

motralec

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX

Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48

Demande de prix / e-mail : service-commercial@motralec.com

www.motralec.com

SULZER

Sulzer Pumps

Your Partner for Concentrated Solar Power Generation



The Heart of Your Process



Experience and Solutions You Can Rely on

Around the world, the power industry is taking on the challenge to produce clean, dependable energy from renewable resources. Concentrated Solar Power Generation (CSP) provides a sustainable solution to energy needs today and in the future. Sulzer Pumps has been working with customers to provide reliable and cost-effective solar power since supplying pumps to a CSP plant in 1984.

We combine our expertise in Solar Power and in other renewable technologies, such as hydro, geothermal, and biomass, to meet the demands of CSP.

Understanding Your Process

With Sulzer Pumps, you have the single-supplier advantage of our comprehensive portfolio, which supports the leading solar technologies and all major processes in a CSP plant. From a single pump to a total system solution, we work closely with you to develop the best pump solution. We enable you to produce competitive solar power.

CSP operations place extreme demands on all components in your system. You need a pump solution that gives you improved Mean Time Between Maintenance (MTBM). Sulzer Pumps answers this need with a full line of boiler feed, cooling water and condensate extraction pumps for all CSP technologies: Heliostat Fields, Parabolic Trough Collectors (with and without molten salt heat storage), and Hybrid Integrated Solar Combined Cycle (ISCC) process.

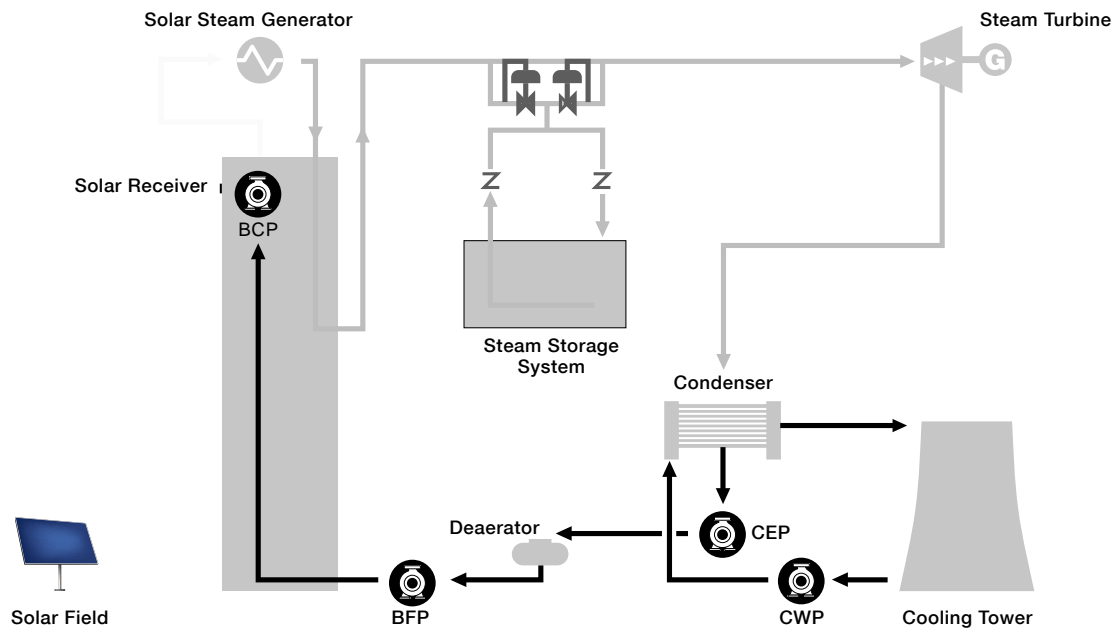
About Sulzer Pumps

Sulzer Pumps is recognized for excellent product quality, performance reliability and technical innovation. We provide a full line of pumps, equipment and related technologies to the Oil and Gas, Hydrocarbon Processing, Power Generation, Pulp and Paper, Water and Wastewater and Chemical Industries. Our global capabilities, our market understanding and application expertise we support customers with more than 150 locations around the world, centers close to our customers.



Heliostat Fields

4RHMF @ "DMSQ@K 2NK@Q 3NVDQ 'DKHNRS@S jDKCR HMUNKUD CHQDBS RSD@L
 these processes with pumps for Boiler Feed (BFP), Boiler Circulation (BCP), Condensate Extraction (CEP) and Cooling Water (CWP).

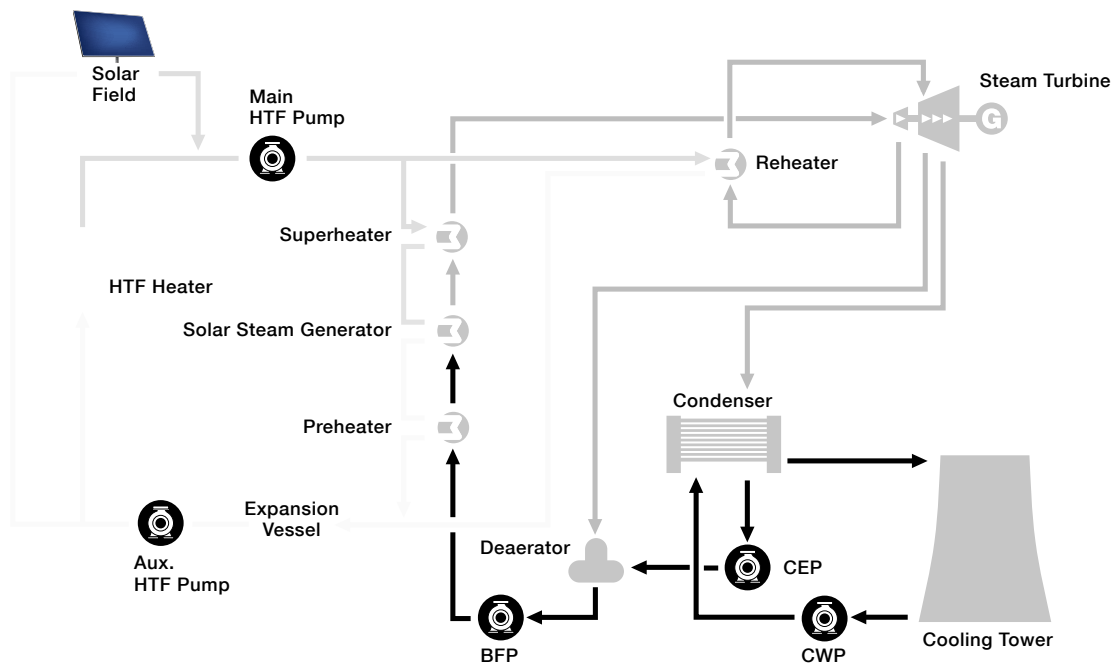


	Boiler Feed	Condensate Extraction	Cooling Water	Auxiliary Services	Boiler Circulation
Single Stage Pumps		ZE		AHLSTAR	ZE/ ZF
Ring Section Pumps	MBN/ MC/ MD				
Barrel Pumps	GSG				
Axially Split Pumps	MSD		SMN/ ZPP		
Vertical Pumps		SJD (CEP)	SJT/ SJM		



Parabolic Trough Collectors

3GHR RXRSDL HR TRHMF RXMSGDSHB SGDQL@K NHK GD@SDC TO SN @QNTMC SGQNTFG SGD RNK@Q jDKC VHSG GHFG @MC U@QH@AKD kNV Q@SDR @MC SDLC includes pumps for Boiler Feed (BFP), Condensate Extraction (CEP) and Cooling Water (CWP), as well as both main and auxiliary pumps for Heat Transfer Fluids (HTF).

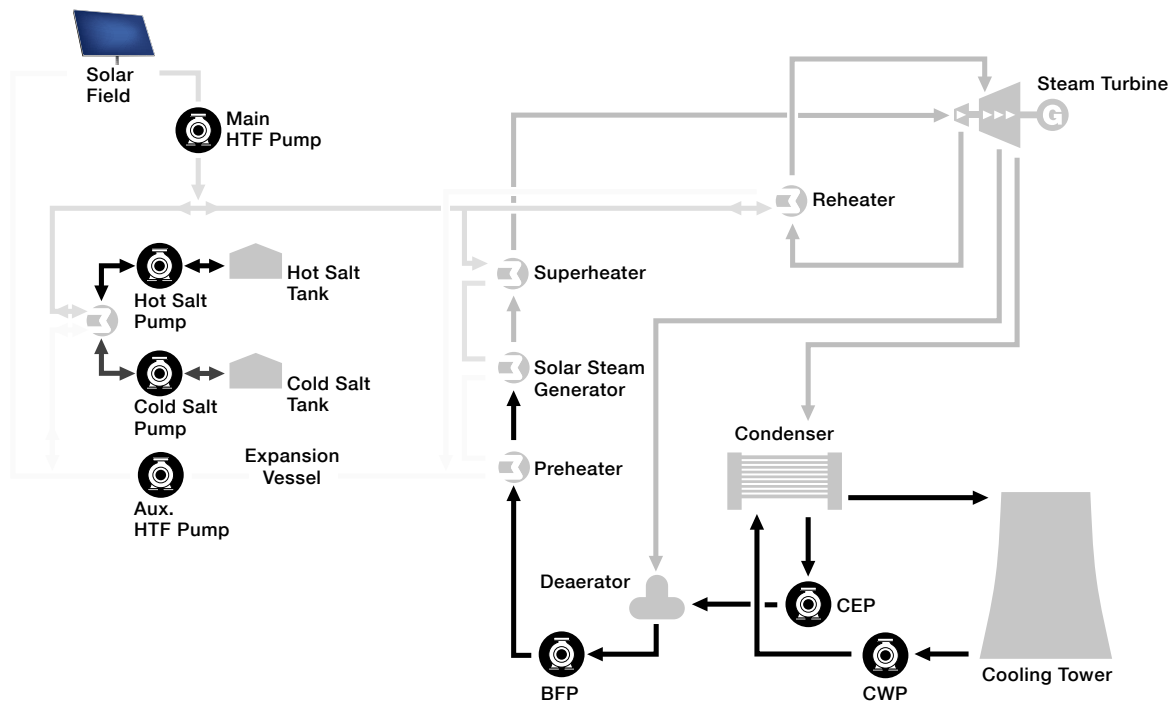


	Boiler Feed	Condensate Extraction	Cooling Water	Auxiliary Services	Main HTF	Auxiliary HTF
Single Stage Pumps		ZE		AHLSTAR	ZF/BBS/CD/HZB	ZE/ZEM/ZF
Ring Section Pumps	MBN/MC/MD					
Barrel Pumps	GSG					
Axially Split Pumps	MSD		SMN/ZPP			
Vertical Pumps		SJD (CEP)	SJT/SJM			



Parabolic Trough Collectors with Molten Salt

to store heat generated in this process. The high temperatures are a challenge to the pumps. Sulzer Pumps supplies a wide range of pumps designed for these operations including Boiler Feed (BFP), Condensate Extraction (CEP), Cooling Water (CWP), Molten Salt Circulation, and main and auxiliary pumps for Heat Transfer Fluid (HTF).

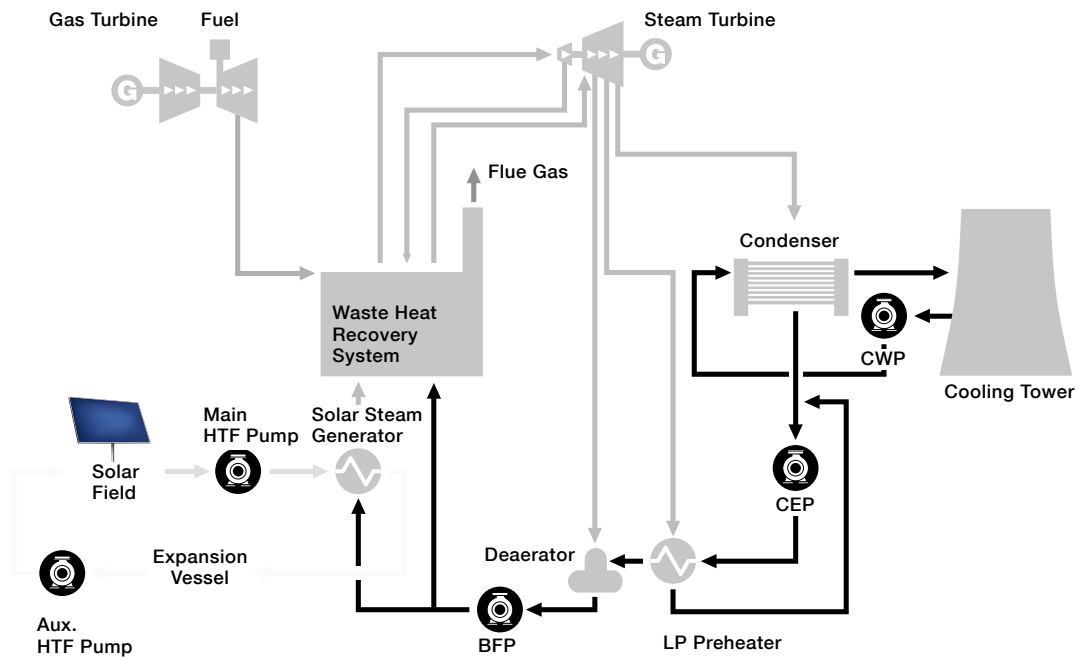


	Boiler Feed	Condensate Extraction	Cooling Water	Auxiliary Services	Main HTF	Auxiliary HTF	Molten Salt Circulation
Single Stage Pumps		ZE		AHLSTAR	ZF/BBS/CD/HZB	ZE/ZEM/ZF	
Ring Section Pumps	MBN/MC/MD						
Barrel Pumps	GSG						
Axially Split Pumps	MSD		SMN/ZPP				
Vertical Pumps		SJD (CEP)	SJT/SJM				SJT (VCN)



Hybrid Integrated Solar Combined Cycle (ISCC)

3GHR OQNBD RR TRDR O@Q@ANKHB SQNTFG BNKKDBSNQR @MC SGDQL@K NHK @ includes pumps for Boiler Feed (BFP), Condensate Extraction (CEP), Cooling Water (CWP), and main and auxiliary pumps for Heat Transfer Fluid (HTF).



	Boiler Feed	Condensate Extraction	Cooling Water	Auxiliary Services	Main HTF	Auxiliary HTF
Single Stage Pumps		ZE		AHLSTAR	ZF/BBS/CD/HZB	ZE/ZEM/ZF
Ring Section Pumps	MC/MD					
Barrel Pumps	GSG					
Axially Split Pumps	MSD					
Vertical Pumps		SJD (CEP)	SJT/SJM			



Meeting Your Most Demanding CSP Needs

Reliable and cost-effective CSP plant performance begins with the selection of the right equipment and continues with the constant life cycle monitoring. Drawing on our extensive portfolio of products and services, we will work with you to select and customize pumps to comply with your requirements.

Pump Process	Boiler Feed	Condensate Extraction	Cooling Water	Boiler Circulation	Main Heat Transfer Fluid (HTF)	Auxiliary Heat Transfer Fluid (HTF)	Molten Salt Circulation	Auxiliary Services
Heliostat Field with Central Solar Tower with Direct Steam Generation	q	q	q	q				q
Parabolic Trough Collectors thermal oil as heat	q	q	q		q	q		q
Parabolic Trough Collectors thermal oil as heat Molten Salt Storage	q	q	q		q	q	q	q
Parabolic Trough Collectors Hybrid Integrated Solar Combined Cycle (ISCC) thermal oil	q	q	q		q	q		q



Pumps for CSP Applications Boiler Feed

MBN

The MBN ring section multi stage pump is the ideal choice for medium pressure pumping applications. The pump is offered in a wide range of materials including chrome steel and duplex stainless steel grades. The pump utilizes integrated diffusers and a product lubricated NDE bearing to simplify construction, minimize dimensions and reduce cost.

Pressure 100 bar / 1450 psi
Temperatures 180 °C / 355 °F



MSD

MSD multistage pumps are widely used in power generation applications. The broad range of standard hydraulics and mechanical design options ensure

NOSH LTL JS SN BTRS NLDQR CTSX requirements, using proven pre-engineered solutions.

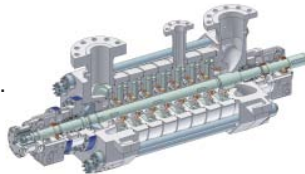
Pressure 310 bar / 4500 psi
Temperatures 200 °C / 400 °F



MC/MD

MC/MD pumps are horizontal, radially split ring section multi-stage pumps of modular design. MC/MD pumps are suitable for pumping clean or slightly polluted, hot or cold, chemically neutral or aggressive liquids. These pumps are primarily designed for power applications, i.e. boiler feed and condensate services in power plants.

Pressure 180 – 270 bar / 2600 – 3900 psi
Temperatures 180 – 210 °C / 355 – 410 °F

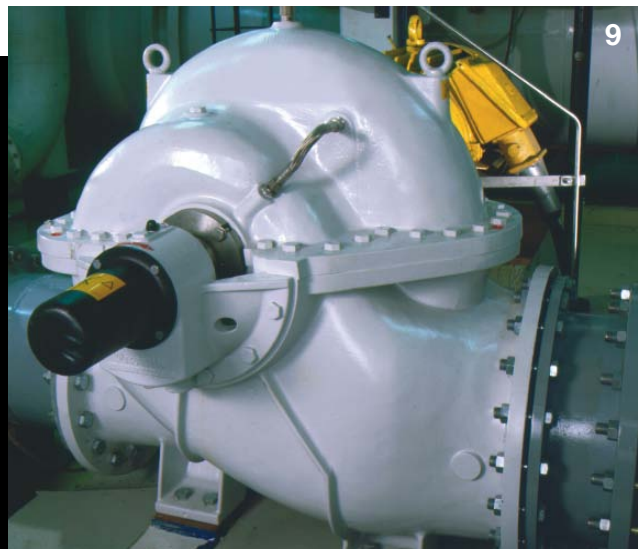


GSG

The GSG pump is a horizontal, radially split, diffuser type, multi stage barrel casing design and is optimized for synchronous speed direct drive applications. The entire cartridge can be removed as an assembly to speed up overhaul.

Pressure 300 bar / 4500 psi
Temperatures 425 °C / 800 °F



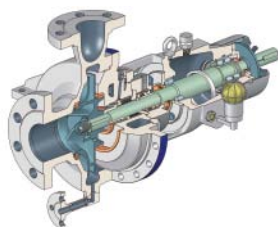


Condensate Extraction

ZE

The ZE heavy duty industrial process pumps use modular construction to provide maximum interchangeability of spares. ZE pumps are ideal for arduous applications including condensate extraction in CSP plants.

Pressure 100 bar / 1450 psi
Temperatures 450 °C / 840 °F



SJD (CEP)

The SJD (CEP) range of vertical pumps is ideal for applications where NPSHA is limited. The pumps are used in a wide range of applications ranging from simple industrial booster pumps to high pressure condensate return and heater drain pumps in power plants.

Pressure 40 bar / 570 psi
Temperatures 150 °C / 300 °F

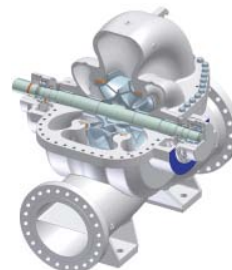


Cooling Water

SMN

The SMN single stage double entry pump is used across a broad range of industries in liquid transport and transfer applications.

Pressure 30 bar / 435 psi
Temperatures 160 °C / 320 °F



ZPP

ZPP double suction, axially split pumps are designed for cooling water services in power plants and other industries requiring

KNV OTKR @ SHNM @ MCB
Pressure 10 bar / 150 psi
Temperatures 120 °C / 250 °F

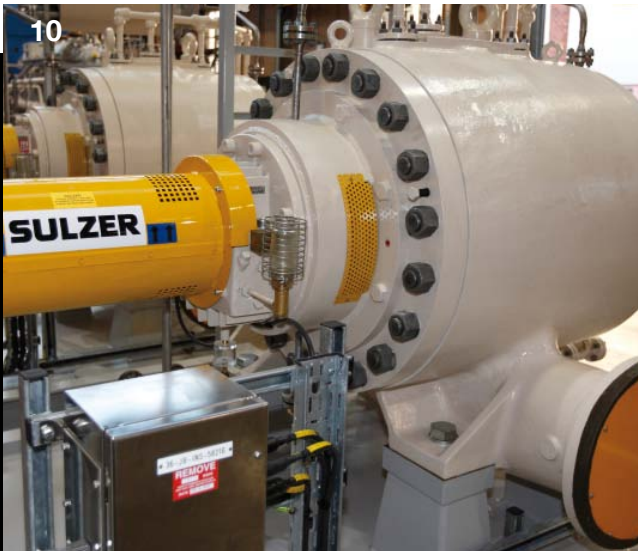


SJM/SJT

SJM/SJT vertical pumps are ruggedly designed providing long service in a wide variety of applications. The basic components of head, column pipe and bowl assembly are combined and customized to perfectly match individual duty needs.

Pressure 40 bar / 570 psi
Temperatures 85 °C / 185 °F



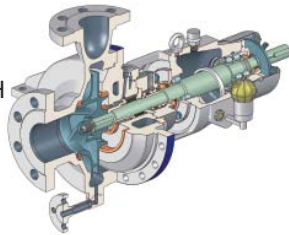


Main HTF

ZF

ZF horizontal, single stage, radially split pumps with single k N V B K N R D C Q @ C H designed for a wide range of applications including HTF and boiler circulation in power plants.

Pressure 100 bar / 1450 psi
Temperatures 450 °C / 840 °F



BBS/CD/HZB

BBS/CD pumps are primarily used in power plants. The broad pressure and temperature capabilities of this design allow it to be used in the most arduous applications while still providing long service. HZB pumps are designed for hot oil applications.

Pressure 52 bar / 740 psi
Temperatures 425 °C / 800 °F

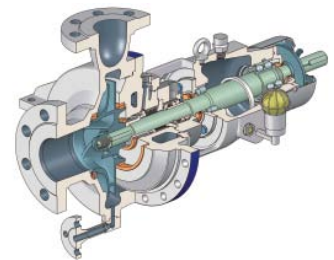


Auxiliary HTF

ZE/ZEM

The ZE/ZEM heavy duty industrial process pumps use modular construction to provide maximum interchangeability of spares. ZE pumps are ideal for arduous applications including L @ H M G D @ S S Q @-M tion in CSP plants. ZEM pumps with magnetic coupling meet the most stringent requirements regarding hermetic sealing, operational safety and environmental protection.

Pressure 100 bar / 1450 psi
Temperatures 450 °C / 840 °F



< @



Molten Salt Circulation

SJT

The SJT vertical turbine range to an extensive variety of standard features. These include oil, F Q D @ R D O Q N C T B S N Q ing lubrication, sealing plans for all liquids above or below ground discharge and a wide selection of materials of construction.



The SJT VCN design is a high temperature version developed to comply with the very demanding applications of molten salt circulation in CSP plants.

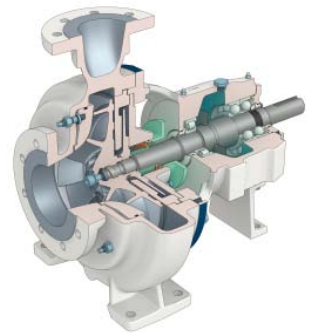
Pressure 60 bar / 870 psi
Temperatures 600 °C / 1100 °F

Auxiliary Services

AHLSTAR

AHLSTAR A pumps are used for pumping clean, abrasive or corrosive liquids. Optionally, this pump type can be equipped with the Sulzer Dynamic Seal R O D B H @ K K X C D R H I liquids offering reliable operation and low total sealing costs.

Pressure 16 bar / 230 psi
Temperatures 150 °C / 300 °F



< S

motralec

4 rue Lavoisier . ZA Lavoisier . 95223 HERBLAY CEDEX
Tel. : 01.39.97.65.10 / Fax. : 01.39.97.68.48
Demande de prix / e-mail : service-commercial@motralec.com
www.motralec.com



E10052 en 10.2010 (1000), Copyright © Sulzer Pumps

This brochure is a general product presentation. It does not provide a warranty or guarantee of any kind. Please, contact us for a description of the warranties and guarantees offered with our products. Directions for use and safety will be given separately. All information herein is subject to change without notice.