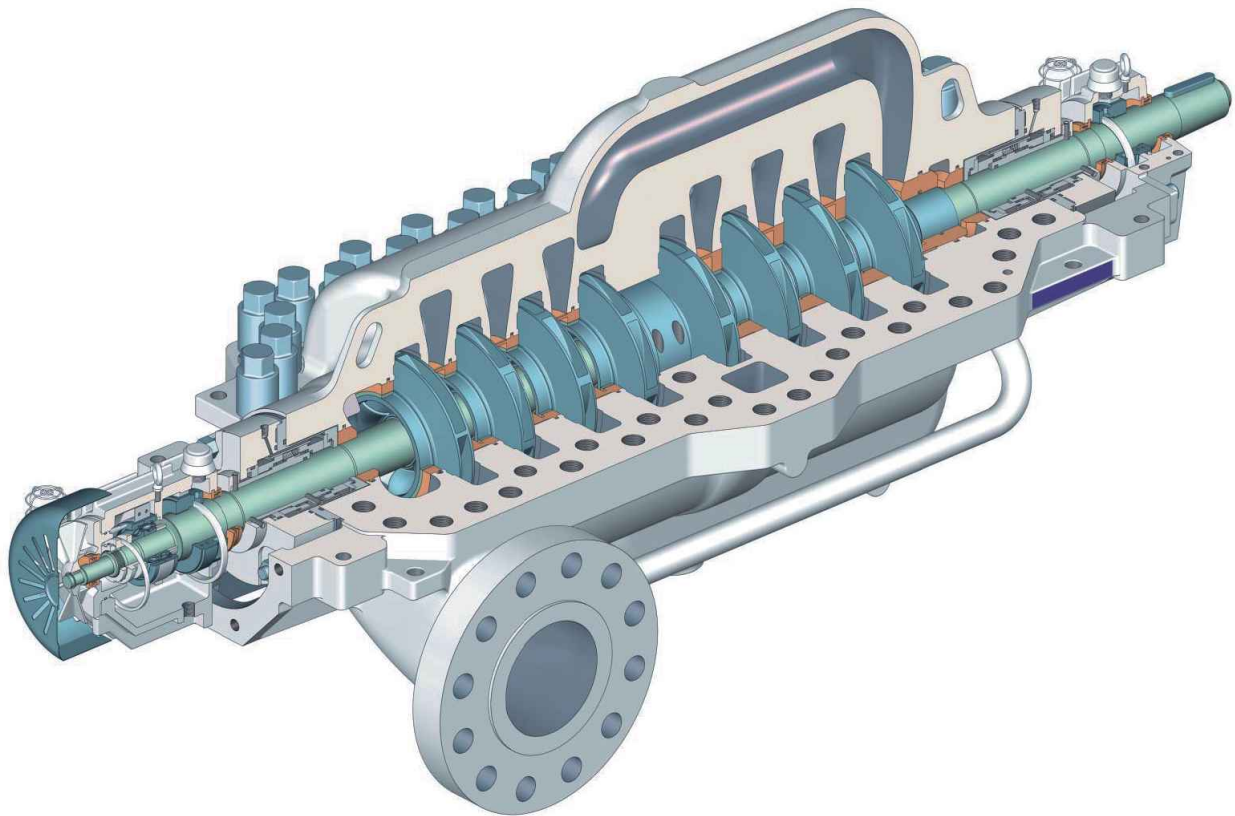


MSD 轴向剖分多级泵

MSD Axially Split Multistage Pumps
ISO 13709(API 610)





苏尔寿泵业——泵技术的领导者

苏尔寿泵业是一个为最终用户提供可靠产品和创新泵解决方案的全球领先的供应商。积极的研究和开发，详尽的工艺制造和丰富的应用经验，加上对于市场需求的全面

理解，使我们始终处于技术发展的前沿。苏尔寿遍布全球的制造和组装工厂、销售办公室、维修中心网络以及设在主要市场区域的销售代表向客户需求提供快速的反应。

苏尔寿泵业积极致力于在如下工业领域为其商业伙伴提供服务：

- 石油及天然气
- 石油化工
- 纸浆造纸
- 电力
- 食品、冶金、化肥
- 给水和水处理

Sulzer Pumps – Leader in Pump Technology

Sulzer Pumps is a leading global supplier of reliable products and innovative pumping solutions for end users. Our active research and development, detailed process and application knowledge together with a comprehensive understanding of market demands keeps us consistently at the leading edge of technical development. Our global network of modern manufacturing and packaging facilities together with sales offices, service centers and representatives located close to major markets provide fast responses to customer needs.

Sulzer Pumps is active serving business partners in the following industries:

- Oil & Gas
- Hydrocarbon Processing
- Pulp & Paper
- Power Generation
- Food, Metals & Fertilizers
- Water & Wastewater





广泛的服务领域和应用范围

石油和天然气

在石油和天然气工业领域，苏尔寿高度工程化的泵产品应用在海水注射、冷凝液抽取、消防、海水提升和原油输出上，均可提供客户化的产品。为苛刻的平台环境和通过洲际管道系统的输送提供泵解决方案。

石油化工

烃类萃取、精炼厂、石化厂和天然气厂复杂的产品工艺需要可靠的泵解决方案来满足严格的工业规范。高质量的苏尔寿泵产品始终可以满足以上行业的预期要求，这一点已经得到了广泛的认可。

电力

苏尔寿泵业为电厂提供极广范围的创新产品和服务。无论任何形式的电厂-核反应堆，燃烧化石燃料，联合循环或较小的工业电厂，我们均可提供锅炉给水、冷凝液抽取、冷却水泵和辅助泵，也可以提供用于核电站的有特殊安全要求的泵产品。

Extensive Services and Product Range



Oil and Gas

The oil and gas industry utilizes Sulzer's highly engineered pumps which can be customized for individual applications as diverse as seawater injection, condensate extraction, fire fighting, seawater lift and oil export. Pumping solutions are provided for arduous platform environments and for transportation through intercontinental pipeline systems.

Hydrocarbon Processing

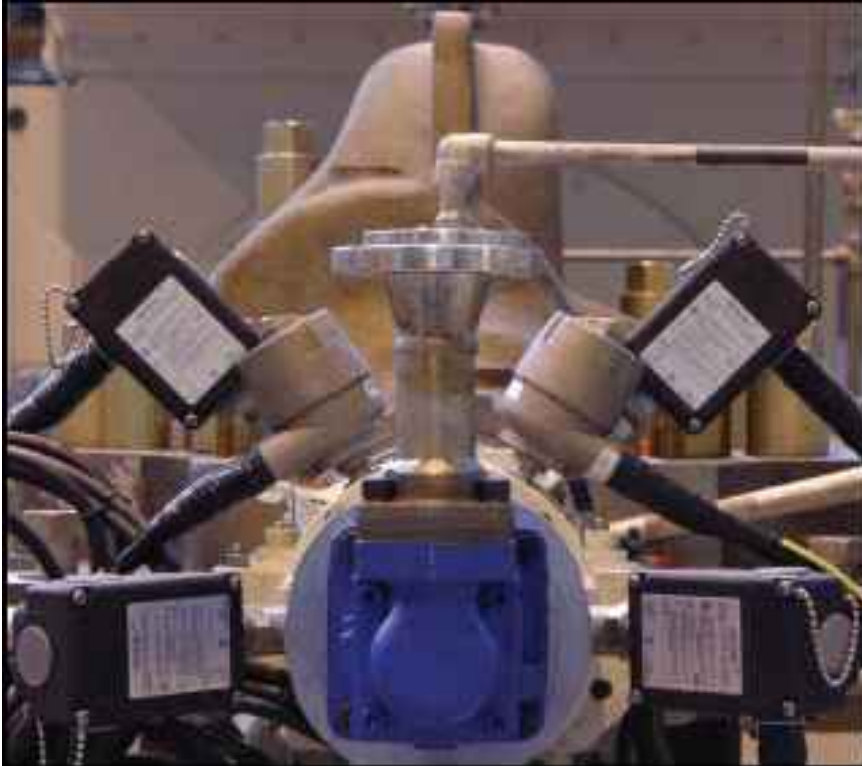
Refineries, petrochemical plants and gas plants run sophisticated production processes requiring reliable pumping solutions to meet stringent industry specifications.

Sulzer Pumps, with its high-quality product line, is known for being able to consistently meet these specifications.

Power Generation

Sulzer Pumps offers the power industry an extensive range of innovative products and services. Whatever the type of power plant - nuclear reactor, fossil-fired, combined cycle, smaller industrial power plants - we deliver boiler feed, condensate extraction, cooling water and auxiliary pumps, as well as specialized safety pumps for nuclear power plants.

工程解决方案



苏尔寿泵业可向石油和天然气工业提供创新泵解决方案。杰出的工程设计使其与众不同。

- 直接驱动- 50Hz和60Hz, 2极和4极的标准性能, 电机驱动和透平机驱动。
- 变速驱动 - 包括变频驱动, 蒸汽轮机驱动和燃气轮机驱动。
- 高速驱动- 电机带变速箱, 蒸汽轮机驱动和燃气轮机驱动。
- 低, 中, 高流量- 45 至 2,700 m³/h (200 - 12,000 usgpm)
- 高压- 最大工作压力达到300bar (4, 500 psi)
- 低比重 - 已经应用证明的可低至 0.28 SG
- 介质温度 - 30°C - +200°C (-20°F - +400°F)

MSD 泵技术

苏尔寿泵业主导MSD 型泵技术的设计, 开发和工程设计。

Engineered Solutions

The oil and gas industry turns to Sulzer Pumps for innovative pumping solutions set apart by outstanding engineering.

- Direct drive solutions - with standardized performances at 50hz and 60hz, 2 and 4 pole, motor drive, turbine drive
- Variable speed drive solutions - including variable frequency drives, steam turbine drives and gas turbine drives
- High speed solutions - motor with gear, steam turbine, gas turbine

- Low, medium and high capacity solutions - 45 to 2,700 m³/hr (200 usgpm to 12,000 usgpm)
- High pressure solutions - to 300 bar (4,500 psi) MAWP
- Low specific gravities - proven application experience as low as 0.28 SG
- Product temperatures - 30°C to +200°C (-20°F to +400°F)

MSD Technology

Sulzer leads the field in designing, developing, and engineering MSD pumping technology.



客户化的应用和标准化的材料

我们标准的产品范围可以根据用户要求进行配置，以达到满足用户最严格应用的水力和机械性能要求。

客户化配置

- 在串联和并联运行中控制扬程的上升以满足系统限制条件。
- 控制最佳效率点的位置以获得最佳的能量效率和性能稳定性。
- 高吸入比转数和低吸入比转数的

- 单吸叶轮，以及用于低NPSHa值的双吸叶轮。
- 高压和低压中间抽头设计用于二次工艺流程。
- 符合API682第2版密封标准的单端面机械密封、加压的和不加压的双端面机械密封以及干气密封。
- 最适合实际应用的球/球轴承，球/滑动轴承，滑动/止推轴承。

标准化的材料

- API610材料等级。
- S-6, S-8, A-8, D-1, D-2
- 低温材料。
- 符合NACE MR0175规范的在酸性环境中使用的材料。
- 非金属耐磨件。
- 应用在紧密运转间隙及低比重、低黏度、低润滑性介质操作条件下的PEEK和石墨材料。

Customized Applications and Standardized Materials

Our standardized product range can be configured on a custom - fit basis to match the hydraulic fit and mechanical requirements of the most exacting customer application.

Types of Custom Configurations

- Controlling of head rise to meet system limits in series and parallel operation
- Controlling of the location of best efficiency to optimize energy efficiencies and performance reliability
- Single-suction impellers with both high and low suction specific speed characteristics in addition to double-suction impellers for low NPSHA

- Low-pressure and high-pressure intermediate take-off connections for secondary process services
- Single, dual-pressurized and dual-unpressurized mechanical seals, including dry gas seals to the latest API 682 2nd edition seal standard
- Ball/ball, ball/sleeve, sleeve/pivot shoe bearings as best fit the application

Standardized Materials

- API 610 material classes
- S-5, S-6, S-8, A-8, D-1, D-2
- Low temperature materials
- Sour service materials for compliance with NACE MR 01-75)
- Non-metallic wear parts
- PEEK and Graphalloy™ allowing operation with reduced internal clearances, low product gravity, low viscosity, low lubricity



MSD 设计特点及优点 Design Features and Benefits

叶轮

- 精铸件
- 动平衡
- 单独固定
- 可选择整体叶轮口环
- 叶轮背靠背设置

Impellers

- Precision cast.
- Dynamically balanced.
- Individually secured.
- Optional integral wear ring.
- Opposed impeller design.

整体级间衬套和导流板

- 舌型固定方式
- 轴向剖分线位置设防转销

Single piece interstage bushing and flow straightener

- Tongued registration.
- Pinned for anti-rotation at split line.

低气蚀性能

- 可选择双吸叶轮

Lower NPSH performance available

- Double suction impeller option.

标准球/球轴承结构

- 可选择滑动/球轴承
- 可选择滑动/止推轴承

Ball/ball bearings standard

- Sleeve/ball bearings optional (shown).
- Sleeve/pivot shoe bearings optional.

可选择的滑动/球轴承结构

- 大规模多级数泵
- 功率超出球/球轴承应用限制

Optional sleeve/ball bearing arrangement

- Larger size multistage pumps.
- Horsepower applications beyond ball/ball bearing limits.

可选择的滑动/止推轴承结构

- 高转速泵
- 高功率泵 (2500kw)

Optional sleeve/pivot shoe bearing arrangement

- High speed pumps.
- High horsepower pumps (2500kw).

双蜗壳结构

- 水力通道精铸
- 最小水力径向力保证小的轴变形量和轴承负荷

Double volute construction

- Precision cast hydraulic passageways.
- Minimum radial thrust for less shaft deflection and less bearing loading.

可选择的级间抽头接口

- 一台泵输送多个液流

Optional interstage bleed-off connection

- Single pump handles multiple flow streams.

轴承部件

- 箱体带散热翅
- 可选择的高性能风扇
- 油环润滑
- 油雾吹扫或完全油雾润滑

Bearing assembly

- Finned housings.
- High capacity fan - optional.
- Ring oil lubrication.
- Pure or purge mist lubrication.

密封腔体

- 尺寸符合 API 682 标准
- 足够的空间用于安装串联式和双端面机械密封
- 便于维护

Seal chamber

- Compliance with API 682 dimensions.
- Space for tandem and double mechanical seals.
- Easy access for maintenance.

大壳体安装孔

- 适合于非金属耐磨件的使用而不需修改

Large case bore

- Accommodates optional non-metallic wear parts without modification.

整体节流衬套

- 用于泄压
- 尺寸变化以平衡轴向力

Single piece throttle bushing

- Designed for pressure breakdown.
- Sized to balance axial thrust.

大直径轴

- 阶梯轴便于组装
- 尺寸变化以满足转子动力学特性和功率传递要求
- 依照水力性能要求优化设计

Large diameter shaft

- Stepped for ease of assembly.
- Sized to satisfy rotor dynamics and power transmission.
- Optimized for hydraulic performance.

NEMA 锥形轴伸

- 便于联轴器拆卸

NEMA shaft taper

- For ease of coupling removal.

INPRO™ 轴承密封

- 最大程度减小润滑油的污染

INPRO™ bearing isolators

- Minimizes lubricant contamination.

其它特点

底座

- 可提供合同需要的特定底座
- 吸入和排出管在下半壳体上
- 更换转子部件不需拆卸壳体进出口的连接管路

确定的水力性能

- 优化水力性能以满足使用要求
- 可预测的水力性能

Additional features

Baseplate

- Optional job specific baseplates.
- Nozzles in case bottom half.
- Casing stays connected to inlet/outlet piping during rotating element maintenance.

Established hydraulics

- Optimum hydraulic match for application.
- Predictable hydraulic performance.

Benefits

- Optimum bearing type for specific application:
- Three bearing arrangements – ball/ball, sleeve/ball, sleeve/pivot shoe**
- Minimize cost of bearings and support systems.
- Maximize rotating element support.
- Opposed impeller layout**
- Minimum axial thrust for less bearing loading.
- Consistent axial thrust for minimum axial thrust change as wear parts wear.

轴向剖分壳体

- 转子部件平衡, 检查和安装
- 壳体水力通道检查和修正
- 备用转子更换
- 近中心线支撑
- 全压力范围设计

Axially split casing

- Rotating element balancing, inspection and installation.
- Case hydraulic passageway inspection and modification.
- Spare rotating element retrofit.
- Near centerline mount.
- Full range of design pressures.

优点

- 优化的轴承类型用于特定的应用:

三种轴承结构- 球/球, 滑动/球, 滑动/止推轴承

- 最大程度降低轴承和支撑系统的成本
- 给转子部件提供最大支持

背靠背的叶轮布置

- 最小的轴向力, 减小轴承负荷
- 在耐磨件磨损后轴向力变化最小, 保持稳定的轴向力

可更换的耐磨环

- 压紧配合和轴向销钉固定
- 可选择整体叶轮口环

Replaceable wear rings

- Secured by pressed fit and axial pin.
- Integral impeller ring option.

分半中间衬套

- 便于检查
- 便于拆卸和更换
- 尺寸变化以平衡轴向力
- 最大转子支撑和减震能力

Split center bushing

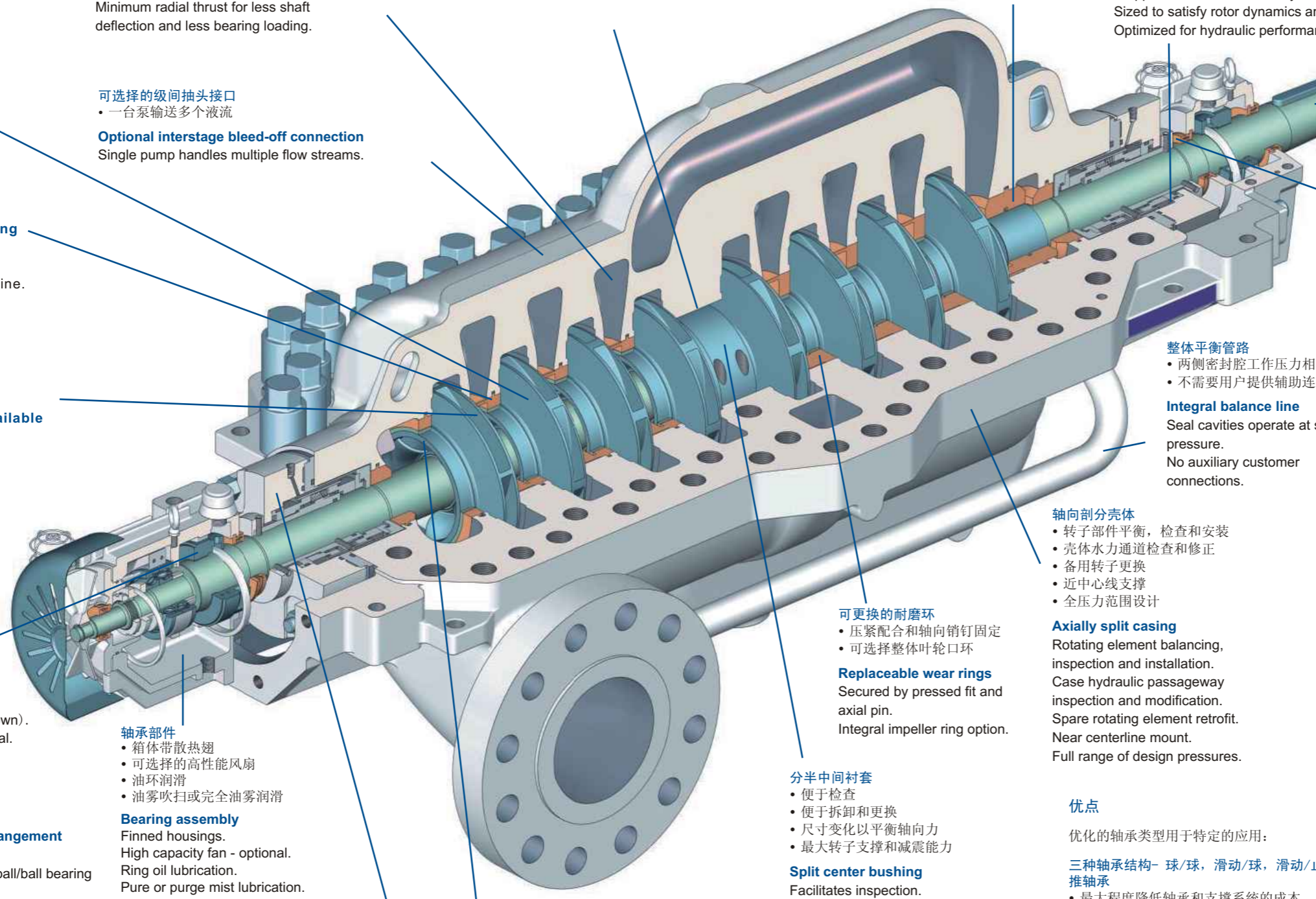
- Facilitates inspection.
- Facilitates removal and replacement.
- Sized to balance axial thrust.
- Maximum rotating element support and dampening.

壳体口环

- 舌型固定方式
- 轴向剖分线位置设防转销

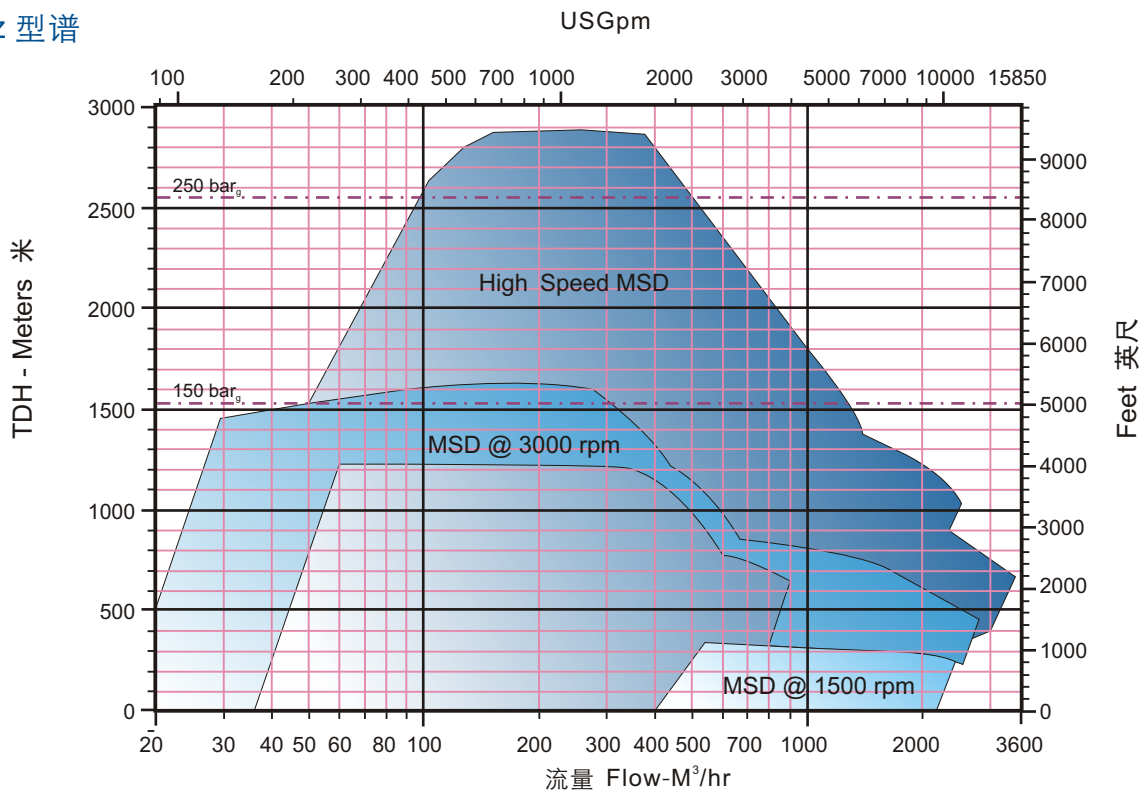
Case wear rings

- Tongued registration.
- Pinned for anti-rotation at split line.

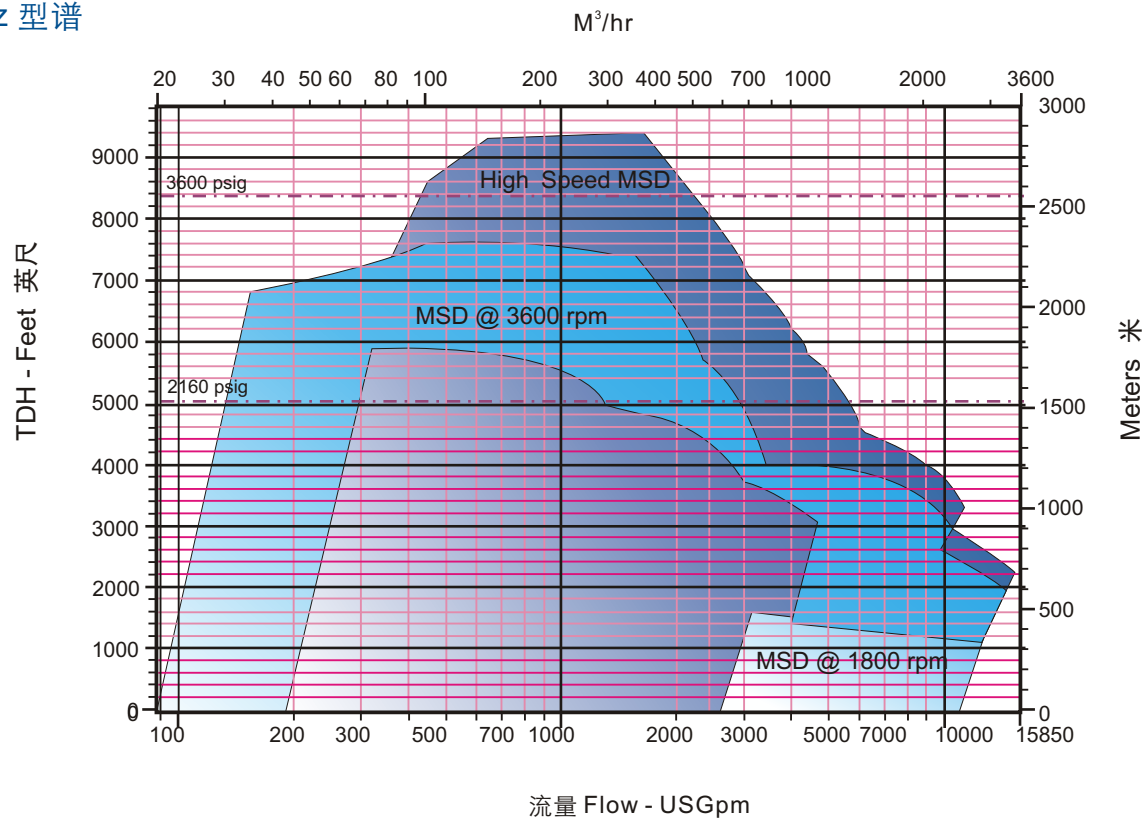


水力型谱 Hydraulic Range Maps

50Hz 型谱



60Hz 型谱





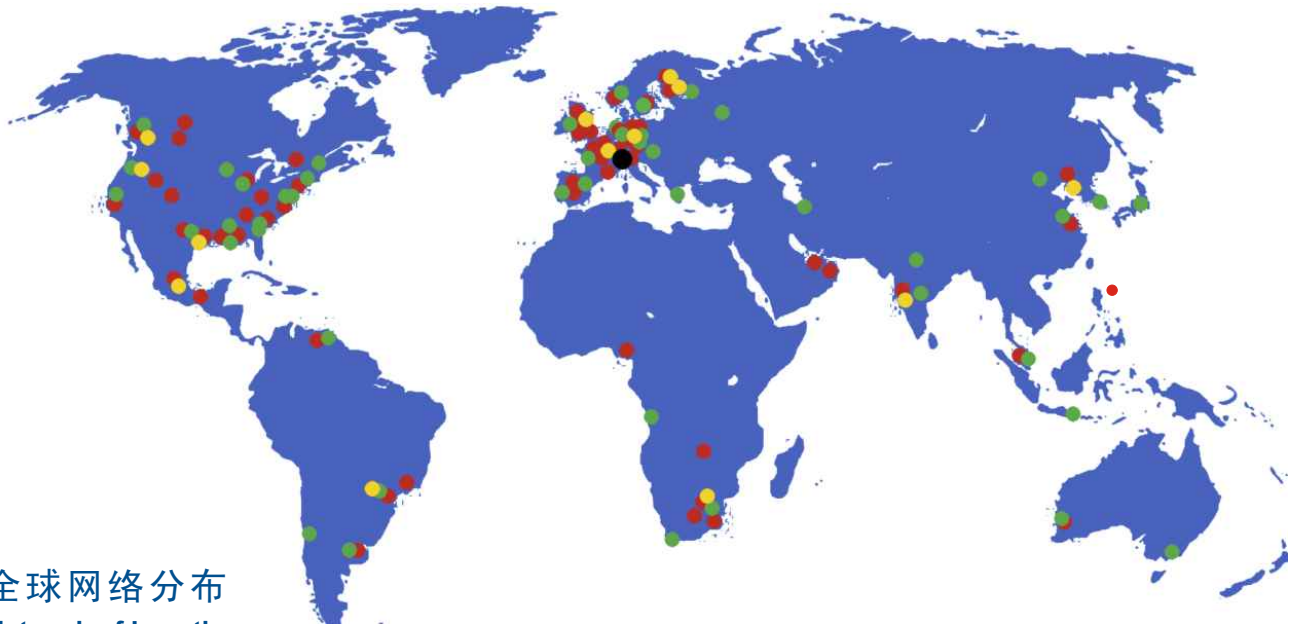
您的全球合作伙伴

苏尔寿在全球拥有20多个测试站，适合于卧式泵或立式泵、敞口坑、大流量/高能量和多相流测试。具有执行50Hz和60Hz试验的能力，在一些测试站，除常规的电动机驱动外，还可以采用柴油机、内燃机、燃气轮机驱动进行试验。苏尔寿的专长之一是对大的高能量泵进行全面联合测试，向客户提供整个泵装置的检验。这一点对于要求苛刻的海洋平台应用尤为重要，因为现场改动既费时又代价昂贵。

Your Global Partner

Sulzer operates over 20 test facilities worldwide. Our facilities are suitable for horizontal or vertical, open pit, high flow rate/high energy and multiphase testing. We have the ability to perform tests at 50 & 60Hz and, depending on the site, are able to operate using diesel engines, gas engines and gas turbines in addition to conventional electric motors.

A specialty of Sulzer is the ability to fully string test large high-energy pumps to prove the pump package as a whole to our customers. This ability is particularly important for critical offshore applications where on site correction is both expensive and time consuming.



全球网络分布

Network of Locations

- 总部
Headquarters
- 工厂
Manufacturing Facilities
- 售后服务中心
Customer Support Service Center
- 销售处
Sales



客户服务体系

通过苏尔寿分布于世界各地的50多个服务中心，我们可以为用户的泵产品和其它相关的设备提供全面的服务。我们客服部门的全球解决、概念发展和支持队伍24小时/天、7天/周地服务于当地客户。利用我们独一无二的专业知识和经验的结合，始终如一地提供对于旋转设备的高质量的增值的支持服务。另外，我们内

部的再造工程专家还可以为非苏尔寿机械设计，交付和安装高度完整性的零部件。

苏尔寿客户联盟

苏尔寿泵业的商业战略是与我们的商业伙伴紧密合作，理解他们的要求和期望，并提供最能满足这些期望的产品和服务。回顾过去10年的经历，我们的客户联盟协议是联盟战略的核心，代

表了我们与客户间长期的相互承诺，通过最有效利用苏尔寿和我们伙伴的资源以获得世界水平的泵送系统生命周期价值。苏尔寿现与世界上许多主要的石油公司均有协议，致力于解决问题和简化工作流程。

Customer Support Service

Through our worldwide network of over 50 service centers we provide our customers with a full range of services for pumps and other associated equipment. Local 24 hours a day, 7 days a week customer service backed up by our service groups' global solutions, concept development and support team. Applying our unique combination of experience and expertise, we are consistently able to deliver high quality, value added rotating equipment support. Furthermore, we can also design, deliver and fit high integrity components for non-Sulzer machinery using our in-house reengineering specialists.

Sulzer Customer Alliances

Sulzer Pumps' business strategy is simply to work closely with our partners to gain an understanding of their requirements and expectations, and provide products and services which meet those expectations better than anyone else. We can look back on 10 years of alliance experience. Our customer alliance agreements are key to our strategy and represent a mutual long term commitment for the purpose of achieving world class pumping system life cycle cost by maximizing the effectiveness of our partner's and Sulzer's resources. Sulzer currently has agreements with many of the major oil companies focusing on solving problems and simplifying work processes.



苏尔寿（大连）

大连苏尔寿泵及压缩机有限公司是瑞士苏尔寿泵业有限公司在中国的独资企业，负责苏尔寿泵产品在中国区的生产、销售和服务。

苏尔寿（大连）能提供从泵件模具开发、制造、机械加工、泵组装，到泵性能测试、喷漆、包装等成套的生产解决方案。

Sulzer (Dalian)

Sulzer (Dalian) Pumps & Compressors Ltd. is the Sulzer wholly owned entity in China. The company is fully responsible for Sulzer Pumps manufacture, sale and service in China.

Sulzer (Dalian) can provide systematic solutions for pump manufacturing process: pattern making, component machining, pump assembling, performance testing, painting and packing.



苏尔寿泵业中国售后服务网络

Sulzer Pumps CSS China Service Network

- 工厂 **Factory**
- 服务中心 **Service Center**
- 服务站 **Service Station**



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