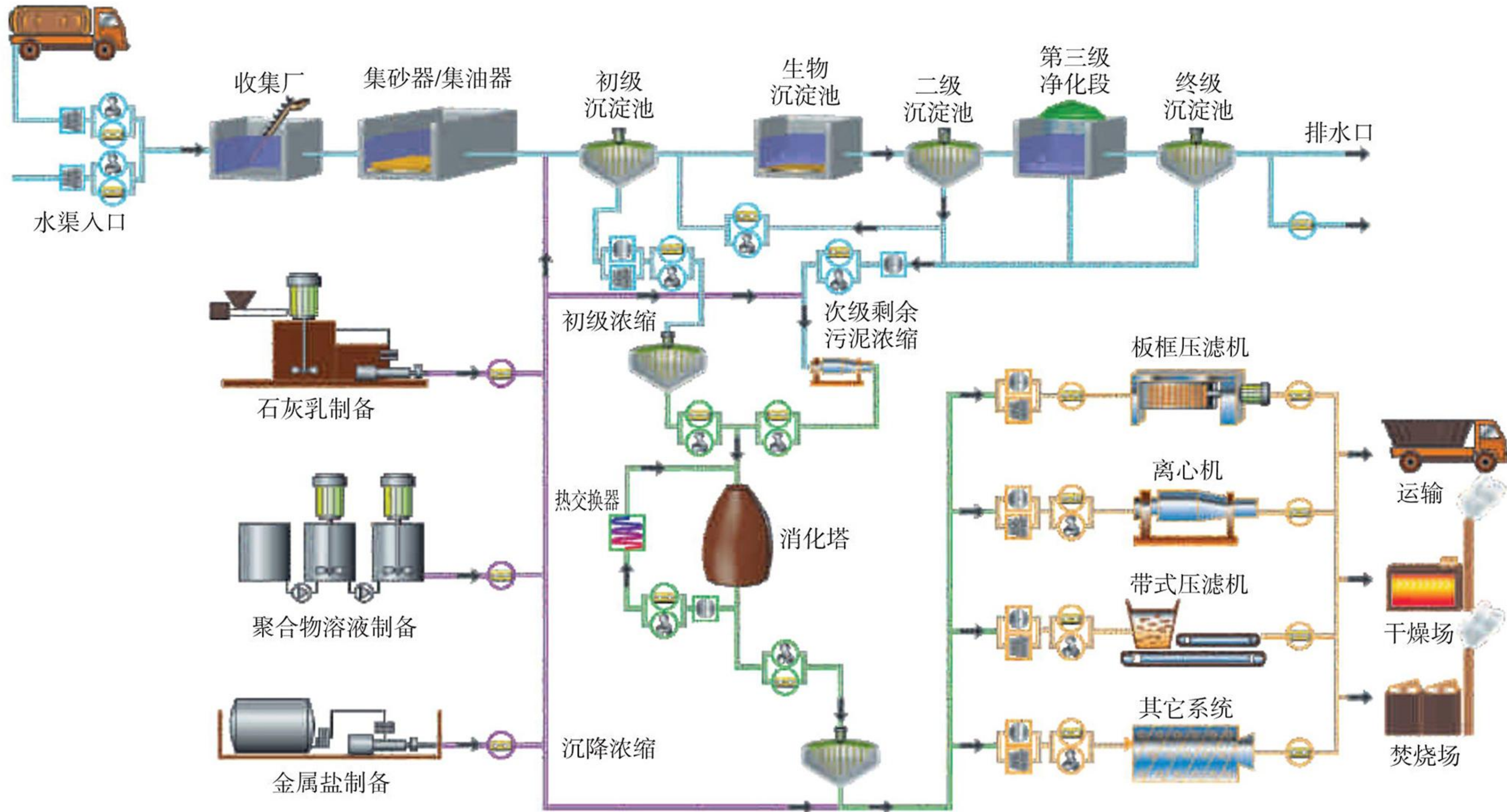


污水处理是利用一定的技术方法，将污水所含的有机污染物、固体悬浮物、氨氮、磷、细菌等污染物分离或将其转化为无害物质，从而使污水得到净化的过程。

近年来，随着我国工业化、城镇化进程不断推进，社会经济得到飞速发展，但随之而来的污染问题也成为亟待解决的重要问题，污水处理已日渐成为经济发展和水资源保护不可或缺的组成部分。因此，大力发展污水处理技术和产业化水平，是防止水体污染、缓解水资源短缺的重要途径。今后一段时间，依据依照相关法律法规，与生态环境质量密切相关的污水处理行业还将得到进一步的发展。

Wastewater treatment is the process of using certain technical methods to separate or convert organic pollutants, solid suspensions, ammonia nitrogen, phosphorus, bacteria, and other pollutants in sewage into harmless substances, thereby purifying the sewage.

In recent years, with the continuous advancement of industrialization and urbanization in China, social and economic development has accelerated, but the accompanying pollution problems have become urgent issues to address. Wastewater treatment has gradually become an indispensable part of economic development and water resource protection. Therefore, vigorously developing wastewater treatment technology and industrialization is a crucial way to prevent water pollution and alleviate water resource shortages. In the coming period, according to relevant environmental laws and regulations, the wastewater treatment industry, which is closely related to ecological environment quality, will continue to develop further.



转子泵在污水处理行业的应用

转子泵是一种新型的污水污泥输送泵，在污水处理厂，传统都采用了螺杆泵来输送污水污泥，相比单螺杆泵，转子泵具有占地空间小，维护简单，备件成本低，能耗低等显著优势。此外，转子泵还具有强大的自吸能力及正反可逆运转的特点，用在膜处理工艺中作为膜抽吸泵。转子泵在污水领域应用非常广泛，从初沉池-曝气池-二沉池-浓缩池-消化池到脱水机供料，再到最后的脱水后的干泥输送，几乎每个工艺段都可以使用转子泵来输送污泥污水。

Application of Rotor Pumps in the Wastewater Treatment Industry

Rotor pumps are a new type of wastewater and sludge transportation pump. In wastewater treatment plants, traditional screw pumps are commonly used to transport wastewater and sludge. Compared to single screw pumps, rotor pumps have significant advantages such as small footprint, simple maintenance, low spare parts cost, and low energy consumption. Additionally, rotor pumps have strong self-priming capability and reversible operation characteristics, making them suitable for use as membrane suction pumps in membrane treatment processes. Rotor pumps are widely used in the wastewater field, from primary sedimentation tanks, aeration tanks, secondary sedimentation tanks, concentration tanks, digestion tanks, to dewatering machine feeding, and finally to the transportation of dewatered dry sludge.

行业应用

INDUSTRY APPLICATION

转子泵在污水处理行业应用的特点及优势

Application of Rotor Pumps in the Wastewater Treatment Industry: Characteristics and Advantages

- 1.结构紧凑，安装占地面积小。
- 2.可输送磨损性高，含固率高，粘度高的介质，颗粒通过能力强。
- 3.流量与转速成正比，几乎不随压力变化，流量可调节范围大。
- 4.具有强自吸能力，标准大气压下，最大自吸高度可达8.5m以上，启动无需灌液。
- 5.低转速泵，耐磨，易损件更换周期长。所以对介质的剪切力小，脉冲小，运行平稳。
- 6.对称结构设计，可以正反双向运转。
- 7.可在线维修设计，提高维护效率。大大降低了维护停机时间及人力成本。
- 8.具有短时干运行的能力，由于泵机密封浸泡在充满轻质润滑油的缓冲隔离腔内，所以泵可适应短时干运行的状态，泵的主要部件转子、机械密封不会因为摩擦升温导致损坏。同时缓冲隔离腔还具有防止介质进入齿轮腔及监测机械密封是否失效的功能。



1. Compact structure and small installation area.
2. It can transport media with high wear resistance, high solid content, high viscosity, and strong particle passing ability.
3. The flow rate is directly proportional to the speed and hardly changes with pressure, with a large adjustable range of flow rate.
4. It has strong self suction ability and can reach a maximum self suction height of over 8.5m under standard atmospheric pressure, without the need for liquid filling during startup.
5. Low speed pump, wear-resistant, with a long replacement cycle for vulnerable parts. So the shear force on the medium is small, the pulse is small, and the operation is stable.
6. Symmetric structure design, capable of bidirectional operation in both directions.
7. It can be designed for online maintenance to improve maintenance efficiency. Significantly reduces maintenance downtime and labor costs.
8. It has the ability of short-term dry operation. Due to the pump seal being immersed in a buffer isolation chamber filled with light lubricating oil, the pump can adapt to the state of short-term dry operation. The main components of the pump, such as the rotor and mechanical seal, will not be damaged due to frictional heating. At the same time, the buffer isolation chamber also has the function of preventing medium from entering the gear chamber and monitoring whether the mechanical seal is ineffective.



吸砂泵/行车吸砂泵 Sand suction pump

吸砂泵/行车吸砂泵主要用于污水厂沉沙池，可安装在行车上，利用转子泵优秀的自吸能力排出池底的沉沙。

Sand suction pump/traveling sand suction pump is mainly used for sedimentation tanks in sewage plants. It can be installed on the crane and utilizes the excellent self suction ability of the rotor pump to discharge the sediment at the bottom of the tank.



污泥输送泵 Sludge conveying pump

帕普生转子泵适用于污水处理各工艺的污泥输送，包含靠重力沉淀的稀污泥及聚集在二沉池表面的悬浮污泥，其固体的含量大约为1%-4%。

The Papusen rotary pump is suitable for sludge transportation in various sewage treatment processes, including dilute sludge settled by gravity and suspended sludge accumulated on the surface of the secondary sedimentation tank, with a solid content of approximately 1% -4%.



加药泵 Dosing pump

加药泵在市政污水主要用于输送絮凝剂（PAC、PAM）、活性炭、石灰乳等介质。

The dosing pump is mainly used in municipal sewage to transport media such as flocculants (PAC, PAM), activated carbon, lime milk, etc.



脱水机供/排料泵 Dehydrator supply/discharge pump

污水处理厂经过沉淀和浓缩以后的污泥，通过转子泵来输送至脱水机(离心式脱水，带式脱水机，或板框式压滤机)。

The sludge from the sewage treatment plant after sedimentation and concentration is transported to the dewatering machine (centrifugal dewatering, belt dewatering machine, or plate and frame filter press) through a rotor pump.



膜处理抽吸泵 Membrane treatment suction pump

转子泵位于膜池的后端，提供负压，使未处理的自来水在负压吸引的作用下流经超滤/微滤膜。

The rotor pump is located at the rear end of the membrane tank, providing negative pressure to allow untreated tap water to flow through the ultrafiltration/microfiltration membrane under the suction of negative pressure.



干泥泵 Dry mud pump

经脱水机脱泥之后的干污泥、泥饼（含固率25%左右）可用转子泵输送至污泥料斗。

The dry sludge and sludge cake (with a solid content of about 25%) after being deslimed by the dewatering machine can be transported to the sludge hopper by a rotor pump.