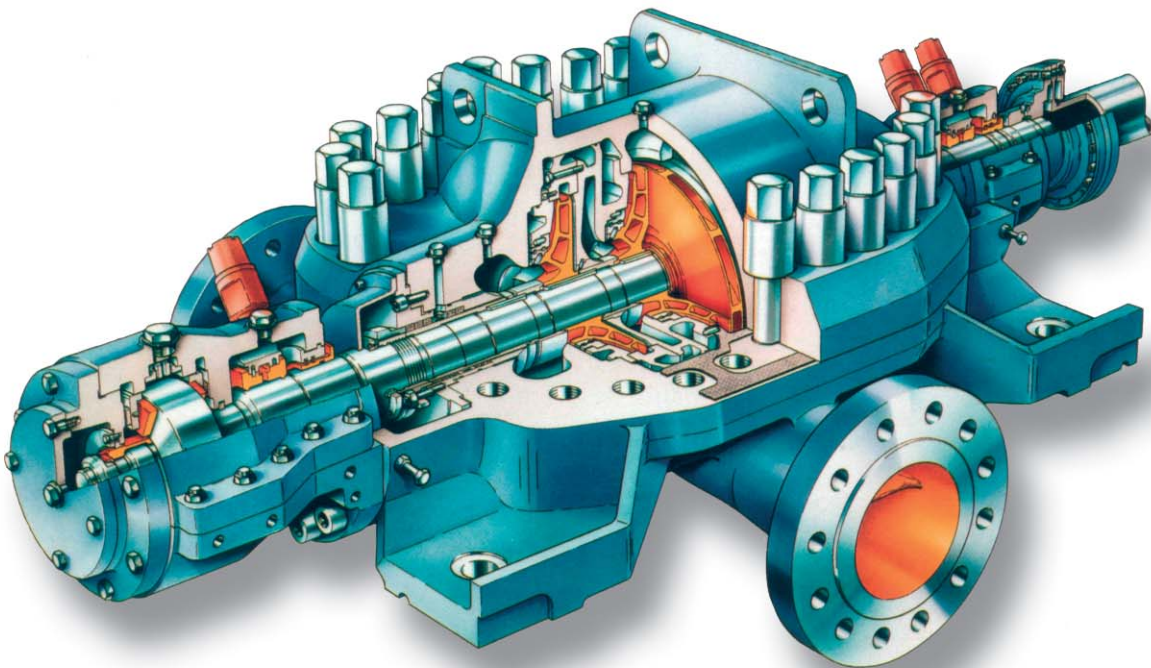


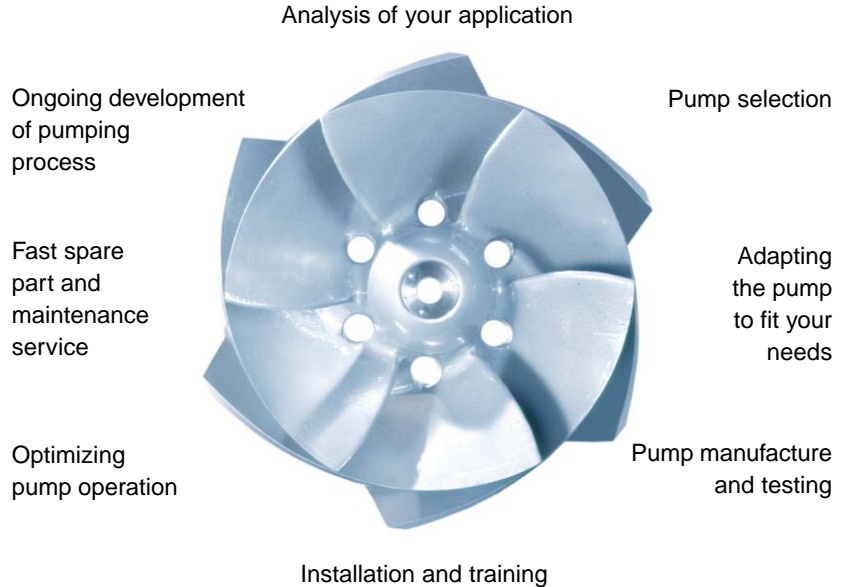
HPDM Volute Casing Pumps Axially Split



Sulzer Pumps - working with you from design to operation

Sulzer Pumps combines more than 135 years of experience in pump development and manufacturing with a deep commitment to fully understanding the needs of our customers.

Our detailed process and application knowledge has allowed us to develop innovative pumping solutions for our focus segments including tailor made systems if required. Our active research & development supports this customer oriented approach.



Extensive Product Range

Sulzer Pumps has a long history of providing innovative pumping solutions to business partners in the following industries:

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

Water and Wastewater

Around the world, reserves of pure drinking water are being depleted. The need for water conservation is growing, and better ways are being found to process industrial wastewater and treat sewage in urban areas. Sulzer Pumps is part of the effort.

We are applying our engineering and contracting know-how in major water handling projects the world over. We offer pumping solutions for modern reverse osmosis plants, where seawater is transformed into water fit for human consumption. Our pumps are delivering vast quantities of fresh water over long distances to people in some of the world's most populous regions.



HPDM Volute Casing Pumps, Axially Split

Application

For the transport of fresh water and seawater as well as other clean or slightly contaminated liquids.

Performance range

The overall performance range provides for discharge rates of 1'000 to 20'000 m³/h and delivery heads of 130 to 680 m.

Pressure range

The pumps are designed for a test pressure of 150 bar (HPDM..1d) and 100 bar (HPDM..2d).

Temperature range

The maximum allowable fluid temperature range for water is 0 to 50°C.

Principal fields of application

- Pumping stations for pipelines transporting fresh water or seawater
- Waterworks

Pump Design HPDM..1d

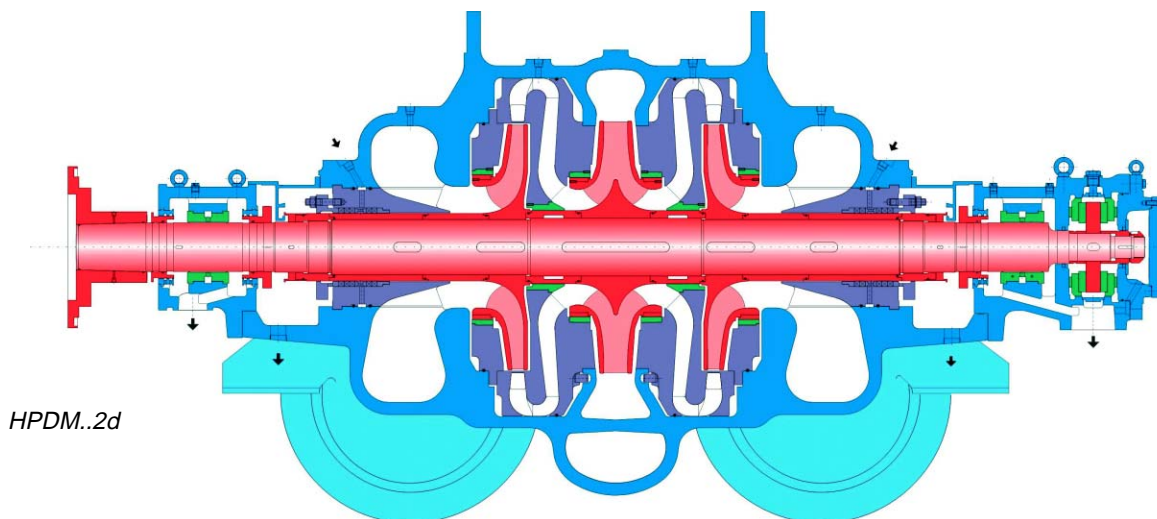
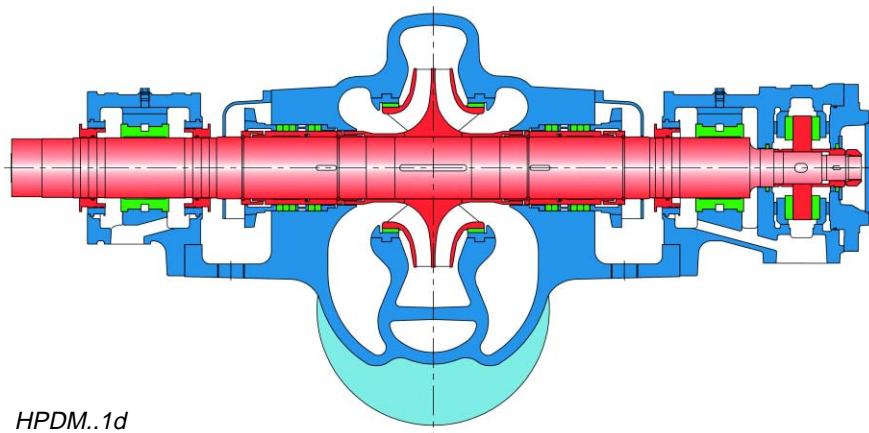
The HPDM..1d is a single stage, horizontally split, double volute, and double suction pump. It is designed according to Sulzer Standards.

After the nuts to the casing split flange are removed, the upper half of the casing can be lifted off. The rotor consisting of impeller, shaft and shaft seals can be checked and lifted out without disturbing the piping connections or pump alignment. The pump can be driven from both side.

Pump Design HPDM..2d

The HPDM..2d is selected for higher head applications. A single suction impeller is installed on each side of the double suction impeller. The flow is guided in the diffusers from the first stage to the second stage.

The two suction branches are integral to the lower half of the pump casing and are connected by means of breeches pipe. The suction branches can be arranged either horizontally (inline with the discharge) or from below.



Description of Pump

Casing

The casing is horizontally split and of the double volute type minimizing the radial forces acting on the shaft. The suction and discharge branches are inline, horizontal, located on opposite side, cast integrally with the lower half. Both casing halves are bolted together and sealed with a gasket.

Impeller

The double suction impeller is of the closed type. It is keyed to the shaft and located axially on the shaft by means of sleeves and shaft nuts.

The double suction impeller is hydraulically balanced, has low NPSH performance and low disc friction losses, resulting in high efficiency.

Wear rings

Both, the impeller and the casing have renewable wear rings.

Shaft

The large diameter pump shaft for high stiffness combined with a double volute casing results in small shaft deflection and ensures good performance of bearings and shaft seal life.

Shaft sleeves

Replaceable shaft sleeves are provided on each side of the impeller in the area of inlet and shaft seals.

Shaft seal

Both, mechanical seals and packing rings can be supplied. The mechanical seal is generally of the cartridge type. It can be removed and replaced as a single unit. The fluid properties, the shaft peripheral speed and the suction pressure limit the use of packing rings.

Bearings and lubrication

Forced feed or self-lubricated hydrodynamic bearings are available. They consist of a journal bearing unit on the drive end and a combined thrust/journal bearing unit on the none-drive end.

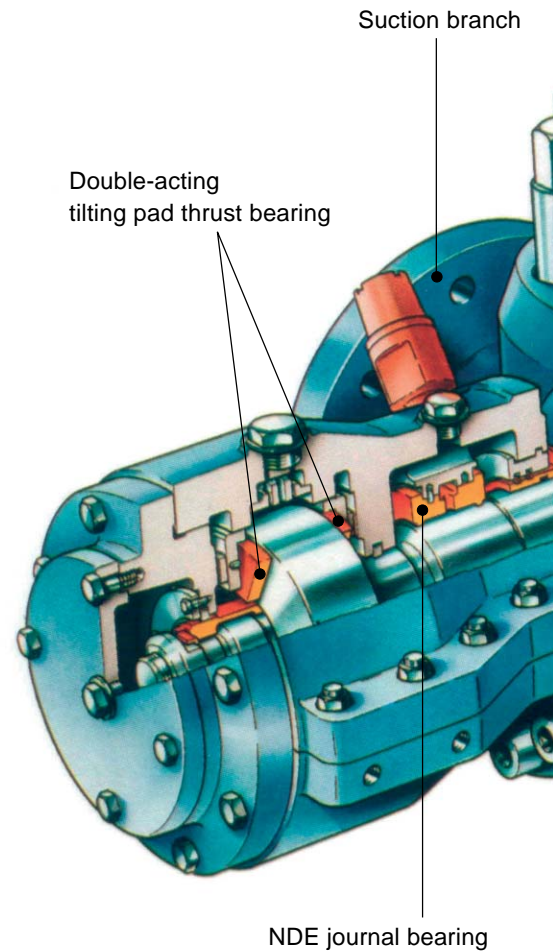
The thrust bearing absorbs the residual thrust of the hydraulically balanced rotor.

The bearing housings are horizontally split for ease of assembly and maintenance.

Antifriction bearings are available for smaller pumps.

Connecting flanges

Suction and discharge branches are made in accordance with the standards specified by the customer.



Dynamics

The pump is operated below the first wet critical bending speed.

Base plate

Single foot support to embed in concrete with anchor bolts or a fabricated base plate, pedestal is welded in a solid plate, which is bolted to the foundation and grouted at its outer edges.

Materials

Casing parts: normally of unalloyed or alloyed cast steel, the chosen material can be matched to the respective operating conditions.

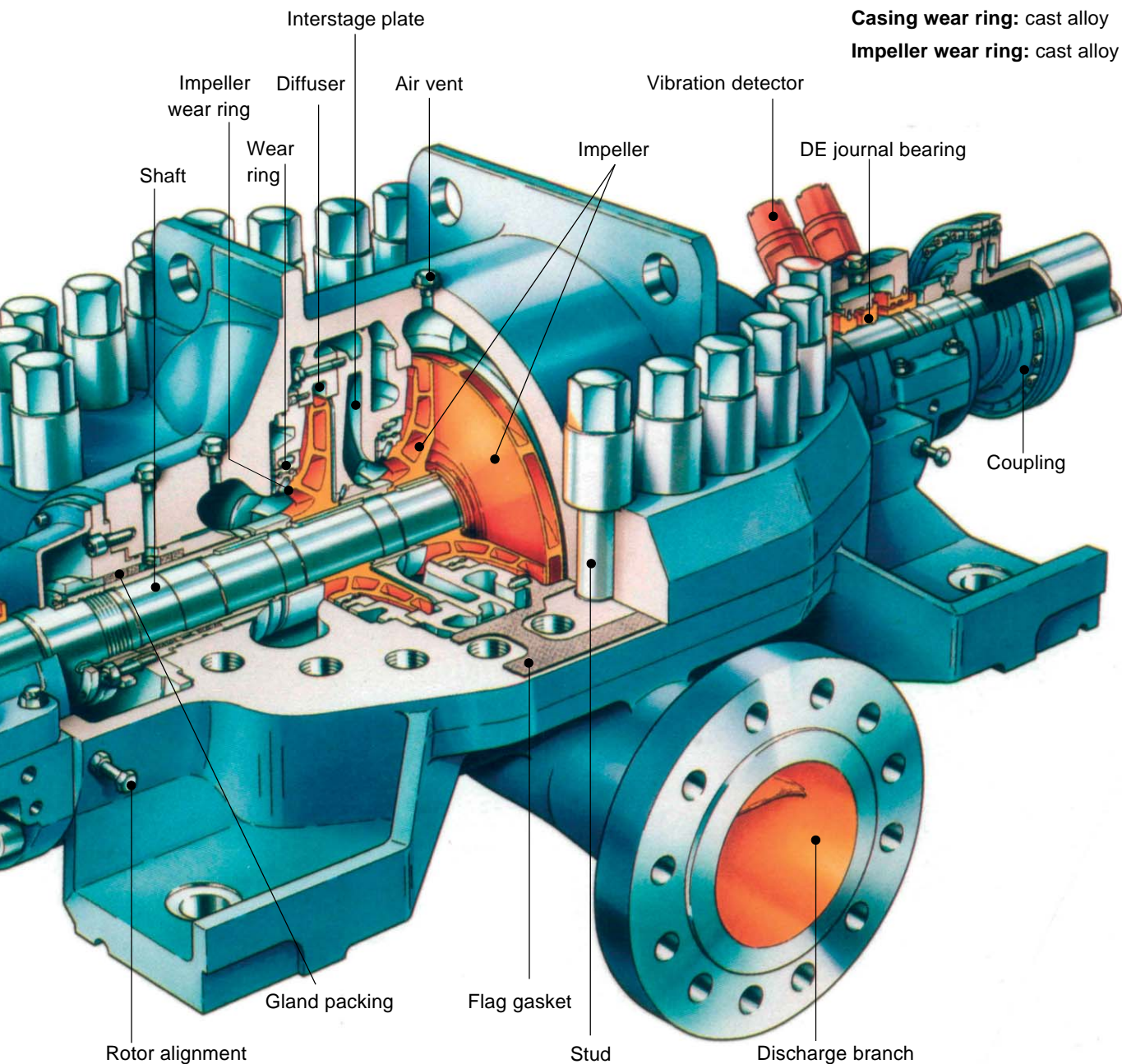
Impeller: cast chromium steel

Shaft: normally of unalloyed forged steel or alloyed steel in accordance with the operating conditions.

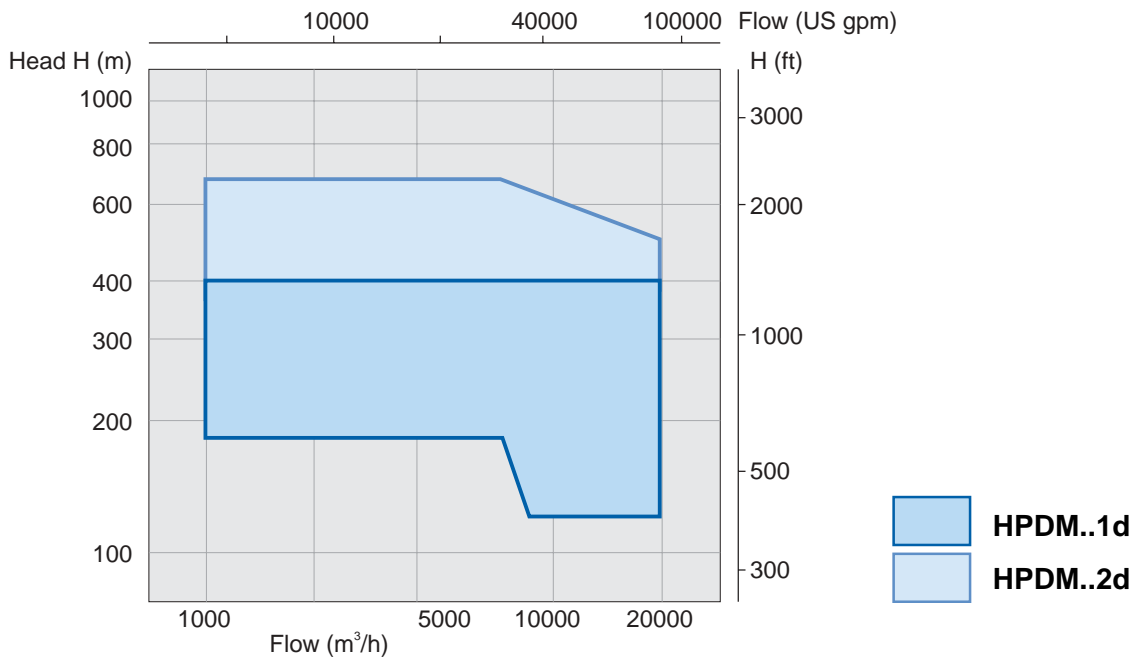
Shaft sleeve: chromium steel

Casing wear ring: cast alloy

Impeller wear ring: cast alloy steel

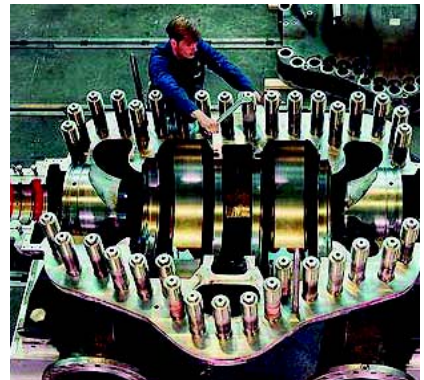
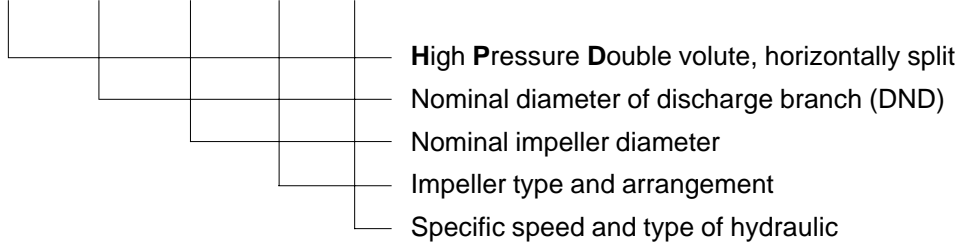


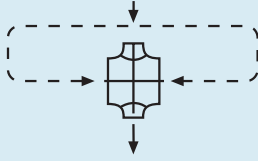
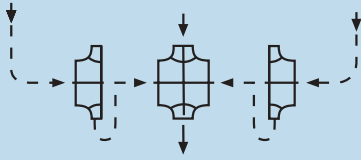
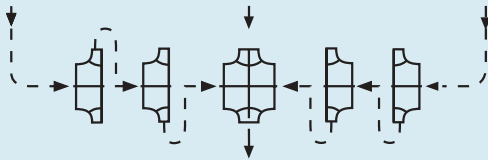
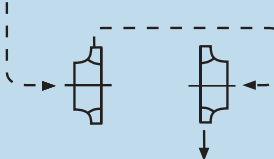
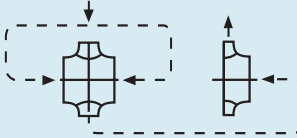
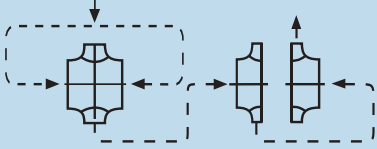
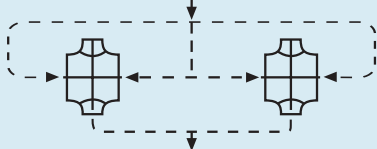
HPDM Range Chart



Pump Designation

HPDM 300 - 420 - 1d / 36



Designation	Description	Impeller Arrangement
HPDM..1d	Single stage, double suction	
HPDM..2d	Two stages, double suction (two "s" impellers in parallel, back to back arrangement with "d" outlet stage)	
HPDM..3d	Three stages, double suction (2+2 "s" impellers in parallel, back to back arrangement with "d" outlet stage)	
HPDM..s+s	Two stages, single suction (two "s" impellers back to back arrangement)	
HPDM..d+s	Two stages, double suction ("d" impeller suction stage in series with "s" impeller)	
HPDM..d+s+s	Three stages, double suction ("d" impeller suction stage with two "s" impellers in back to back arrangement)	
HPDM..dd	One stage, two double suction (two "d" impellers in parallel)	



Major Reference Installations

Water Supply System Brasilia (Brazil)

Operator CAESB (Companhia de Água et Esgotos de Brasilia)
Ordered by CAESB
Planning Planidro



Pump type	Q (m ³ /h)	H (m)	P (kW)
2 x HPDM 500-860-2d	3'600	270	3'008
1 x HPDM 600-1150-2d	7'200	270	6'030

Water Supply System Cutzamala, Mexico-City (Mexico)

Operator CAVM (Comisión de Aguas del Valle de México)
Ordered by CAVM
Planning CAVM and Ipesa Consultores S.C.



Pump type	Q (m ³ /h)	H (m)	P (kW)
11 x HPDM 750-945-1d	14'400	160	6'930
6 x HPDM 800-865-1d	14'400	122	5'370
12 x HPDM 700-1010-1d	14'400	350	15'390
3 x HPDM 500-620-1d	6'120	158	2'990
3 x HPDM 450-710-1d	5'760	213	3'780

Water Supply System Tuy I / III / IV, Caracas (Venezuela)

Operator INOS (Instituto Nacional de Obras Sanitarias)

Ordered by INOS

Planning INOS and sub-consultants



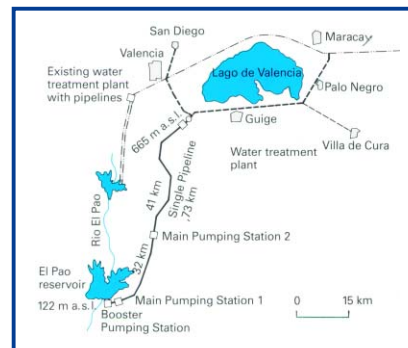
Pump type	Q (m ³ /h)	H (m)	P (kW)
7 x HPDM 800-1300-3d	14'400	350	15'404
12 x HPDM 600-750-2d	10'800	420	13'725
16 x HPDM 500-860-2d	3'680	286	3'225

Water Supply System El Pao la Balsa (Venezuela)

Operator INOS (Instituto Nacional de Obras Sanitarias)

Ordered by INOS

Planning INOS and sub-consultants



Pump type	Q (m ³ /h)	H (m)	P (kW)
6 x HPDM 600-830-3d	8'100	350	8'500



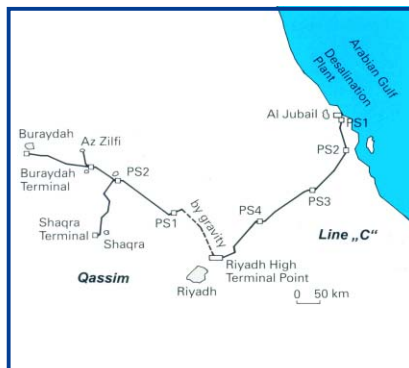
Water Transport and Supply System Al Jubail Riyadh Line "C" and Riyadh Qassim (Saudi Arabia)

Al Jubail - Riyadh Line "C", Saudi Arabia

Operator SWCC (Saline Water Conversion Corp.)
Riyadh, Saudi Arabia

Ordered by Halla Construction Co. Ltd., Seoul, South Korea

Consultant ACI - Aqua Project Consult, Siegen, Germany



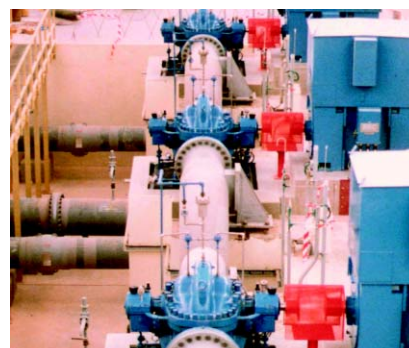
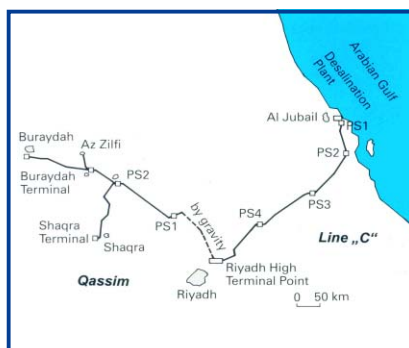
Pump type	Q (m ³ /h)	H (m)	P (kW)
4 x HPDM 500-815-s+s	5'280	508	8'198
4 x HPDM 500-815-s+s	5'280	498	8'037
6 x HPDM 800-1080-1d	15'840	212	10'061

Riyadh - Qassim, Saudia Arabia

Operator SWCC (Saline Water Conversion Corp.)
Riyadh, Saudi Arabia

Ordered by SWCC (Saline Water Conversion Corp.)
Riyadh, Saudi Arabia

Consultant AAA-ABALKHAIL,
Riyadh, Saudi Arabia



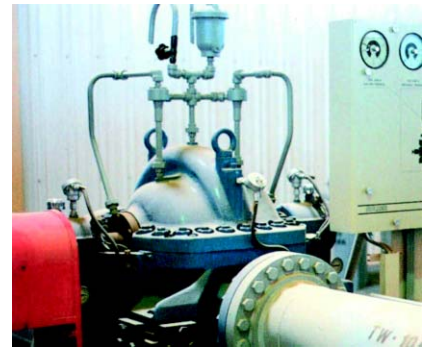
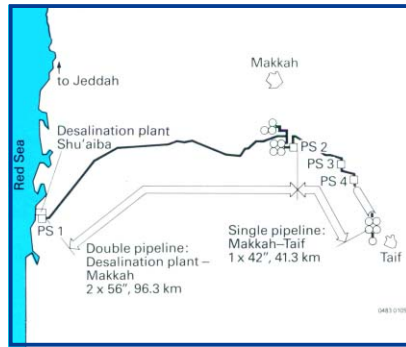
Pump type	Q (m ³ /h)	H (m)	P (kW)
10 x HPDM 600-570	8'646	118	3'165

Water Supply System for Mecca and Taif (Saudi Arabia)

Operator SWCC (Saline Water Conversion Corp.), Riyadh, Saudi Arabia

Ordered by Al Rashid/Hak Consortium, Riyadh, Saudi Arabia

Planning ILF, Innsbruck, Austria

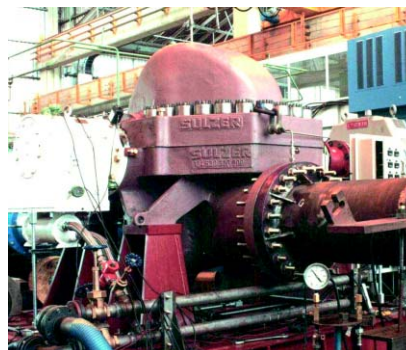


Pump type	Q (m ³ /h)	H (m)	P (kW)
8 x HPDM 300-600-1d	1'782	70	397
8 x HPDM 250-375-2d	1'782	485	2'732
4 x HPDM 250-425-1d	1'332	340	1'448
4 x HPDM 250-420-2d	1'332	575	2'449
4 x HPDM 250-420-2d	1'332	645	2'748

Water Transport and Supply System Fujairah, United Arab Emirates

Operator Union Water & Electricity, Abu Dhabi, UAE

Ordered by Technip-Coflexip, Düsseldorf, Germany



Pump type	Q (m ³ /h)	H (m)	P (kW)
4 x HPDM 600-900-s+s	6'314	487	9'373



Check our worldwide offices at
www.sulzerpumps.com