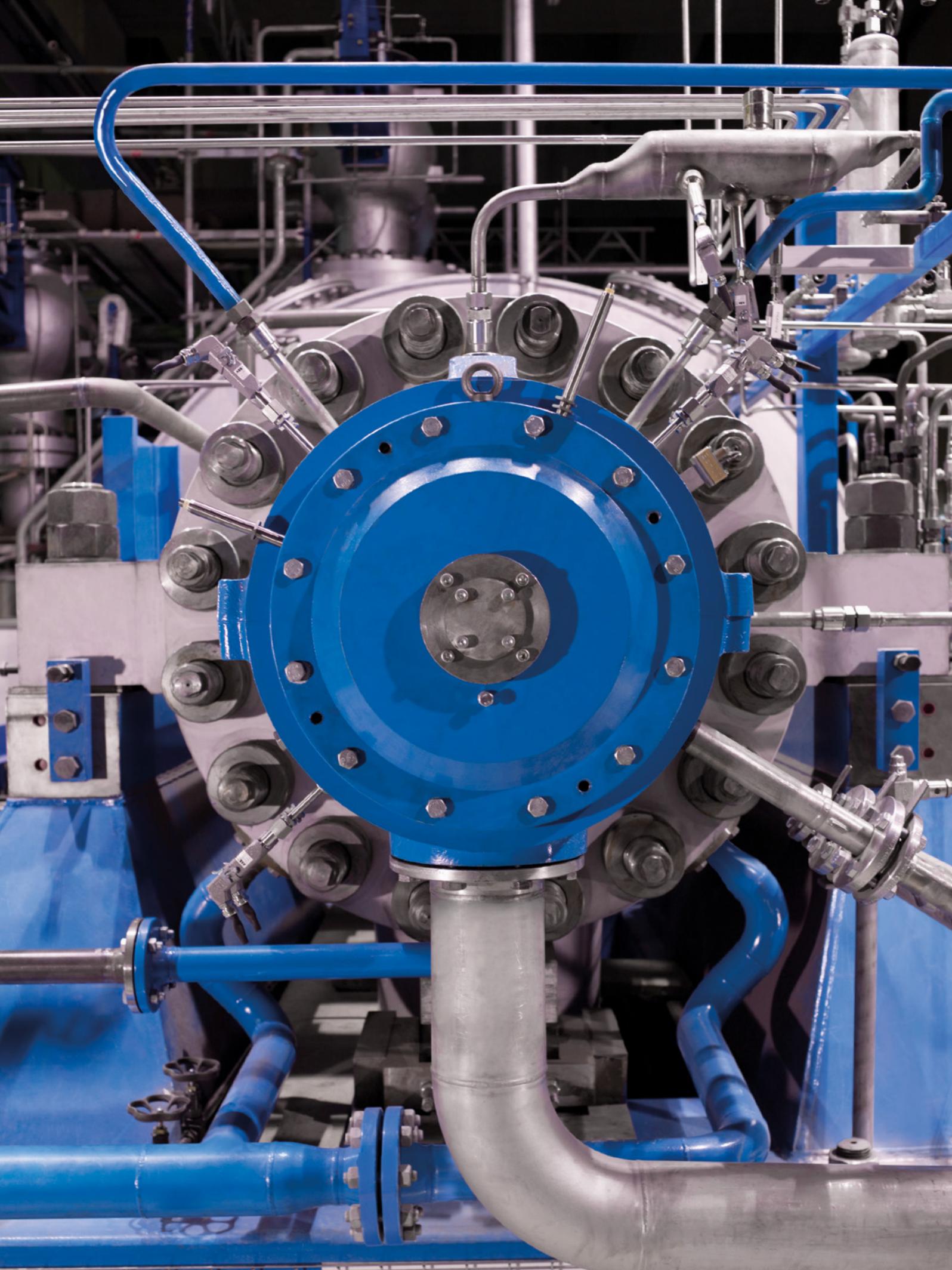


# SULZER

## Cutting-edge pumping solutions for the fossil fuel-fired power generation

We are your partner for the optimal pumping solution in coal, gas and industrial power plants. Our pumps cover applications from boiler feed to condensate extraction, and cooling water applications. [sulzer.com/fossil-power](https://www.sulzer.com/fossil-power)





# The Sulzer advantage

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Driven by the need to reduce emissions, fossil-fuel power producers are striving to more and more plant efficiency. Be it coal-fired or gas-fired power plants, Sulzer develops the right pumping solutions to answer every efficiency requirement.

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## Designed to your needs

- Sulzer works closely with its customers to develop and design the optimum pumping solution
- Because reliability of a pumping system is often dependent on its design, Sulzer's experienced team of engineers dedicates their know-how to each customer's success

## Improvement of environmental footprint

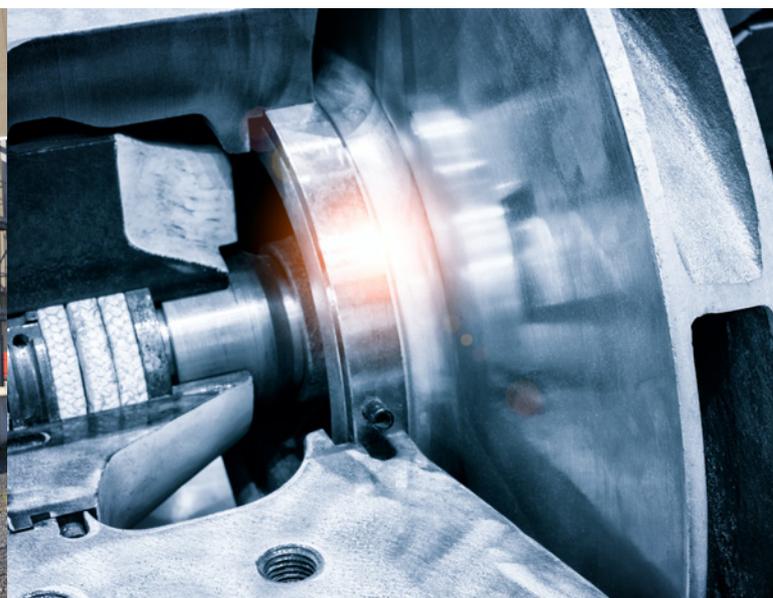
- Sulzer's high efficient pumps and services contribute to reduce overall emissions
- Sulzer aims at maintaining the balance between economic success, sound social responsibility and environmentally friendly solutions in short- and long-term decision making

## Focused on efficiency

- Selecting the right pump is one key factor for boosting operational efficiency; Sulzer is the specialist to provide efficient pumping solutions
- Thanks to leading-edge products, Sulzer contributes to improve customers' equipment efficiency

## Our footprint spans across the globe

- All Sulzer manufacturing plants design, produce and test vertical and horizontal pumps dedicated to fossil fuel-fired power application

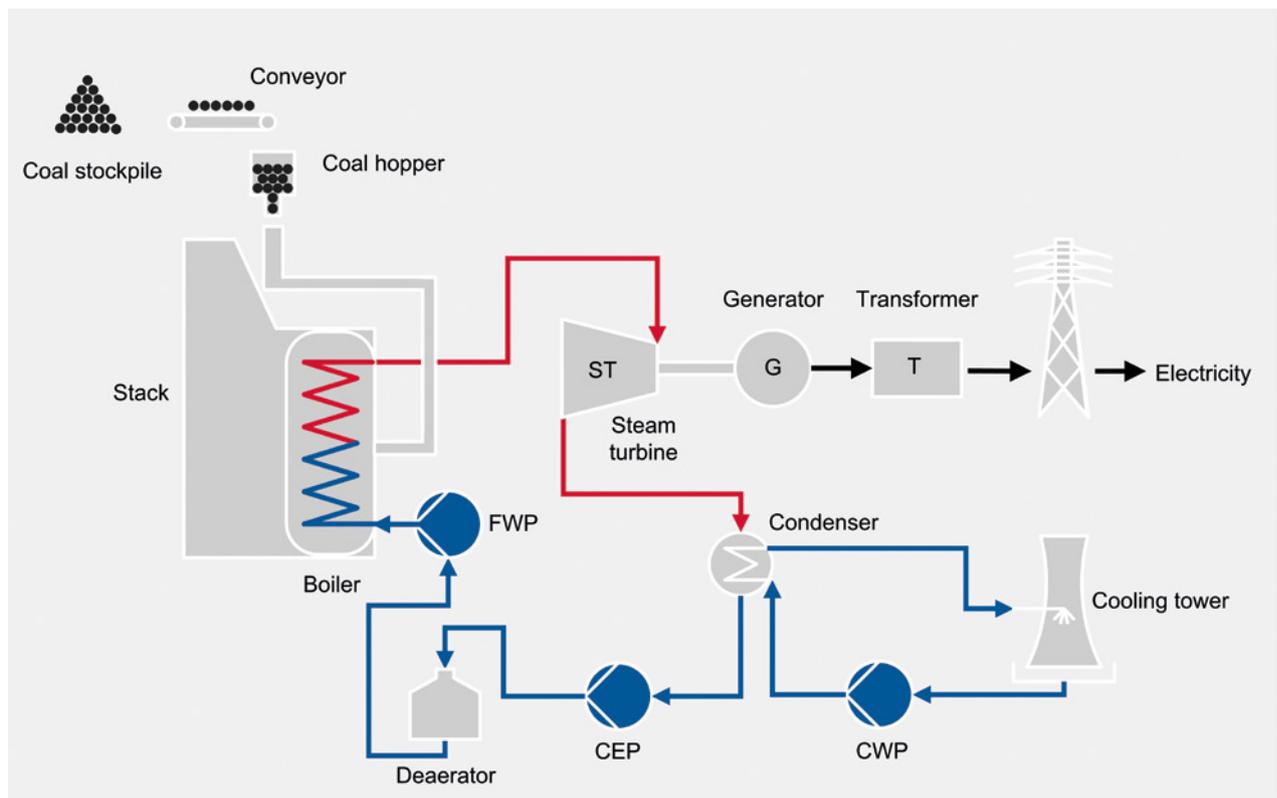


# You set out the challenge, we provide the solution

With a range of well proven products for all applications we are always ready to push the boundaries. Through innovation and time trusted experience we will rise to your challenge. Be it higher pressures, higher operating temperatures, higher efficiencies, we are ready.

## Coal- and oil-fired power plant

Mineral fuels coming from natural origin (hard coal, bituminous coal, lignite, etc.) or industrial derived (heavy fuel oil from petroleum) are combusted in burners to generate either subcritical or supercritical steam in appropriate boilers. The steam is directly sent to a turbine/generator unit to produce electricity, then passed through a condenser to convert it into demineralized water again. Sulzer supports these processes with Feed Water Pumps (FWP), Condensate Extraction Pumps (CEP), Cooling Water Pump (CWP), make-up and other auxiliary pump services.



FWP = Feed Water Pump

CEP = Condensate Extraction Pump

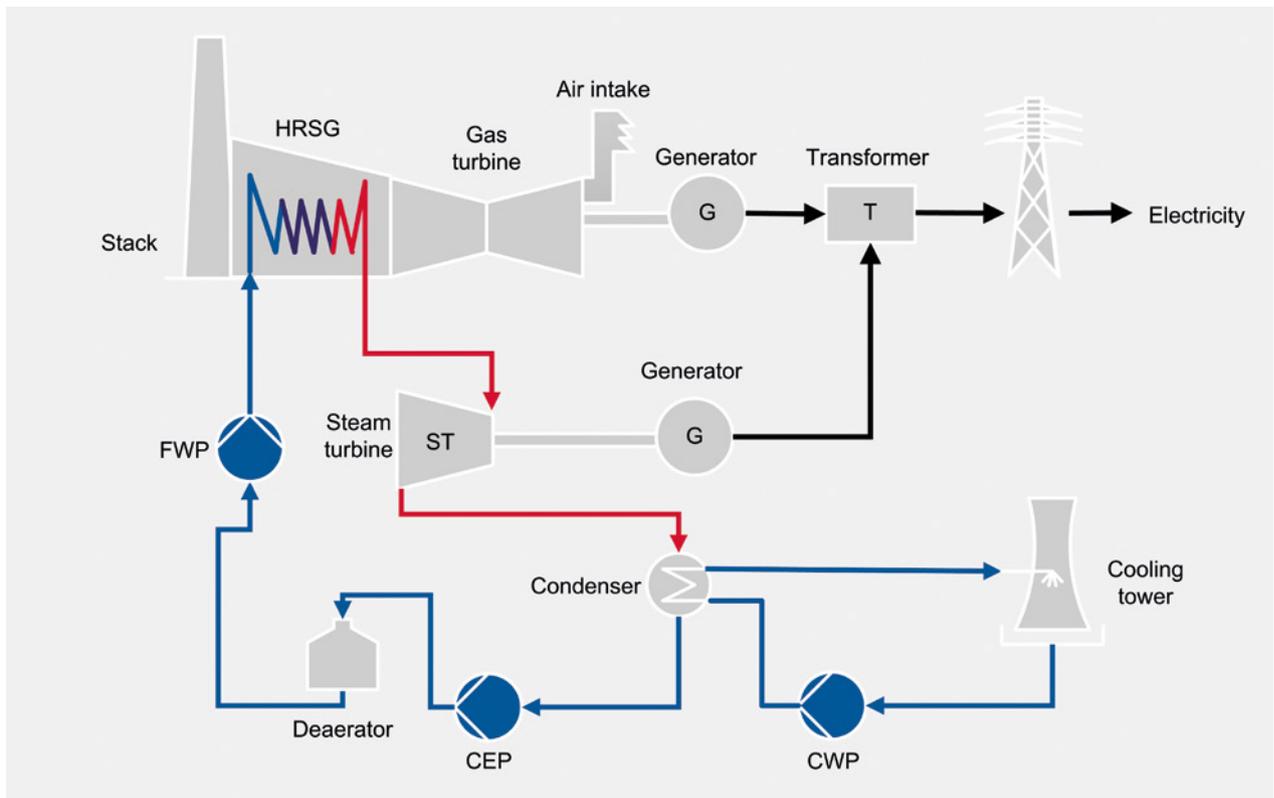
CWP = Cooling Water Pump

Note: the oil-fired power plant process scheme is similar to the coal-fired power plant one, replacing the coal feed system by fuel tanks.

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## Gas-fired combined cycle power plant

Natural gas is combusted in a gas turbine burner which drives a generator to produce electricity. The hot exhaust gases coming from the gas turbine are sent to a Heat Recovery Steam Generator (HRSG) to generate steam. The steam is directly sent to a turbine/generator unit to produce additional electricity, then passed through a condenser to convert it into demineralized water again. Sulzer supports this process with Feed Water Pumps (FWP), Condensate Extraction Pumps (CEP), Cooling Water Pumps (CWP), fuel injection pumps, NOx abatement pumps, make-up and other auxiliary pump services.

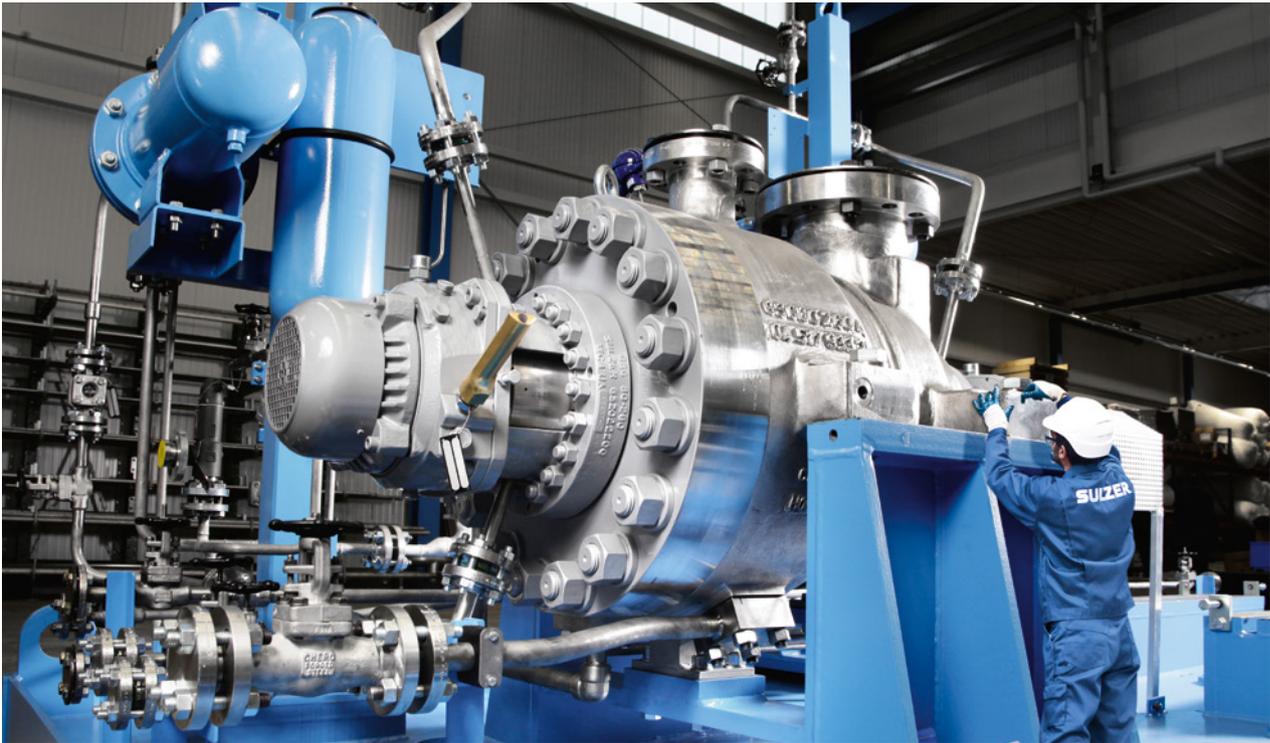


HRSG = Heat Recovery Steam Generator  
FWP = Feed Water Pump  
CEP = Condensate Extraction Pump  
CWP = Cooling Water Pump



# Our comprehensive product portfolio

Power plant type	Applications				
	Feed Water Pumps (FWP)		Condensate Extraction Pumps (CEP)	Cooling Water Pumps (CWP)	Auxiliary pumps
	Main feed pumps	Booster pumps			
	Pump type				
	HPT GSG CP MD MC MSD	HZB BBS ZE PRE	SJD-CEP ZE PRE MC BBS	SJT-CWP SJT SMD HSA ZPP	ZE/ZF PRE/PRER/PRETR AHLSTAR SNS CPE SMD HSA
Coal- and oil-fired power plant	●	●	●	●	●
Gas-fired combined cycle power plan	●		●	●	



# Product overview

## Barrel casing pumps

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### HPT high pressure barrel casing pump

#### Features and benefits

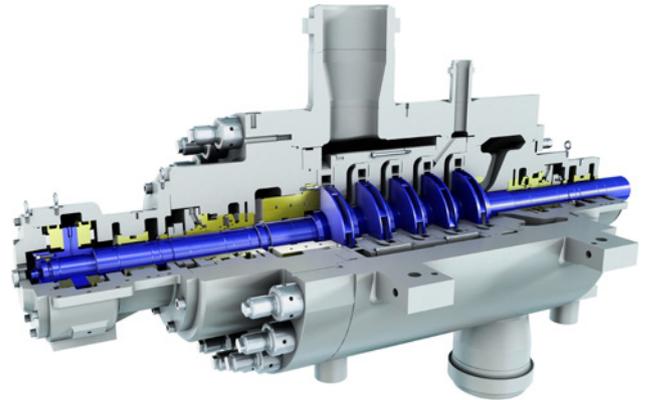
- Maximum safety due to double casing design
- Pipework connections remain undisturbed during disassembly
- High strength barrel material to accept occasional thermal shock
- Full cartridge pull-out for rapid changeover
- Design features to eliminate the need for pre-warming in most installations except on larger sizes
- Long operating life regardless of the operating mode

#### Applications

- Feedwater for TPP

#### Key characteristics

Capacities	up to 4'000 m <sup>3</sup> /h / 17'600 USgpm
Heads	up to 4'200 m / 13'800 ft.
Pressures	up to 545 bar / 7'905 psi
Temperatures	up to 220°C / 430°F



### GSG diffuser style barrel pump for feedwater applications

#### Features and benefits

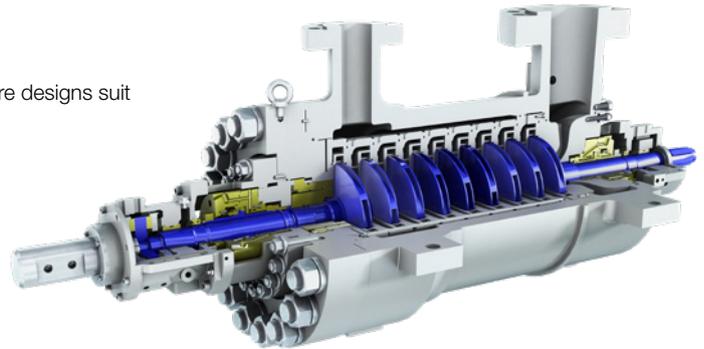
- Direct drive options to 6 MW
- Back-to-back rotor stack allows up to 16 stages
- Multiple sizes cover a broad hydraulic range
- Low pressure, high pressure, twistlock, and high temperature designs suit many applications

#### Applications

- Feedwater for TPP and CCPP

#### Key characteristics

Capacities	up to 900 m <sup>3</sup> /h / 4'600 USgpm
Heads	up to 2'600 m / 10'000 ft.
Pressures	up to 300 bar / 4'500 psi
Temperatures	up to 425°C / 800°F



### CP volute style barrel pump

#### Features and benefits

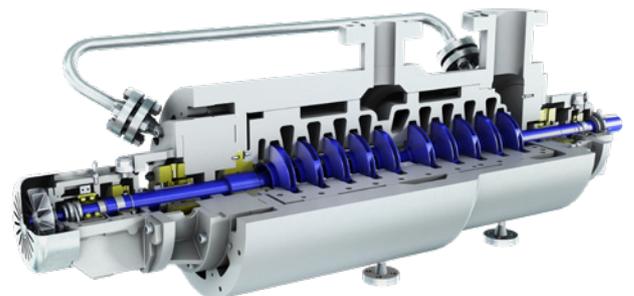
- Opposed impellers balance axial thrust, without need of lube system on smaller pumps
- Axially split inner case means rotor balance is not disturbed when installed in the pump
- Dual volute inner case balances radial loads for longer service life
- Twistlock barrel closure reduces maintenance time on lower temperature services
- Cartridge design on larger pumps can speed up pump repair time
- Volute inner case with lower erosion wear on abrasive services

#### Applications

- Feedwater for TPP and CCPP

#### Key characteristics

Capacities	up to 1'000 m <sup>3</sup> /h / 4'400 USgpm
Heads	up to 4'000 m / 13'120 ft.
Pressures	up to 425 bar / 6'250 psi
Temperatures	up to 425°C / 800°F



## Ring section pump

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### MD high pressure stage casing pump

#### Features and benefits

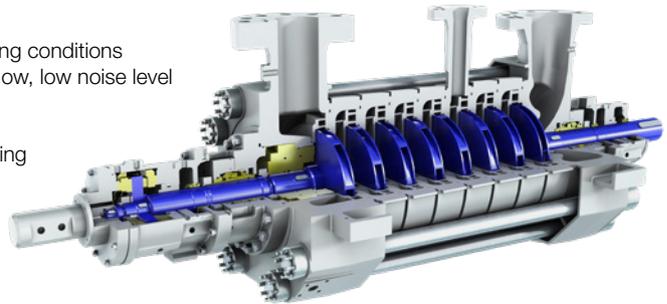
- Modular hydraulics for high efficiency in a wide range of operating conditions
- Centerline mounted with large branch sizes for optimized inlet flow, low noise level and higher allowable forces and moments
- Unaffected by rapid temperature variations
- Stiff shaft design for critical speeds above the maximum operating speed
- Multiple screws mechanical tensioners are used on large sizes to allow simpler tightening and loosening

#### Applications

- Feedwater for TPP and CCPP

#### Key characteristics

Capacities	up to 1'200 m <sup>3</sup> /h / 5'300 USgpm
Heads	up to 2'800 m / 9'200 ft.
Pressures	up to 350 bar / 5'080 psi
Temperatures	up to 210°C / 410°F, higher temperature upon request



### MC high pressure stage casing pump

#### Features and benefits

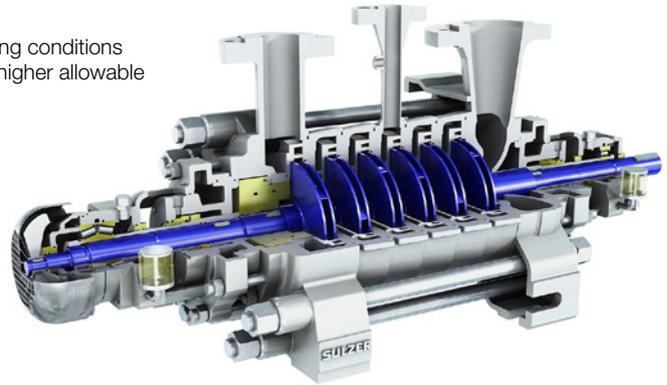
- Modular hydraulics for high efficiency in a wide range of operating conditions
- Large branch sizes for optimized inlet flow, low noise level and higher allowable forces and moments
- Unaffected by rapid temperature variations
- Easy access for cleaning to the seal cooling chambers
- Stiff shaft design for critical speeds above the maximum operating speed
- Low pressure version with dedicated large sizes for condensate extraction service

#### Applications

- Feedwater for CCPP
- Fuel injection and NOx abatement in OCPP and CCPP
- Condensate extraction

#### Key characteristics

Capacities	up to 1'700 m <sup>3</sup> /h / 8'500 USgpm
Heads	up to 1'750 m / 5'500 ft.
Pressures	up to 180 bar / 2'610 psi
Temperatures	up to 180°C / 355°F



## Axially split pumps

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### MSD axially split multistage pump

#### Features and benefits

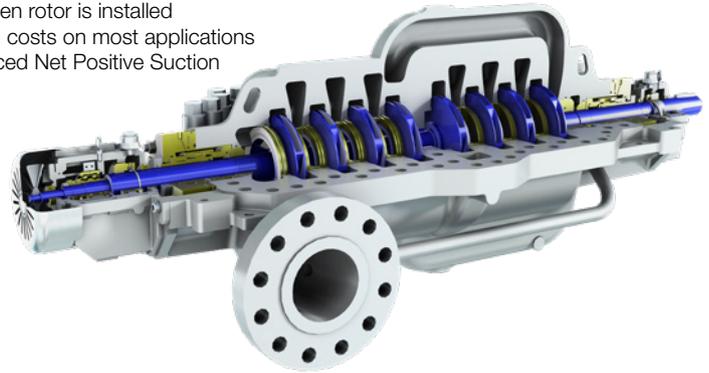
- Broadest hydraulic coverage of any BB3 type multistage pump in the market
- Axially split casing means rotor balance is not disturbed when rotor is installed
- Opposed impellers balance axial thrust, saving lube system costs on most applications
- Double suction, first-stage available on most sizes for reduced Net Positive Suction Head (NPSH)

#### Applications

- Feedwater for TPP and CCPP

#### Key characteristics

Capacities	up to 3'200 m <sup>3</sup> /h / 14'000 USgpm
Heads	up to 2'900 m / 9'500 ft.
Pressures	up to 300 bar / 4'400 psi
Temperatures	up to 200°C / 400°F



### SMD axially split casing double suction pump

#### Features and benefits

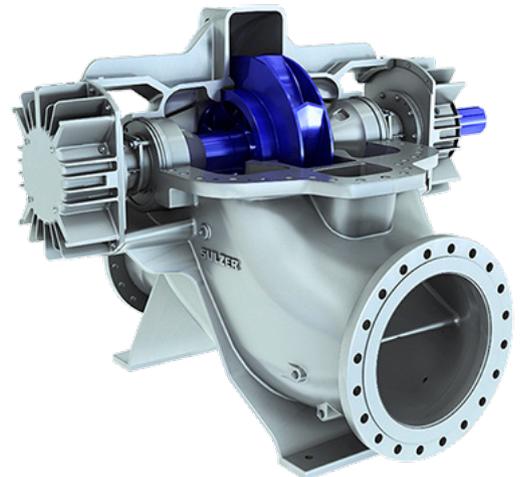
- Optimum hydraulic fit with high efficiency maintained over a wider flow range
- Exceptionally low Net Positive Suction Head Required (NPSHR) value not only at the best efficiency point but also on overload
- Maintenance-friendly features; excellent interchangeability of parts
- Horizontal and vertical constructions

#### Applications

- Cooling water pumps
- Auxiliary services

#### Key characteristics

Capacities	up to 25'000 m <sup>3</sup> /h / 110'000 USgpm
Heads	up to 260 m / 850 ft.
Pressures	up to 34 bar / 490 psi
Temperatures	up to 140°C / 280°F



### HSA axially split single stage double suction pump

#### Features and benefits

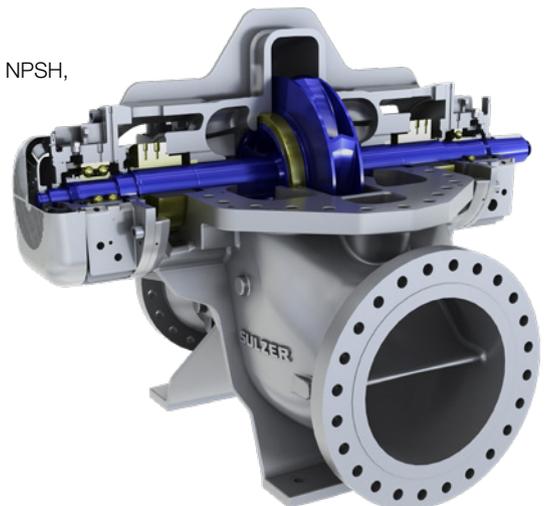
- Double suction impeller with optimum geometry provides high efficiency, low NPSH, and quiet running over a wide operating range
- Large shaft diameter with minimum bearing span for more power capacity and longer mechanical seal life
- High capacity bearing assembly
- Horizontal and vertical construction

#### Applications

- Cooling water pumps
- Auxiliary services

#### Key characteristics

Capacities	up to 18'000 m <sup>3</sup> /h / 80'000 USgpm
Heads	up to 280 m / 900 ft.
Pressures	up to 40 bar / 580 psi
Temperatures	up to 150°C / 300°F



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## ZPP double suction axially split single stage pump

### Features and benefits

- Exceeds requirements of international ISO 5199 standard
- Unique, patented and superior design features minimize life cycle costs
- Quick and easy installation, reliable operation, easy maintenance and service

### Applications

- Cooling water pumps
- Auxiliary services

### Key characteristics

Capacities	up to 25'000 m <sup>3</sup> /h / 110'000 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 20 bar / 290 psi
Temperatures	up to 120°C / 250°F



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## Single stage pumps

### HZB double suction volute pump

#### Features and benefits

- Centerline mounting to allow free thermal expansion and high nozzle loads
- Minimum bearing span to minimize shaft deflection
- Single cover casing design to reduce overhaul times
- Chrome steel casing with good corrosion resistance and excellent mechanical properties is standard; other materials available
- Single mechanical seal provides higher efficiency

#### Applications

- Feedwater booster for TPP

#### Key characteristics

Capacities	up to 5'500 m <sup>3</sup> /h / 29'000 USgpm
Heads	up to 340 m / 1'115 ft.
Pressures	up to 48 bar / 700 psi
Temperatures	up to 220°C / 428°F



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### BBS between bearings single stage pump

#### Features and benefits

- Centerline support for reduced thermally induced misalignment
- Double suction impeller for low Net Positive Suction Head Required (NPSHR)
- First critical speed is well above operating speed range for smooth operation
- Casing designed for 2 times API 610 nozzle loads for freedom from piping distortions
- Grouted or ungrouted, 1x or 2x nozzle load baseplates for reduced installation cost

#### Applications

- Feedwater booster for TPP

#### Key characteristics

Capacities	up to 7'000 m <sup>3</sup> /h / 30'000 USgpm
Heads	up to 800 m / 2'600 ft.
Pressures	up to 100 bar / 1'450 psi
Temperatures	up to 425°C / 800°F



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## ZE and ZF end suction pumps

### Features and benefits

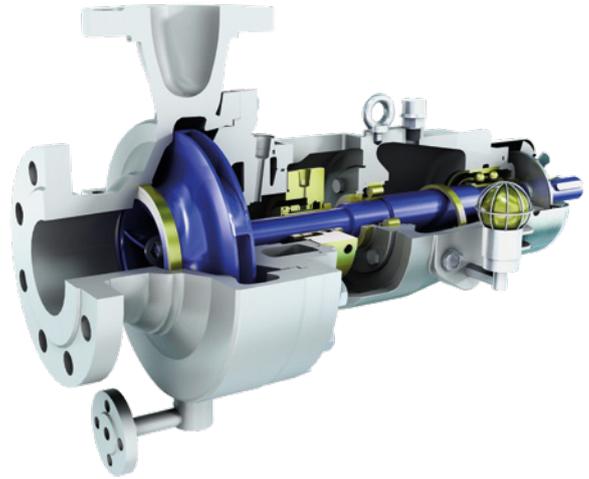
- Designed for hot or cold water medium design pressure applications
- Modular construction to provide maximum interchangeability of spares

### Applications

- Feedwater booster for TPP
- Condensate extraction
- Auxiliary services

### Key characteristics

Capacities	up to 2'600 m <sup>3</sup> /h / 11'440 USgpm
Heads	up to 300 m / 1'000 ft.
Pressures	up to 100 bar / 1'450 psi
Temperatures	up to 425°C / 800°F



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## PRE/PRER/PRETR end suction pumps

### Features and benefits

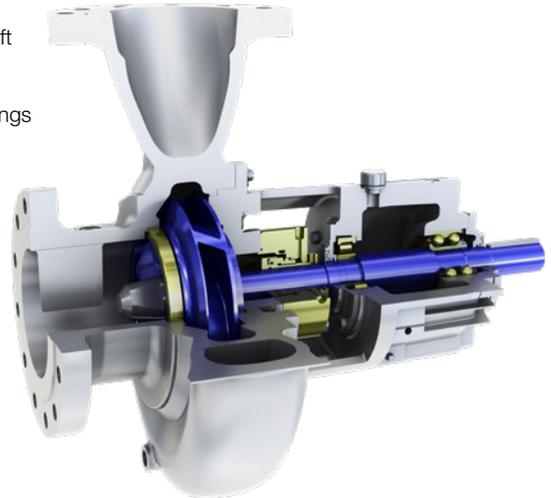
- Centerline mounted to allow thermal expansion without jeopardizing the shaft alignment
- Wear rings and balance holes optimized to maximize seal and bearing life
- Extra heavy-duty shaft for low shaft deflection and long life of seal and bearings
- PRER/PRETR reinforced designs available for very high pressure services (up to 200 bar)

### Applications

- Feedwater booster for TPP
- Condensate extraction
- Boiler circulation
- Auxiliary services

### Key characteristics

Capacities	up to 4'500 m <sup>3</sup> /h / 19'800 USgpm
Heads	up to 320 m / 1'050 ft.
Pressures	up to 60 bar / 870 psi
Temperatures	up to 400°C / 752°F



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## AHLSTAR end suction single stage centrifugal pump

### Features and benefits

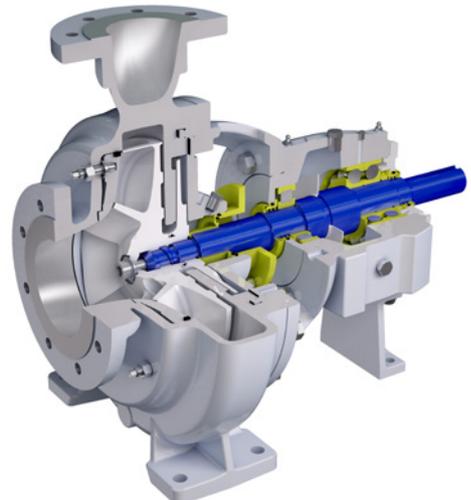
- Exceeds standard requirements of international ISO 5199 and ISO 2858 standards
- Suitable for the most demanding industrial applications
- Unique, patented and superior design features minimize life cycle costs
- Quick and easy installation, reliable operation, easy maintenance and service

### Applications

- Auxiliary services

### Key characteristics

Capacities	up to 11'000 m <sup>3</sup> /h / 48'400 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 25 bar / 360 psi
Temperatures	up to 180°C / 355°F



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## SNS end suction single stage centrifugal pump

### Features and benefits

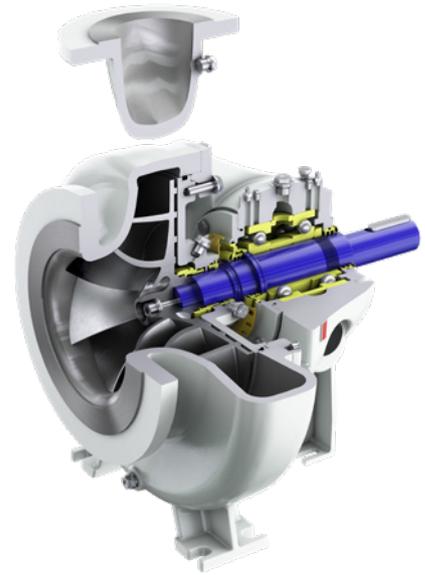
- Designed to meet the design requirement of EN ISO 5199 international standard
- Exceeding EU's (European Union) requirements for energy-related products (ErP)
- Highest efficiency across the whole pump range, exceeding the benchmark efficiency index MEI 0.7 (Minimum Efficiency Index)
- New, state-of-the-art hydraulics ensure optimum capacity with low net positive suction head required (NPSHr)
- Low energy consumption, high standardization, easy installation and unique construction also equate to lower maintenance and operating costs

### Applications

- Auxiliary services

### Key characteristics

Capacities	up to 1'400 m <sup>3</sup> /h / 6'000 USgpm
Heads	up to 160 m / 525 ft.
Pressures	up to 16 bar / 230 psi
Temperatures	up to 120°C / 250°F



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## CPE end suction single stage centrifugal pumps

### Features and benefits

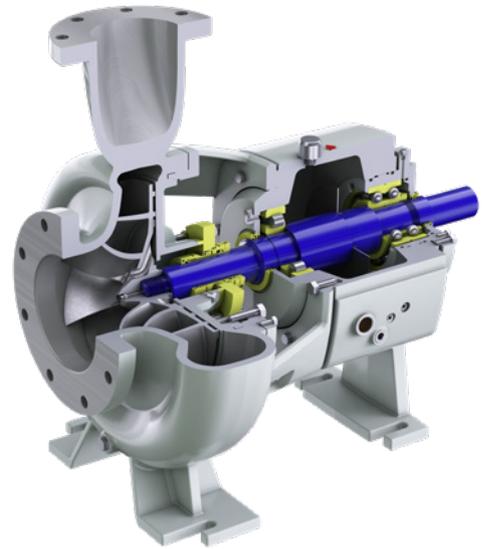
- Designed to exceed the strictest energy regulations for all the industries as well as the requirements of ASME B73.1
- Revolutionary hydraulics and high efficiency to offer the lowest life cycle costs
- Improved reliability
- Minimized total cost of ownership

### Applications

- Auxiliary services

### Key characteristics

Capacities	up to 1'650 m <sup>3</sup> /h / 7'000 USgpm
Heads	up to 275 m / 900 ft.
Pressures	up to 27.5 bar / 400 psi
Temperatures	up to 260°C / 500°F



## Vertical pumps

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### SJD-CEP vertical can mounted turbine type pump

#### Features and benefits

- Carbon graphite product lubricated bearing in bowls and columns for long maintenance free periods
- Removable seal housing allows servicing throttle bushing without removing the head
- Separate fabricated driver stand allows using one suction and discharge head per pump size
- Spacer coupling allows servicing the mechanical seal and thrust bearing as needed
- Can is provided with lateral and anti-rotational ribs uniform inlet velocity along the can length
- Various options available for the first stage impeller hydraulics, including double suction impeller allowing optimum sizing of pump

#### Applications

- High pressure condensate extraction

#### Key characteristics

Capacities	up to 4'900 m <sup>3</sup> /h / 21'560 USgpm
Heads	up to 470 m / 1'540 ft.
Pressures	up to 47 bar / 680 psi
Temperatures	up to 100°C / 212°F



### SJT-CWP vertical pump

#### Features and benefits

- Modern fabricated suction bell and bowl casing incorporating swirl break for stable pump performance curve
- Semi-open or closed cast impeller design for best fitting and optimum efficiency
- Segmented elbow to reduce the internal losses
- Optional full pull-out construction to reduce lifting crane capacity and ease maintenance

#### Applications

- Cooling water pumps for TPP and CAPP

#### Key characteristics

Capacities	up to 90'000 m <sup>3</sup> /h / 396'000 USgpm
Heads	up to 60 m / 200 ft.
Pressures	up to 8.6 bar / 125 psi
Temperatures	up to 50°C / 122°F



## SJT vertical pump

### Features and benefits

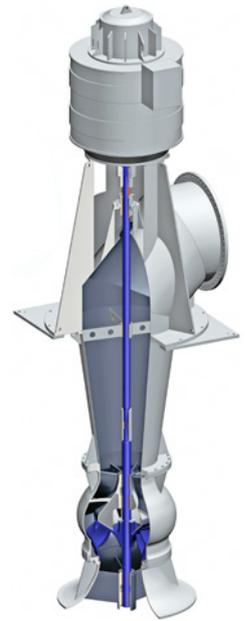
- Optimized hydraulics for high efficiency
- Packed stuffing box for reliable sealing and simple maintenance; mechanical seal is optional
- Rubber-lined product-lubricated bearing in bowls and columns for long maintenance-free periods; other bearing materials also available
- Optional spacer coupling allows servicing of the seal and thrust bearing as required

### Applications

- Cooling water pumps for TPP and CCPP
- Auxiliary services

### Key characteristics

Capacities	up to 12'000 m <sup>3</sup> /h / 52'840 USgpm
Heads	up to 1'830 m / 6'000 ft.
Pressures	up to 78 bar / 1'130 psi
Temperatures	up to 100°C / 212°F



**The Sulzer Flow division keeps your processes flowing. Wherever fluids are treated, pumped, or mixed, we deliver highly innovative and reliable solutions for the most demanding applications.**

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The Flow division specializes in pumping solutions specifically engineered for the processes of our customers. We provide pumps, agitators, compressors, grinders, screens and filters developed through intensive research and development in fluid dynamics and advanced materials. We are a market leader in pumping solutions for water, oil and gas, power, chemicals and most industrial segments.

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