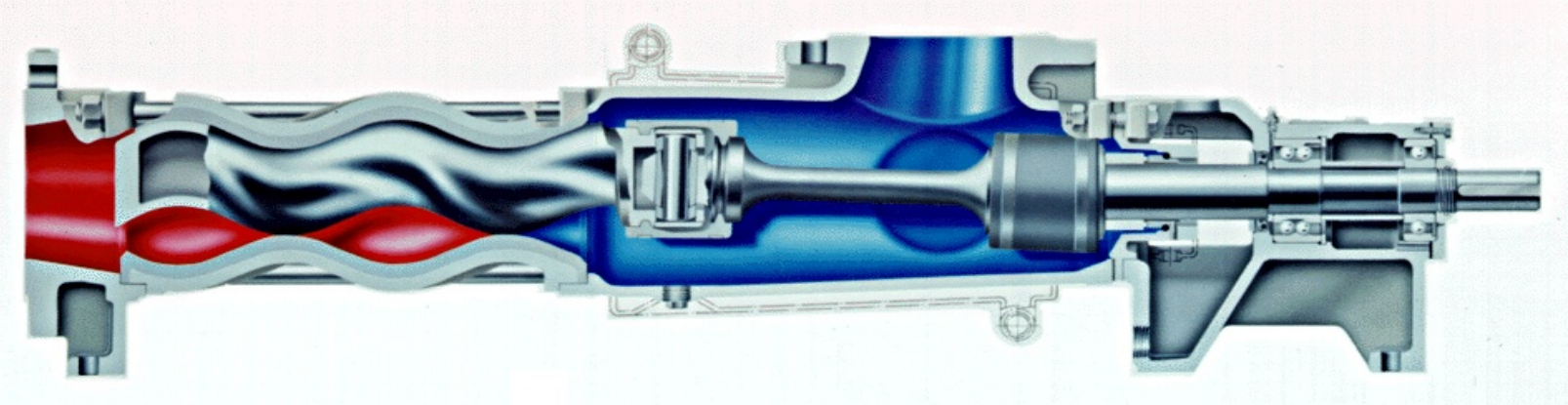
Applications



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Portland Valve

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Warren® Pumps

Zenith® Pumps

Colfax Corporation

Progressing Cavity Pumps

Markets

- **Waste Water Industry**
- **Chemistry / Petrochemical Industry**
- **Food**
- **Paper**
- **Marine**
- **Others**

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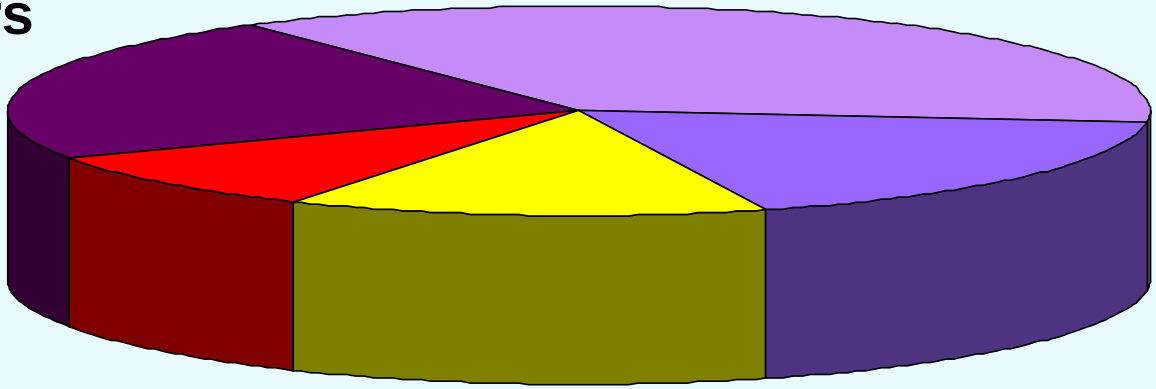
Main - Industries



Export Sales Share 57%

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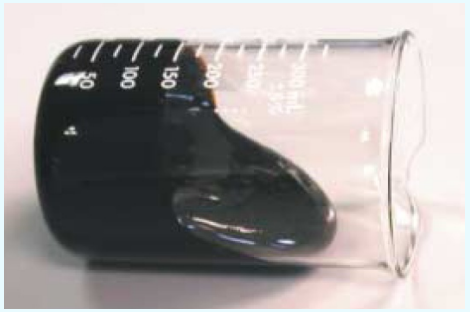
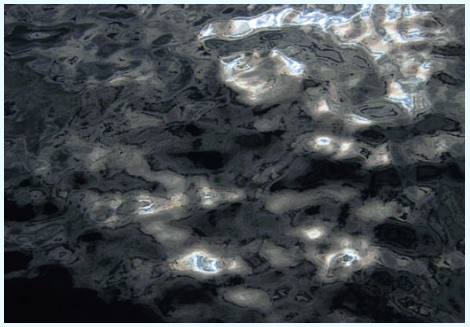
Application Fields of PC‘s

1. **High Viscosity Fluids**



2. **Abrasive Fluids or Fluids with Solids**

3. **Smooth Fluid Handling**



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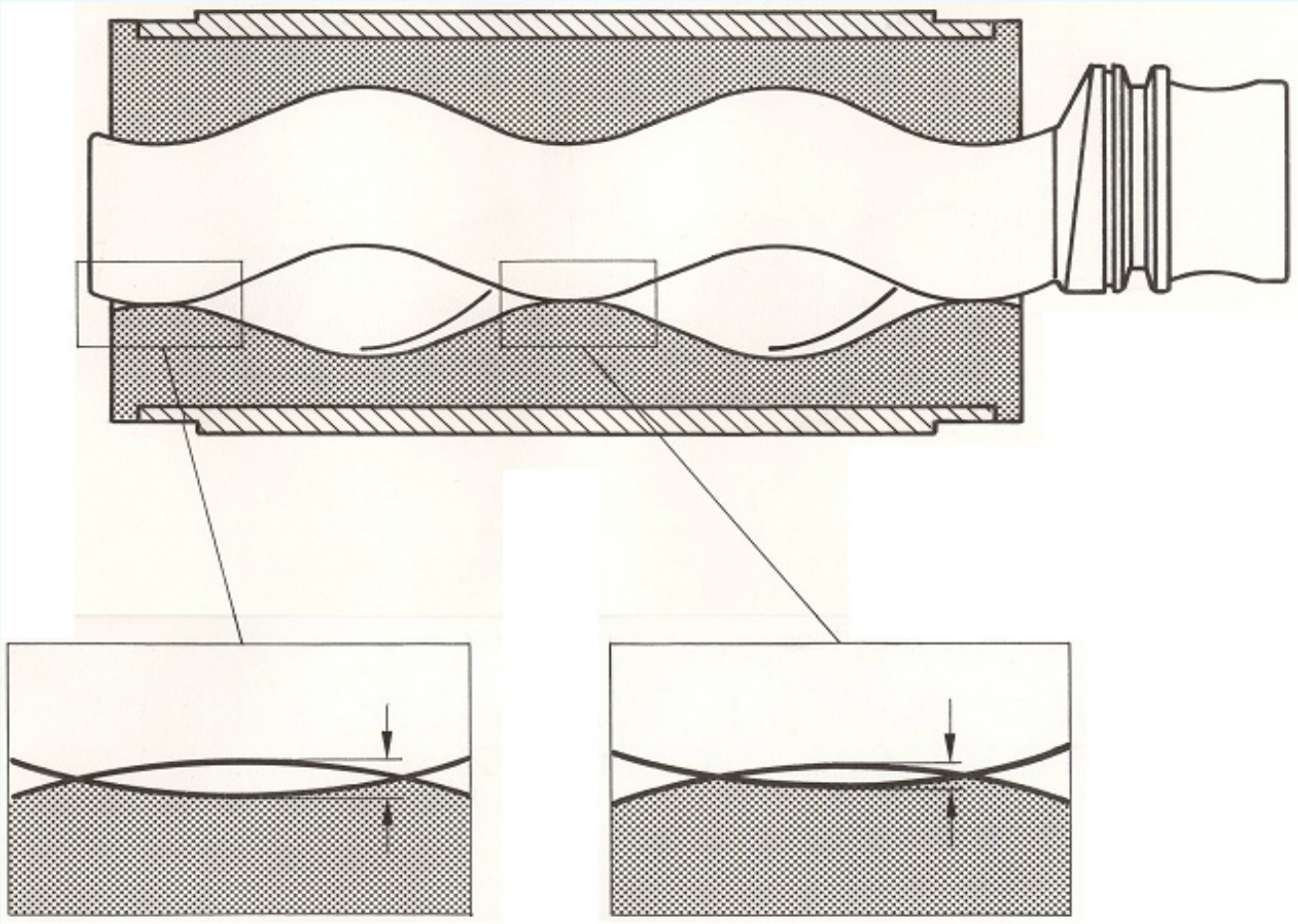
Main Pump Elements

Interference fit



high interference fit normal interference fit

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Application Fields of PC‘s

1. **High Viscosity Fluids**
2. **Abrasive Fluids or Fluids with Solids**
3. **Smooth Fluid Handling**

- Dosing Capability
- Low Pulsation
- Flow ~ Speed
- Reversible
- Self-priming
- Low Invest Costs

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Progressing Cavity Pumps

Waste and Sewage Engineering

- Feeding Dewatering Machines like Centrifuges, Belt Presses, Filter Presses
- Fresh, Digested, Activated and Thickened Sludge
- Dewatered Sludge up to 40 % Dry Substance
- Waste
- Flocculants and Other Dosing Additives

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Chemical Industry

- Solvents
- Latex Paints
- Paints and Lacquers
- Viscous Adhesives
- Viscous Pastes
- Color Stocks
- Ointments
- Soap Products
- Acids and Alkalis
- Synthetic Dispersions and Suspensions

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Petrochemical Industry

- Crude Oil
- Slop Oil / Oily Water
- Slurries
- Oil Sludge

Shipbuilding and Offshore Engineering

- Drain Pump
- Bilge Water Pump
- Separator Sludge
- Separator Feed Pump
- Fecal Matter

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Paper Industry

- **In Stock Preparation**
  -Paper Stock up to 16 % atro
  -Additives as Glue, Kaolin and Dyestuffs
- **Paper Machine**
  -Additives as Glue, Starch Solutions
- **Coating & Laminating**
  -Pigments as Kaolin, TiO2, Satin White and Calcium Carbonate
  -Binders as Starch and Latex
  -Additives as Bentonite and Caustic Soda

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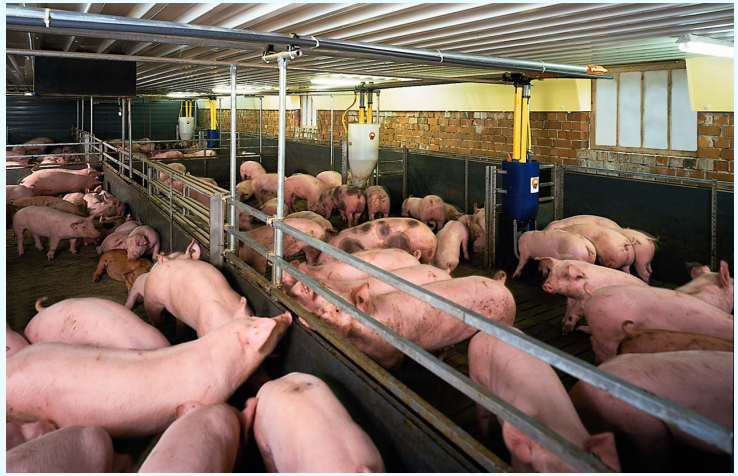
Agriculture



for Pumping Pig Swill and Liquid Manure

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Food and Semi-luxury Food Industry

- Production or Processing of Sugar
- Molasses, Glucose
- Preserves
- Confectionery, Ice Creams, Bread and Pastries, Fruit and Vegetables
- Concentrated Juice
- Mash
- Dairy Products: Cream, Cheese, Yogurt, Whey
- Yeast
- Meat Products and Sausages
- Fish Pastes
- Fats and Oils

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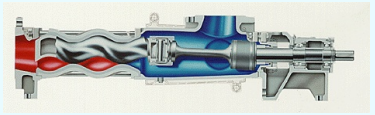
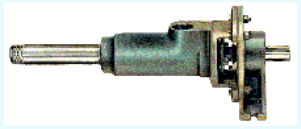
Waste Water Industry

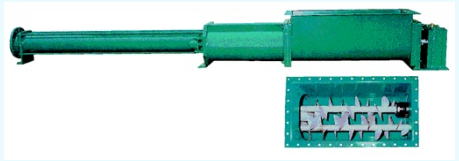
Progressing Cavity Pumps

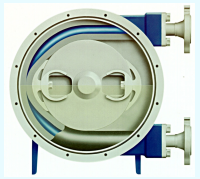
ALLWEILER Pumps in Sewage Industry

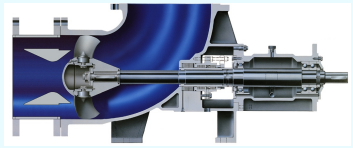
- **Progressing Cavity Pumps**
  - TECFLOW
  - AEB
  - ADP, ADBP
  - AE.N – RG
- **Peristaltic Pumps**
  - ASH, ASL
- **Macerators**
  - AM, ABM
- **Propeller Pumps**
  - P, PT, ALLPRO











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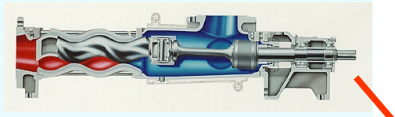
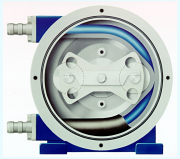
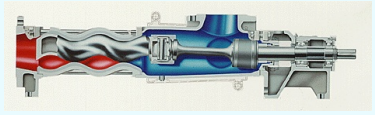
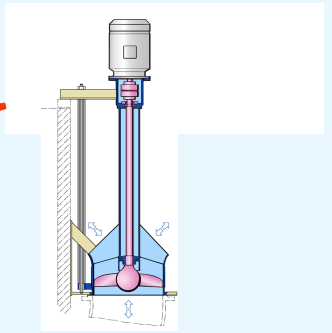
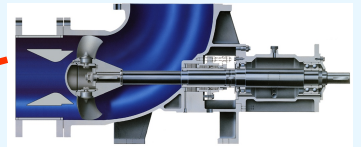
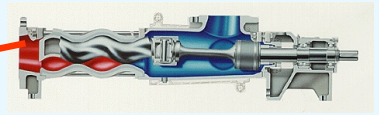


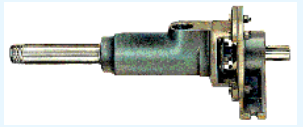


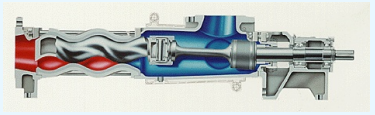


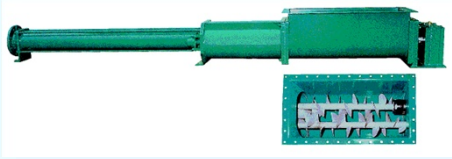




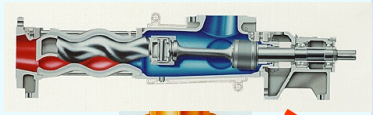


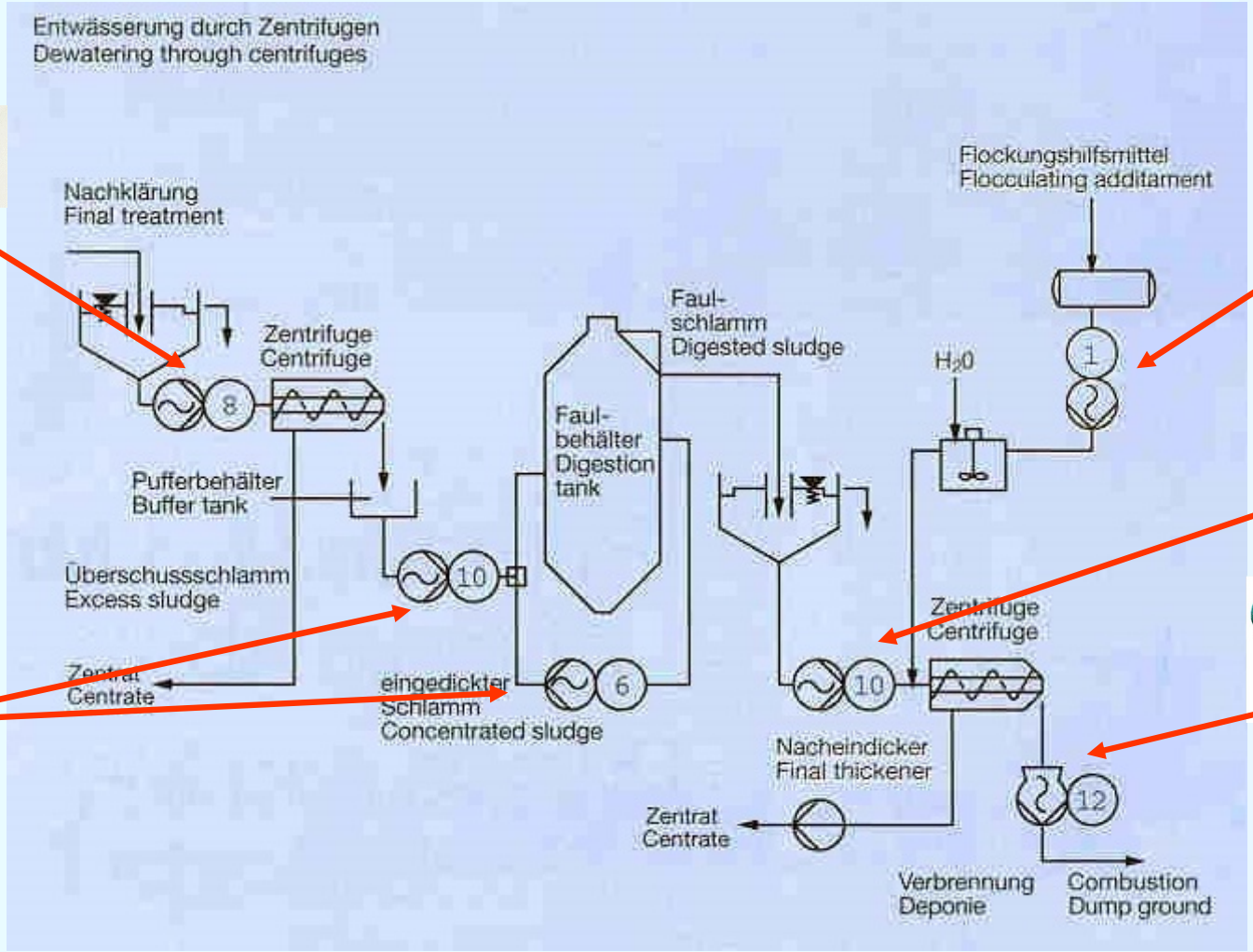


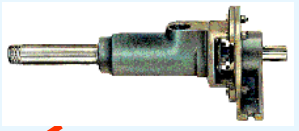


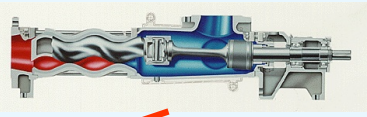


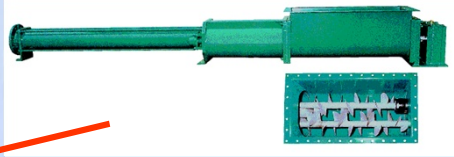
Progressing Cavity Pumps

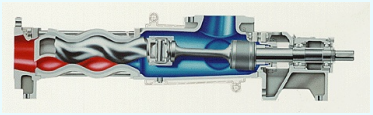




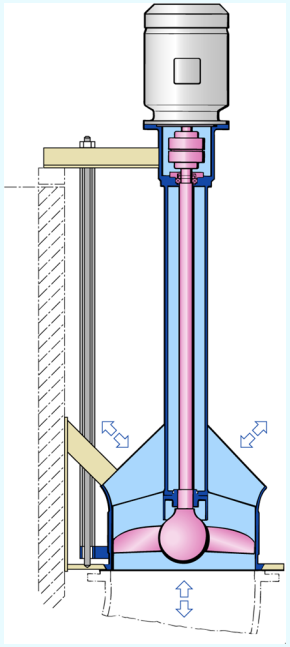




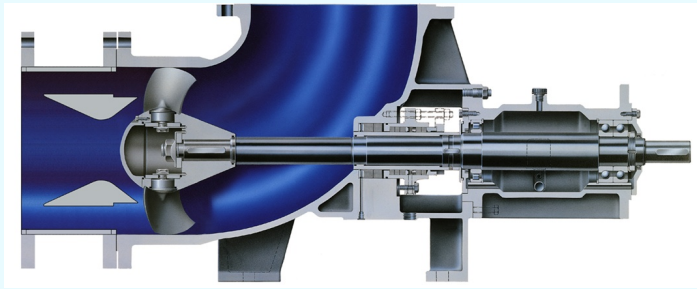




Progressing Cavity Pumps



P, PT, ALLPRO



PT ALLPRO, P

Design Features:

- bearing bracket
- block design
  - segmental type pump
  - horizontal installation
  - vertical installation
  - dry installation
- submerged design (PT)
- wet installation (PT)
- storage tank mounting (PT)

	PT	ALLPRO, P
Capacity up to	35.000 m³/h	35.000 m³/h
Delivery head up to	8 m	9,5 m
Temperature up to	200°C	200 °C
Delivery pressure up to	6 bar	6 bar
Immersion depth up to	2100 mm	-
Nominal diameters from	-	200 to 1200 mm

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Recirculating Pump

Installation example of a vertical-mounted propeller pump of Series PT as Recirculation Pump

(Alternatively the recirculation can be handled with dry installed propeller pump.)

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Propeller Pump, Series P

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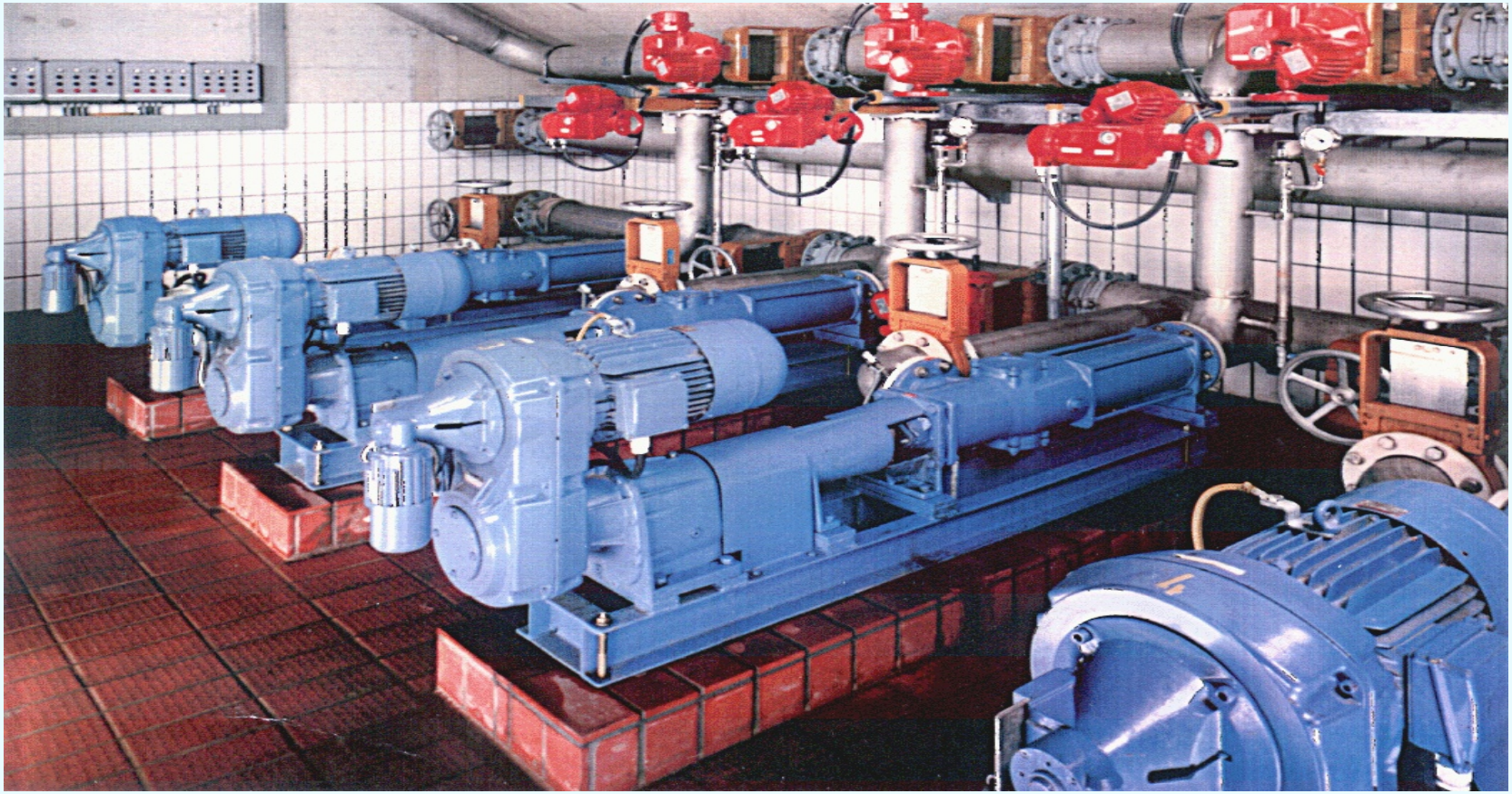
PC Pumps for Pumping hot and fresh Sludge in Sewage Treatment Plants



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Activated Sludge Pumps - 400 m³/hr - AED1E15500-ID
for ORYX GTL Project, Ras Laffan Industrial City - Qatar

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P.C. Pumps in Waste Water Treatment Plants

Yorkshire Water Authority, England

16 off, SEP 1450.1
14 off, SNP 1450.1

for Combined Sludge

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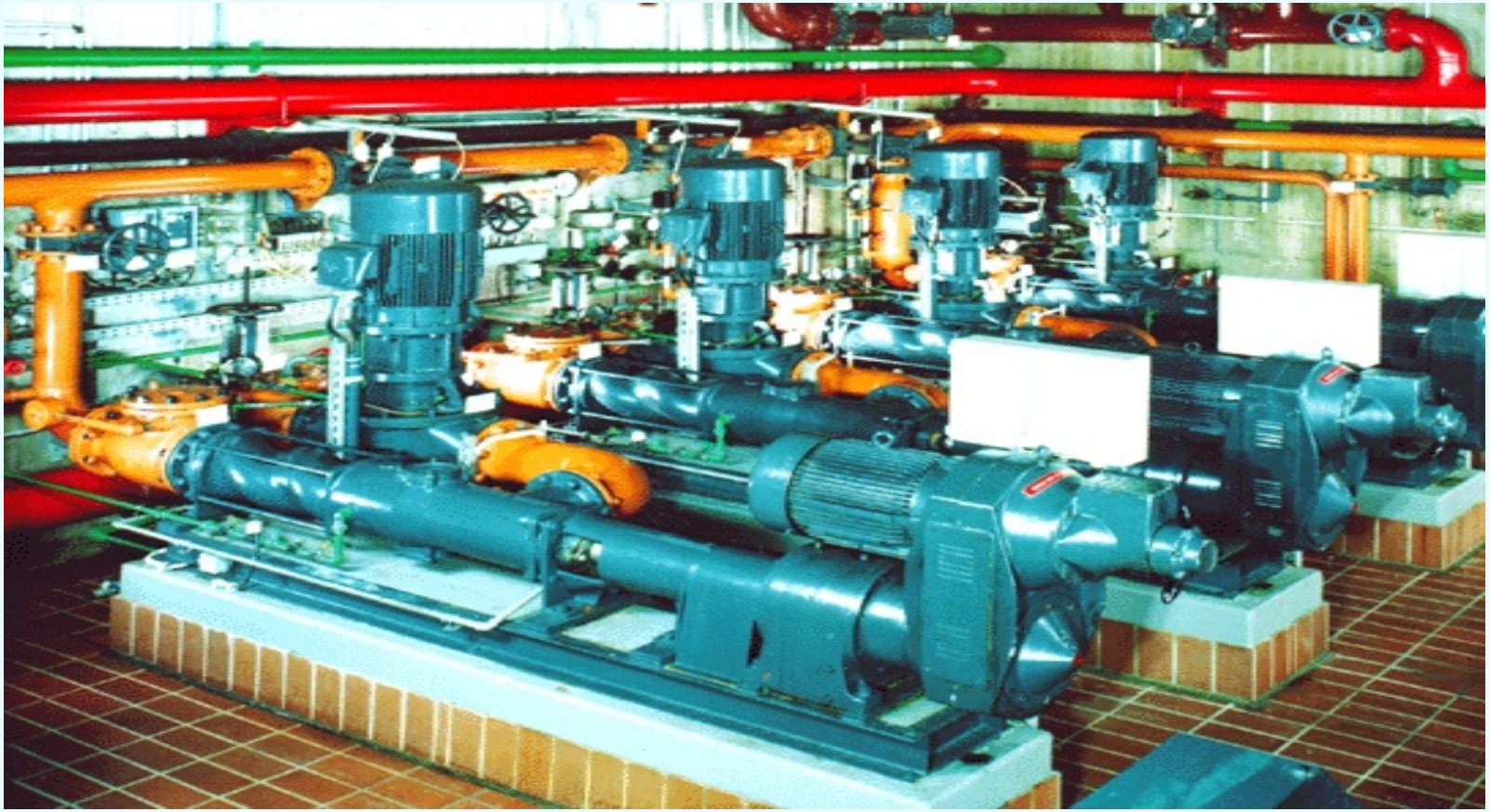
PC - Pumps and Macerators in the Waste Water Industry



Digested Sludge Circulation

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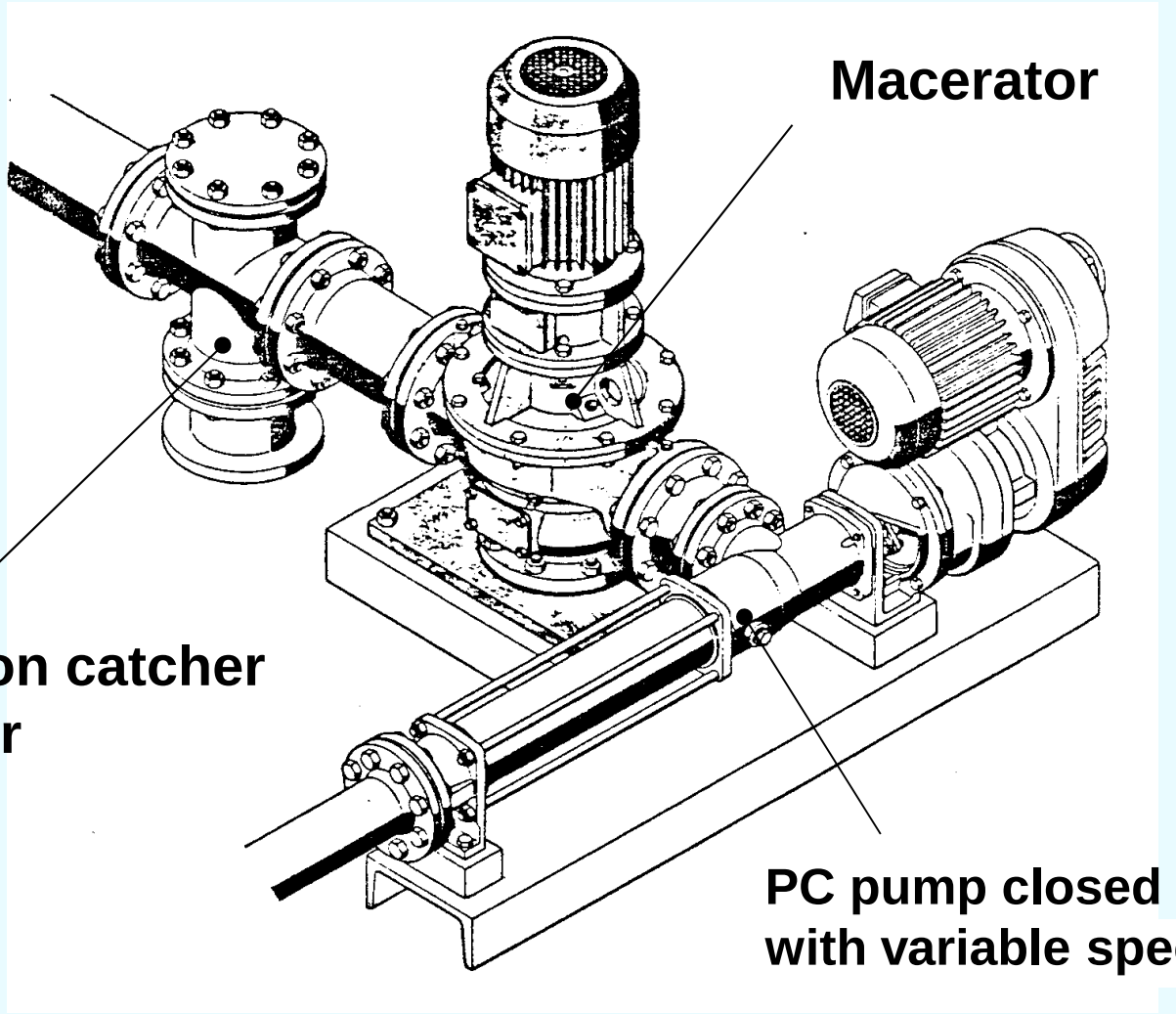
Arrangement of In- Line Macerator and PC Pump



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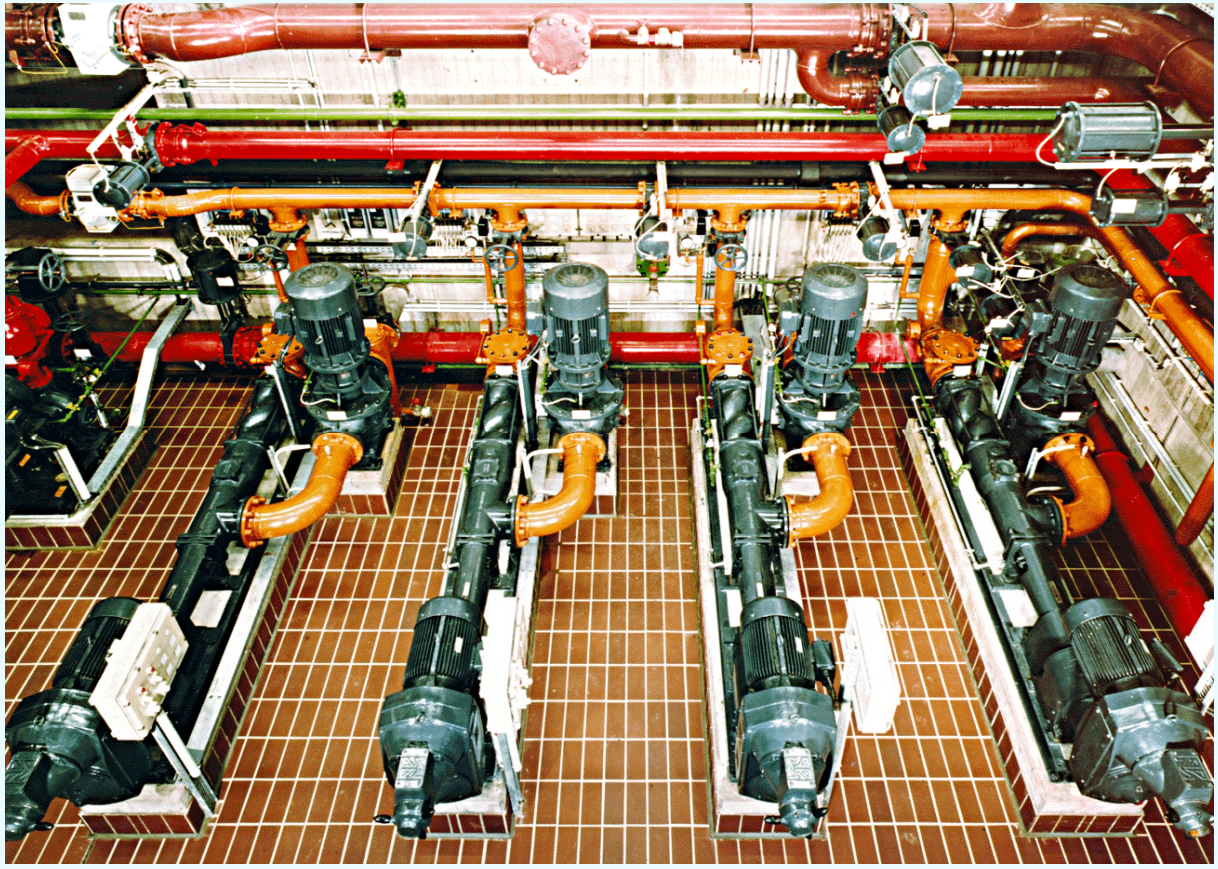
P.C. Pumps in Waste Water Treatment Plants



WWTP Bonn, Germany.
4 off, SEP 2700.1
4 off, AM 120 I-1

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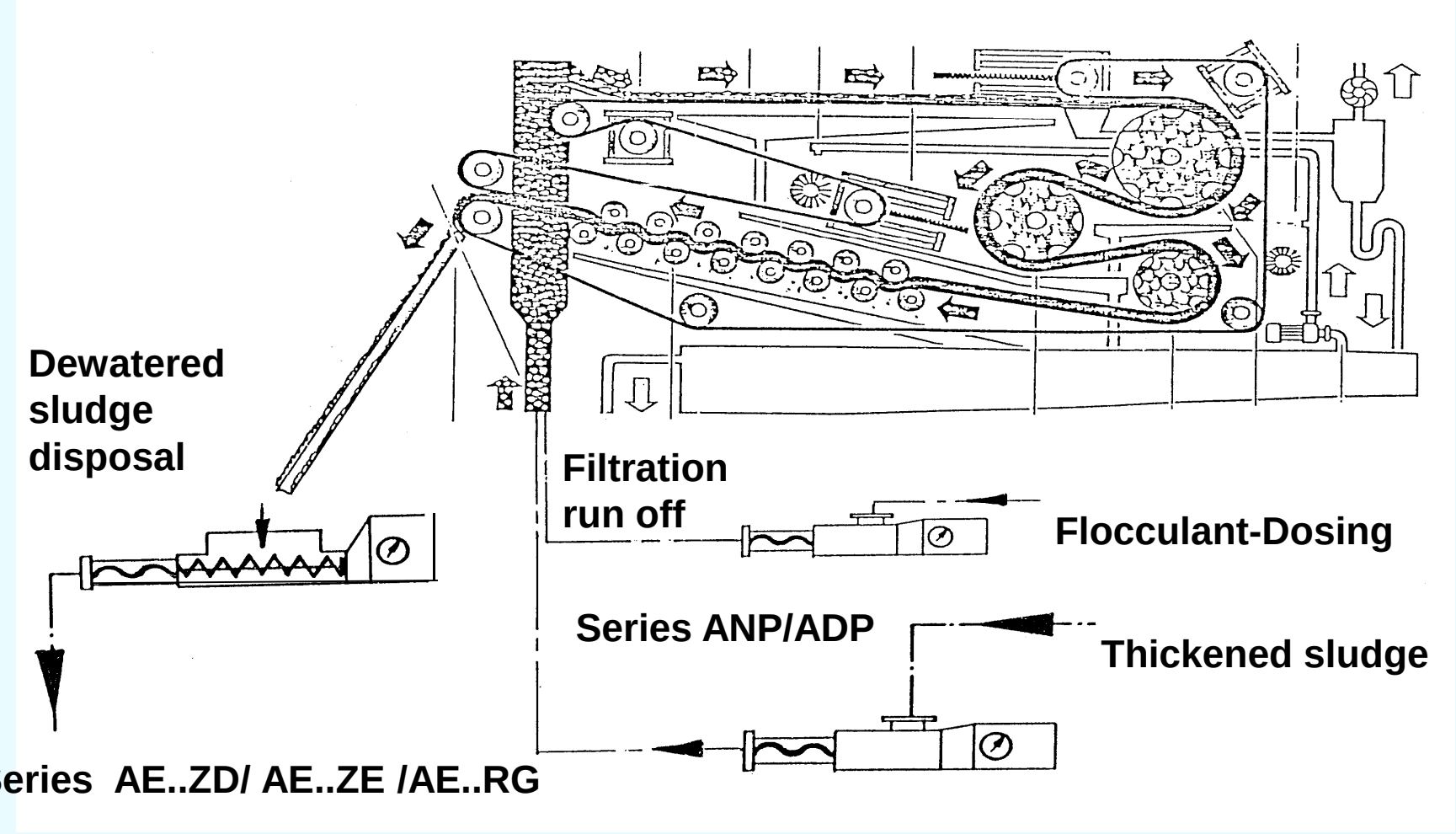
Progressing Cavity Pumps

PC Pumps for Feeding and Removal of Dewatered Sludge from Travelling Screen Presses



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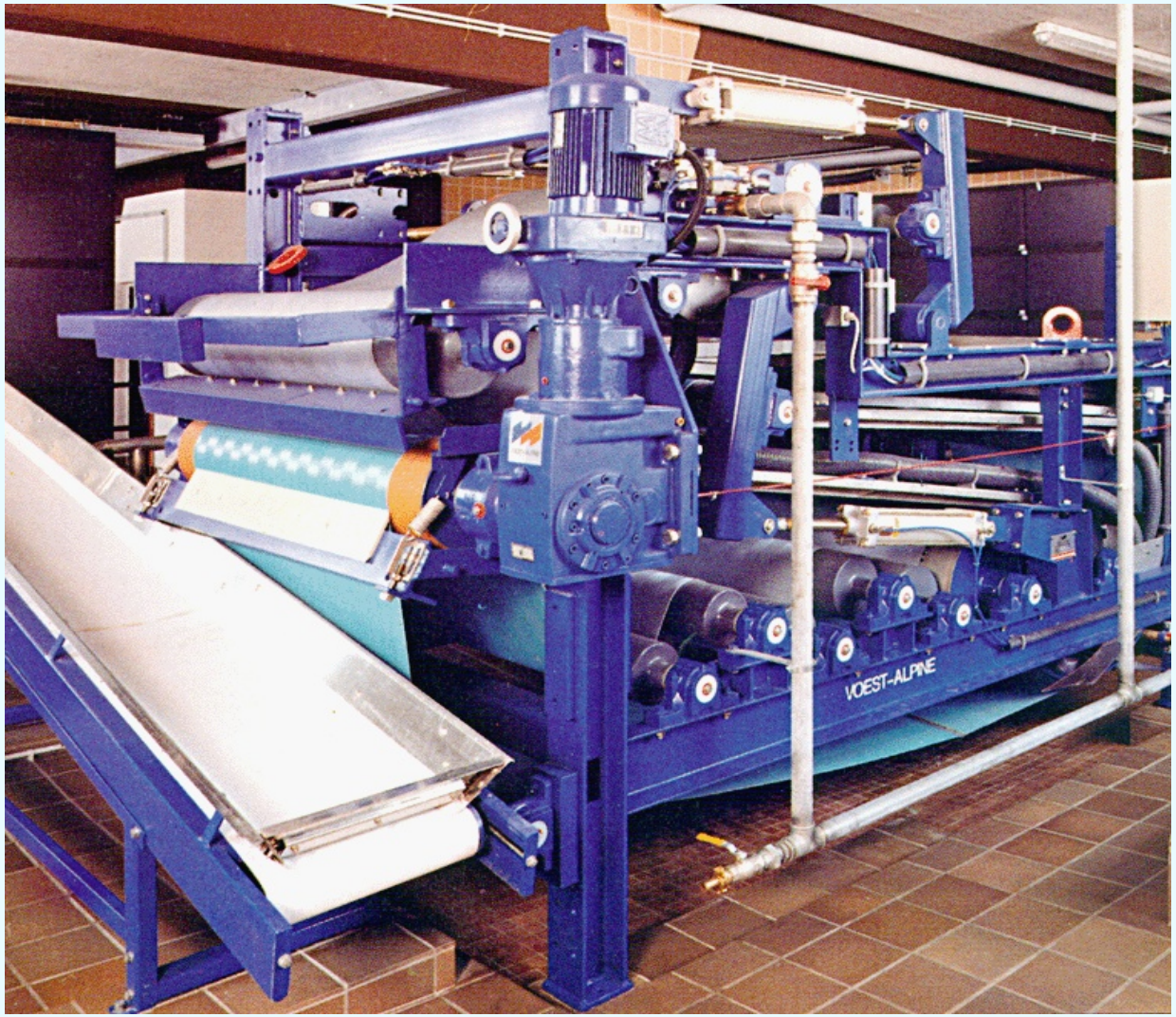

Travelling Screen Press

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Portland Valve
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Warren® Pumps
Zenith® Pumps
Colfax Corporation

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Dewatered Sludge Disposal from a Travelling Screen Press

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AE2N750-ZD Travelling Screen Press

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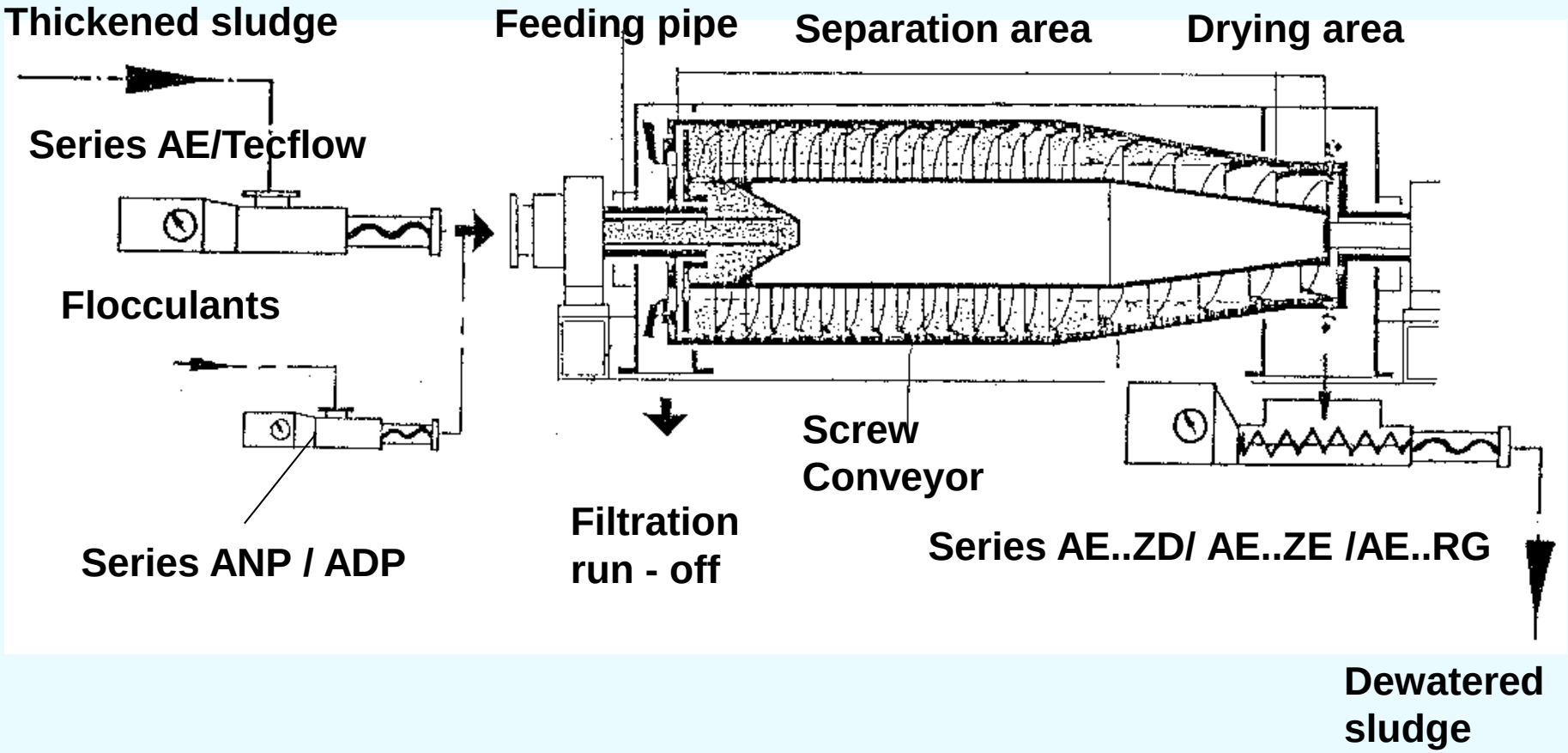
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

PC Pumps for Feeding and Removal of Dewatered Sludge from Centrifuges



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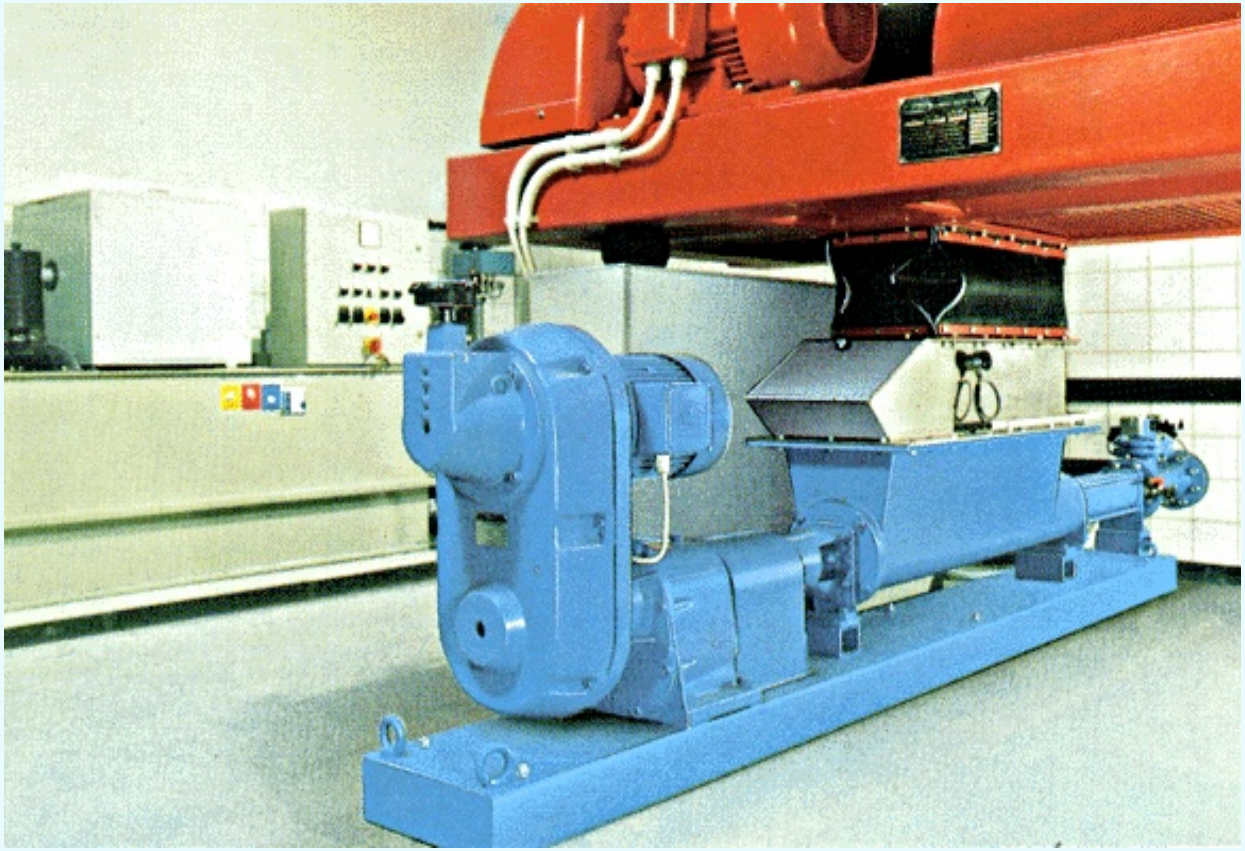
P.C. Pumps in Waste Water Treatment Plants



Auger Feed Pump for dewatered sludge with 35 % dry solid content

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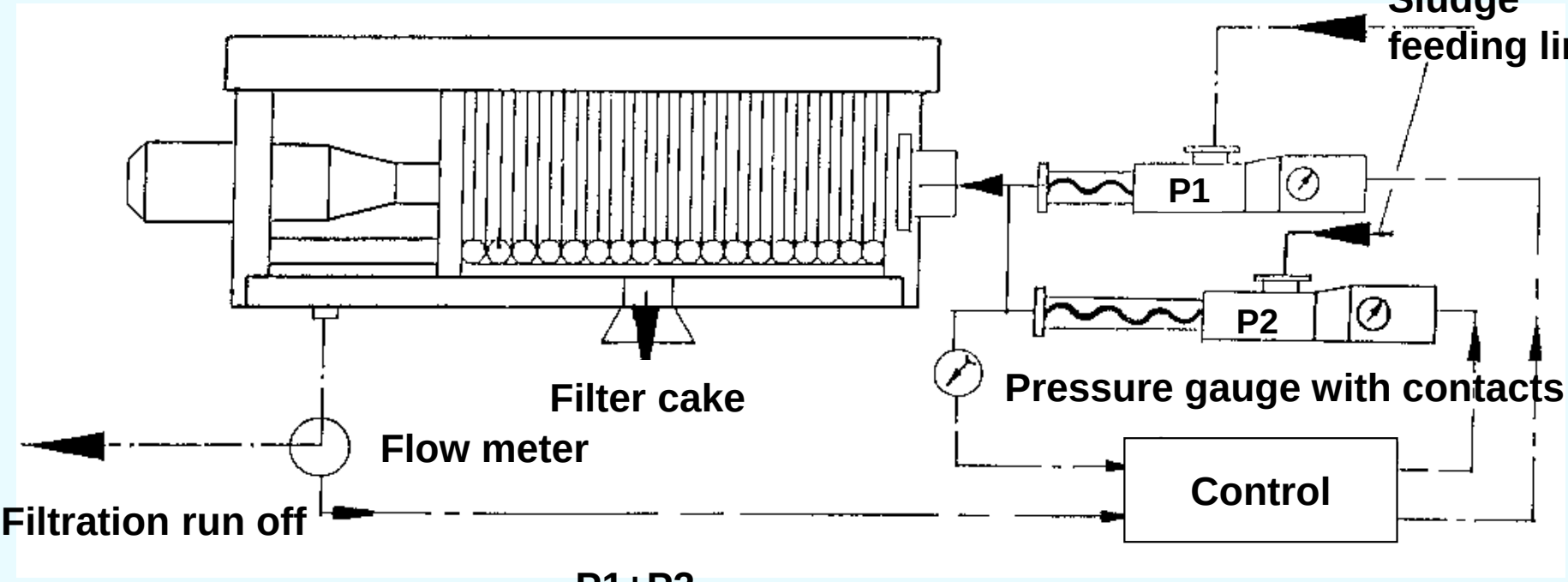
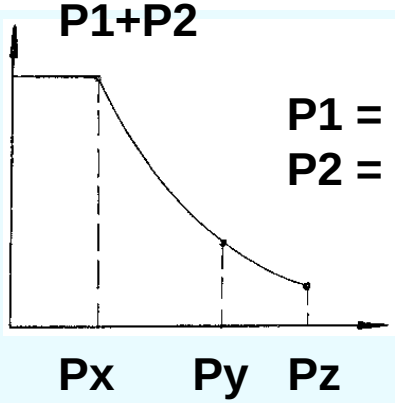
Progressing Cavity Pumps

Filter Press Feeding System



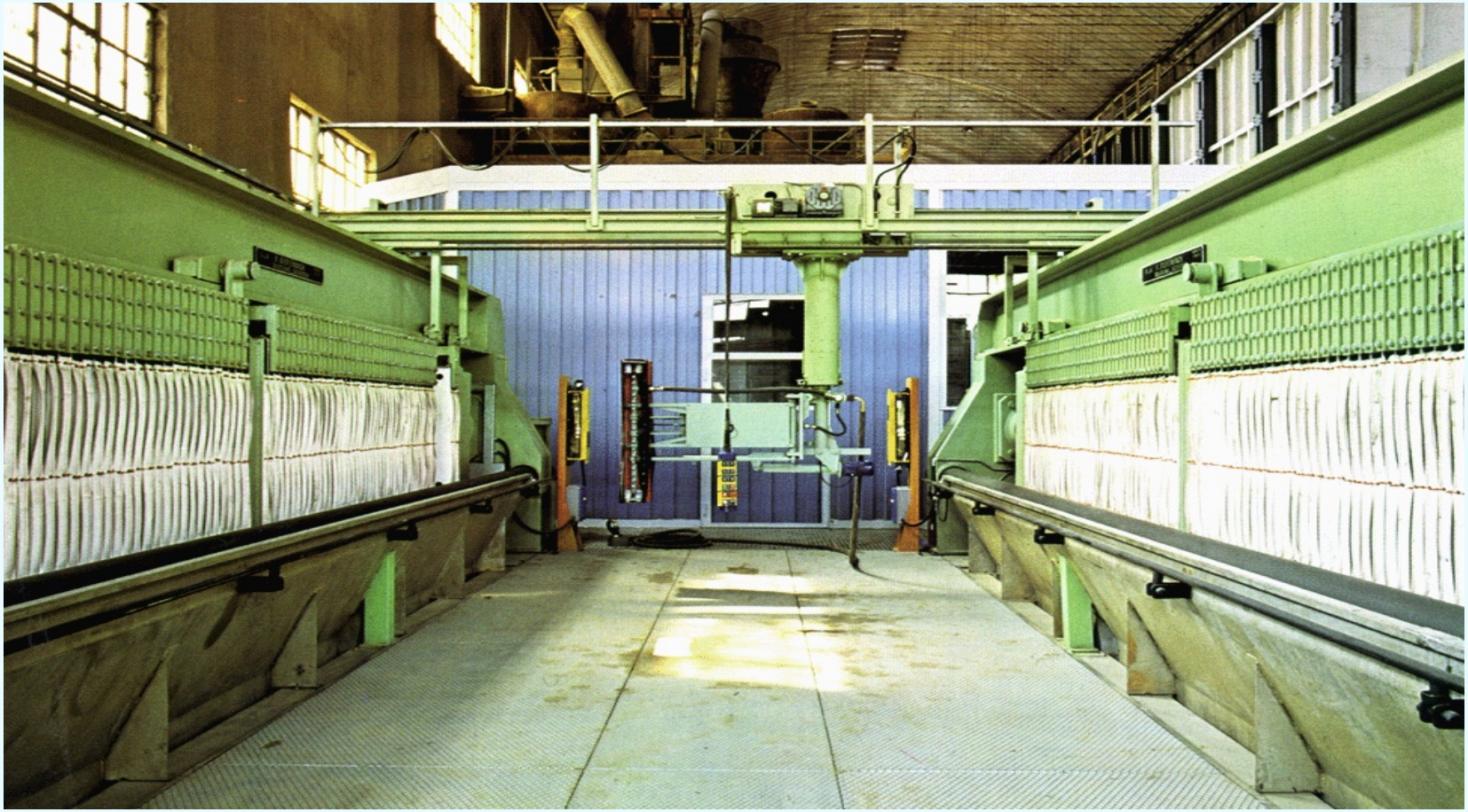


P1 = Feeding pump Series AE..E
P2 = High pressure pump Series AE..H

ALLWEILER®
HOUTTUIN™
Imo Pump
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

Filter Press Feeding by PC Pumps



ALLWEILER®
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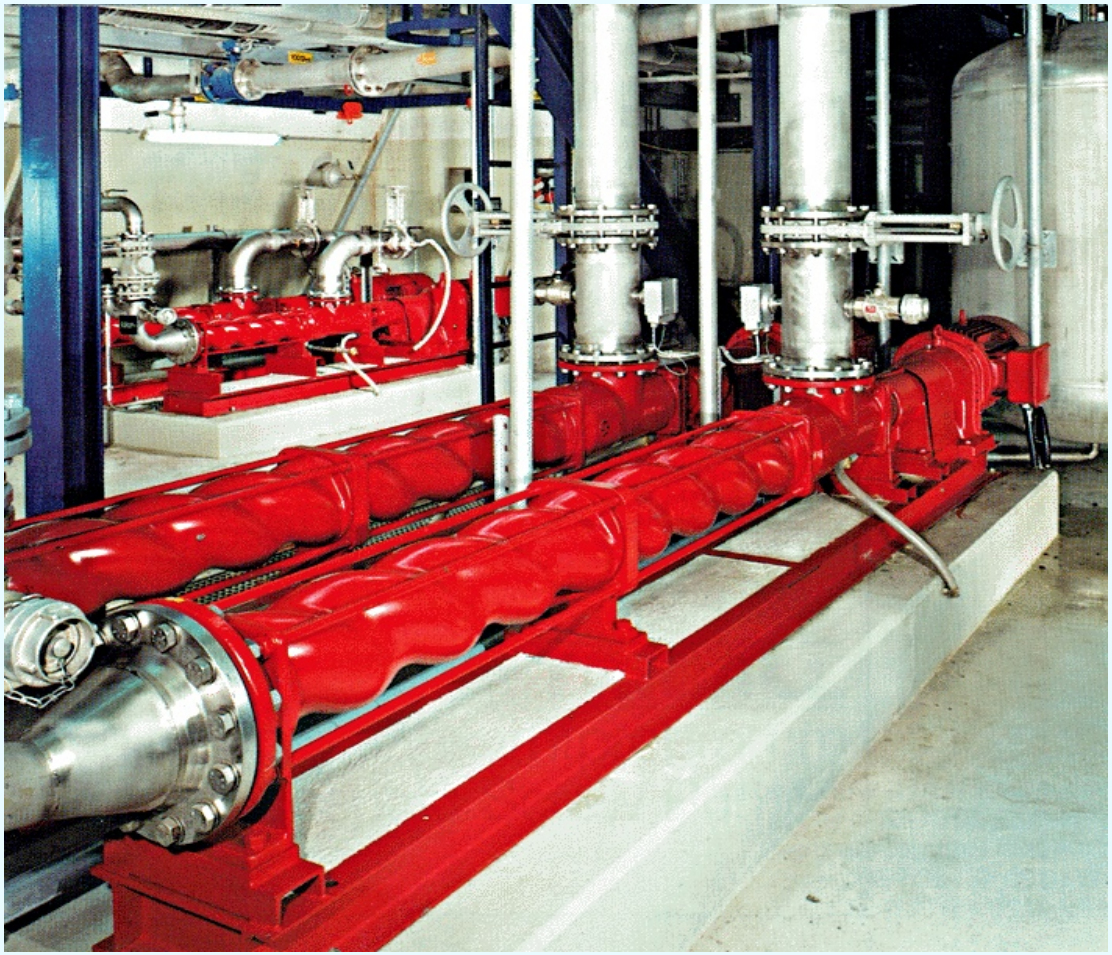
Imo Pump
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

PC Pumps In Waste Water Treatment Plants



4-Stage Pumps for Filter Press Feeding

Werdhöltzli WWTP Switzerland

ALLWEILER®
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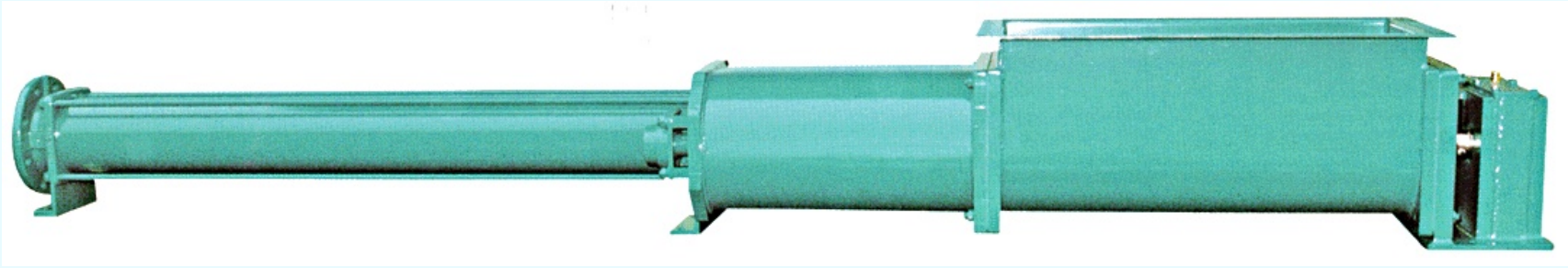
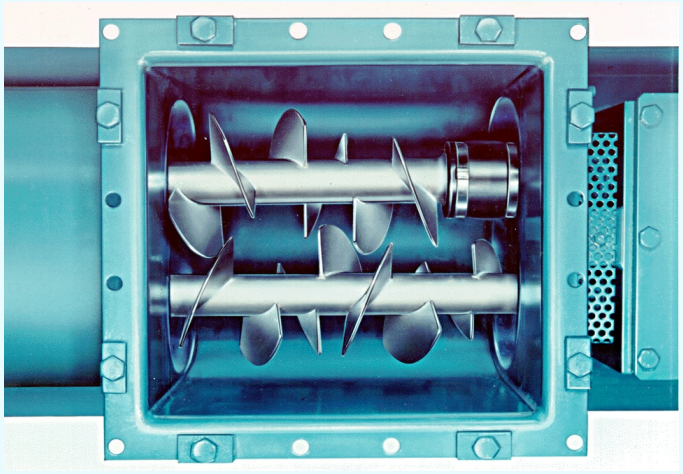
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

Progressive Cavity Pumps Series RG



- Flow rates up to 350 dm3 / min
- Discharge pressure up to 20 bar
- 1, 2 or 4 Stages
- Solids content up to 45 % DS
- No bridge building above the augers
- Optional integrated sludge/lime mixing with special augers
- Optional stator with adjustment device for max. stator life
- Available in fabricated carbon steel or stainless steel



ALLWEILER®

HOUTTUIN™

Imo Pump

LSC Lubrication Systems Company

Portland Valve

TUSHACO® PUMPS

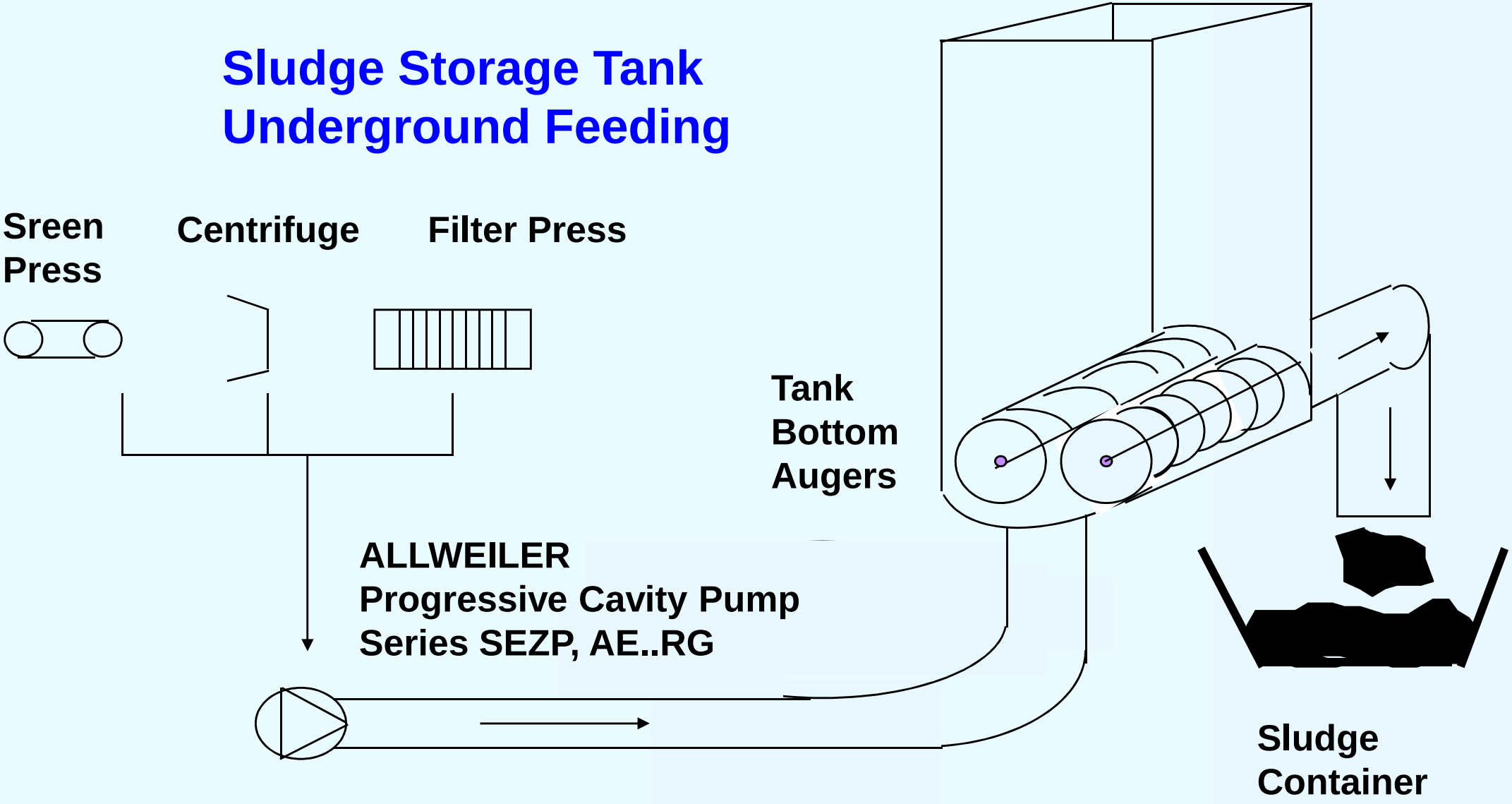
Warren® Pumps

Zenith® Pumps

Colfax Corporation

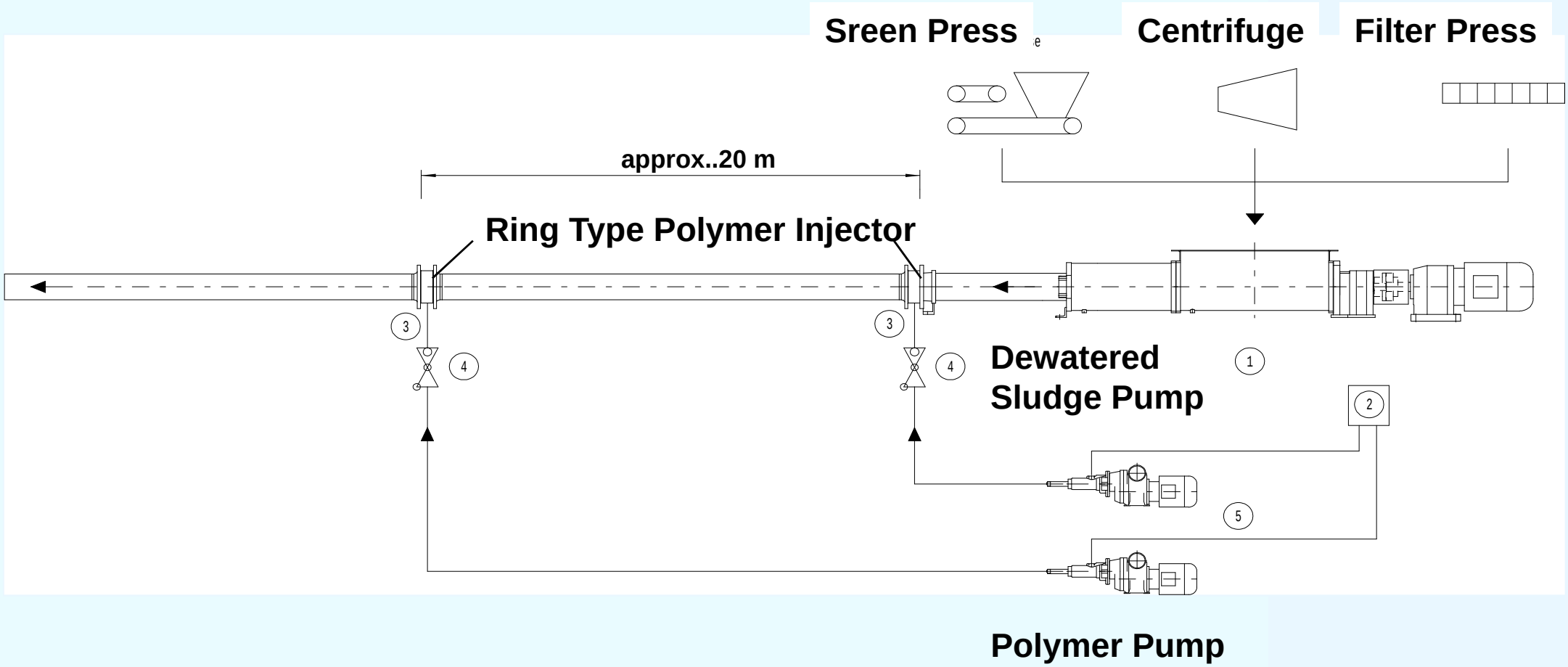
Progressing Cavity Pumps

Sludge Storage Tank
Underground Feeding



Progressing Cavity Pumps

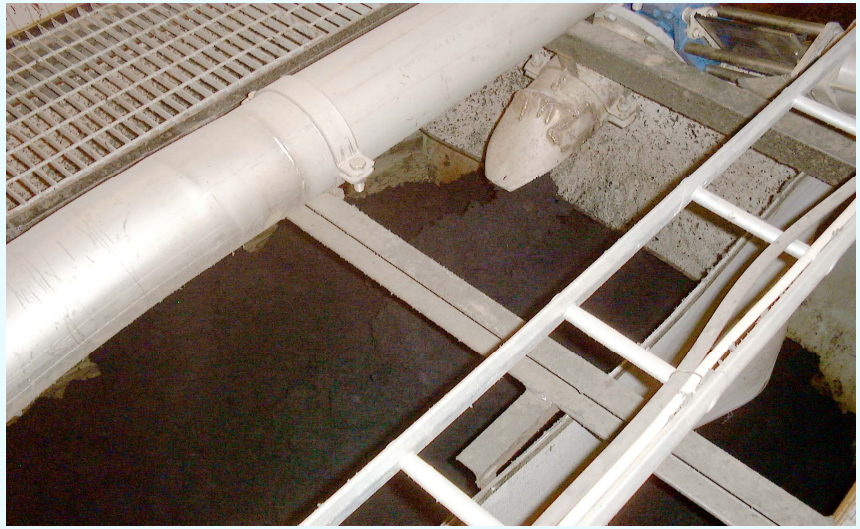
Polymer - Injection into Sludge Pipeline



Progressing Cavity Pumps

Dewatered Sludge

WWTP Käppala
Sweden



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Portland Valve
TUSHACO PUMPS
Warren Pumps
Zenith Pumps
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Progressing Cavity Pumps

Polymer Dosing System

PC Pumps

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HOUTTUIN™

Imo Pump

LSC Lubrication Systems Company

Portland Valve

TUSHACO® PUMPS

Warren® Pumps

Zenith® Pumps

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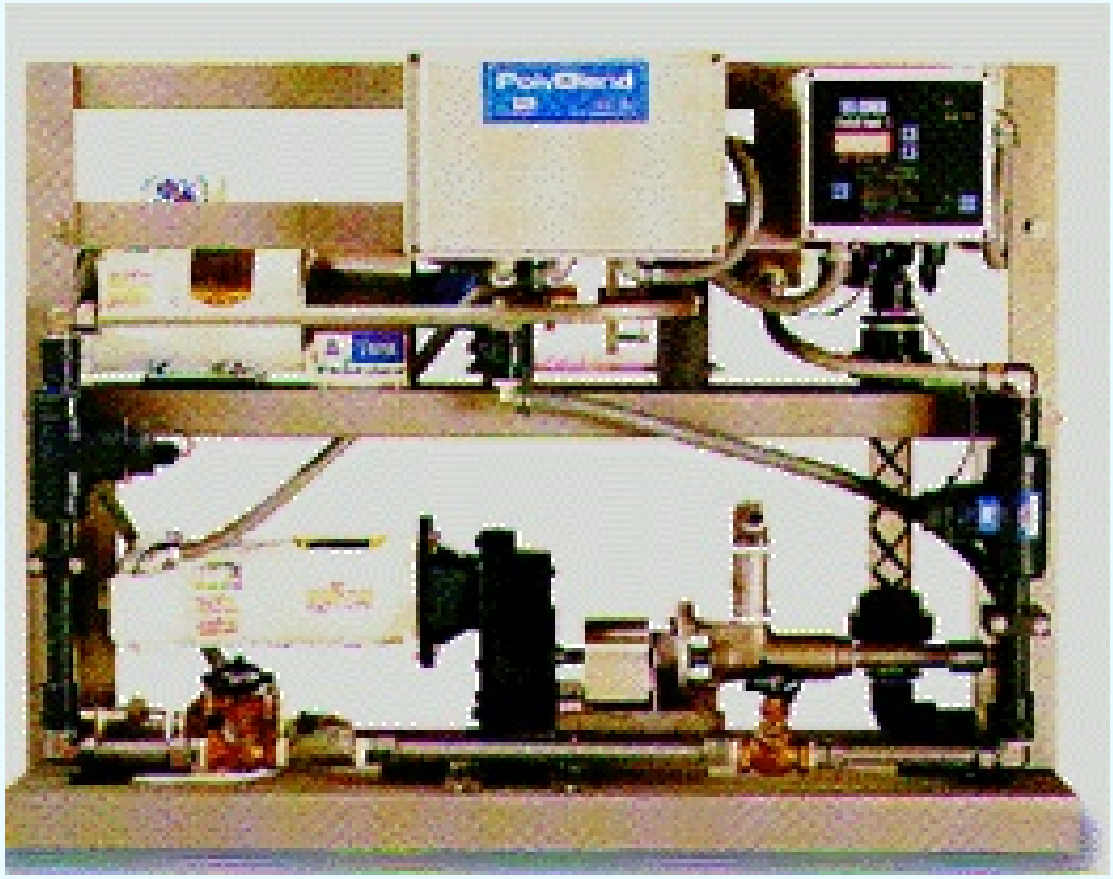
Progressing Cavity Pumps

Progressive Cavity Pumps for Metering



ADP Pump in a Polymer Metering System

STRANCO Water Quality Control

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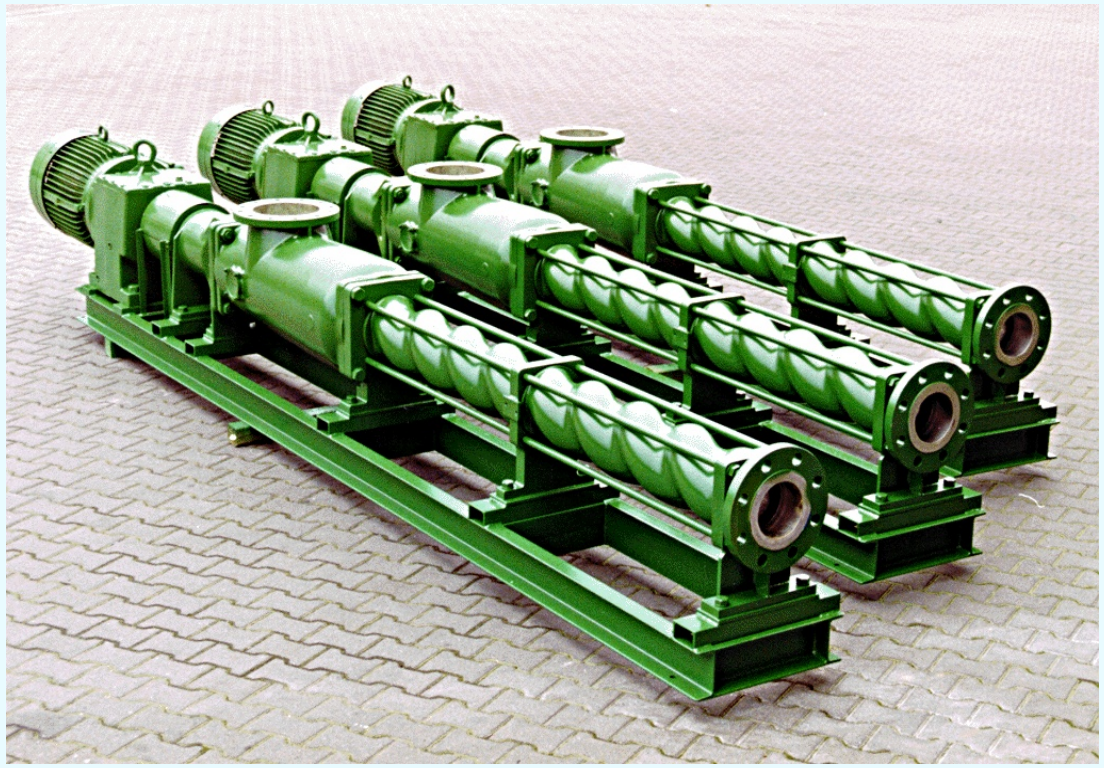
HOUTTUIN™
Imo Pump
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps

Colfax Corporation

Progressing Cavity Pumps

P.C. Pumps in Waste Water Treatment Plants



Veluwe Water Board, Apeldoorn, The Netherlands

Reactor Feed Pumps
AE 2+2V1450-ID

Digested Sludge
367 dm3/min
42, max. 48 bar
174 rpm, 55 KW

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LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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Oil-Water Separation

Progressing Cavity Pumps

Oil - Water Separator

PC Pump

- ALLWEILER®
- HOUTTUIN™
- Imo Pump
- LSC Lubrication Systems Company
- Portland Valve
- TUSHACO® PUMPS
- Warren® Pumps
- Zenith® Pumps
- Colfax Corporation

Chemical and Petrochemical Industry

Progressing Cavity Pumps

PC- Pumps
in the
Chemical Industry
pumping grease

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Imo Pump
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

Allweiler PC Pumps for Water Based Paint

Paint ingredient categories:
- **Pigments**
- **Binders**
- **Liquids**
- **Additives**

PC Pumps transfer tough fluids as:
Latex, Titaniumdioxide, Calcium Carbonate, Talcum, and Polymer.

Fluids are abrasive and/or have high viscosity of 1000 - 5000 cP

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Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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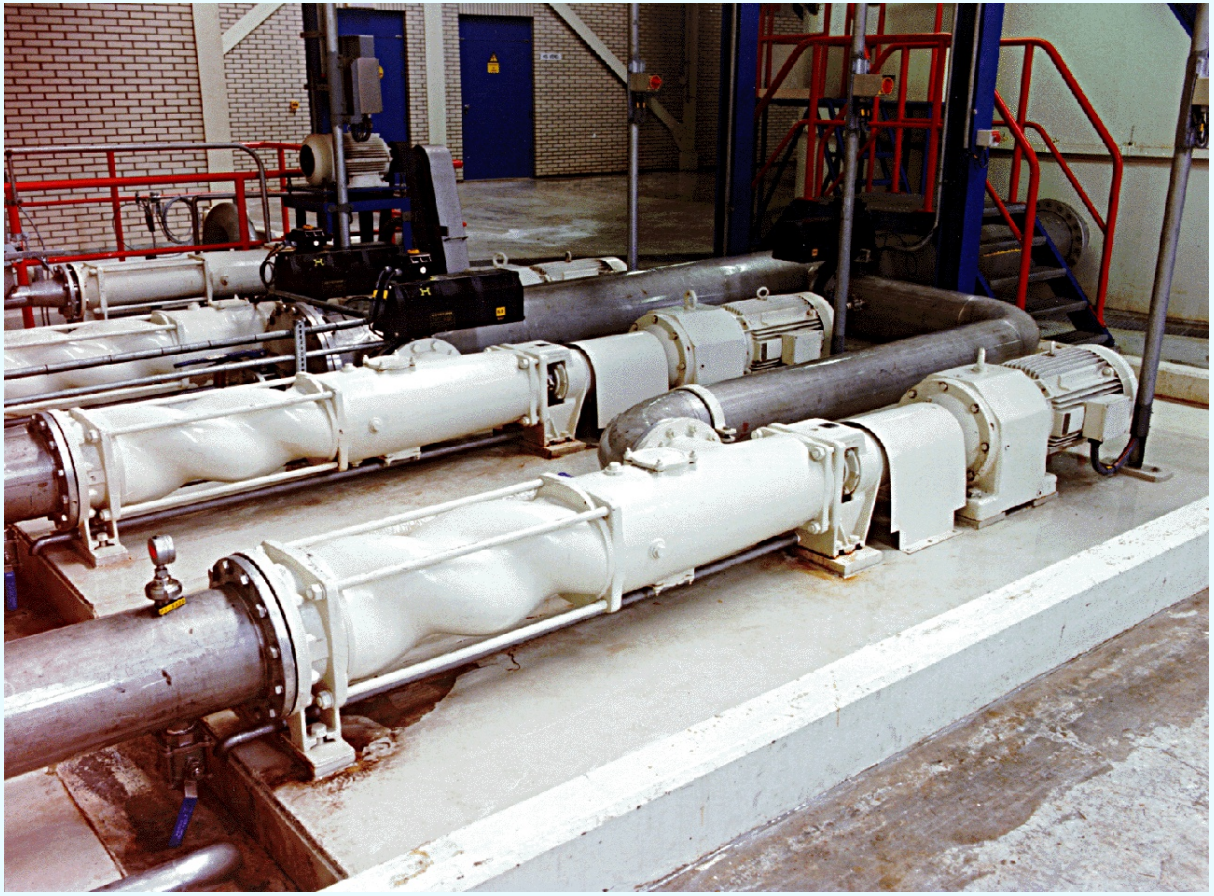
Progressive Cavity Pumps in the Starch Industry



SEP 5000.1 for Rasped Raw Potatoes at AVEBE B.V. in Terapelkanaal, NL

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Progressing Cavity Pumps

Truck Pump Handling Flowable Explosives

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Imo Pump

LSC Lubrication Systems Company

Portland Valve

TUSHACO® PUMPS

Warren® Pumps

Zenith® Pumps

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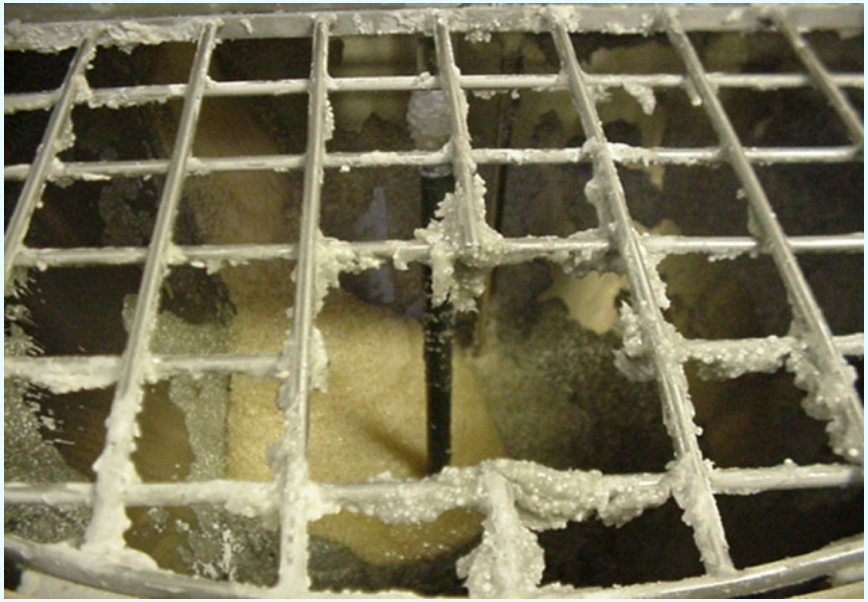
Progressing Cavity Pumps

Explosive Emulsions



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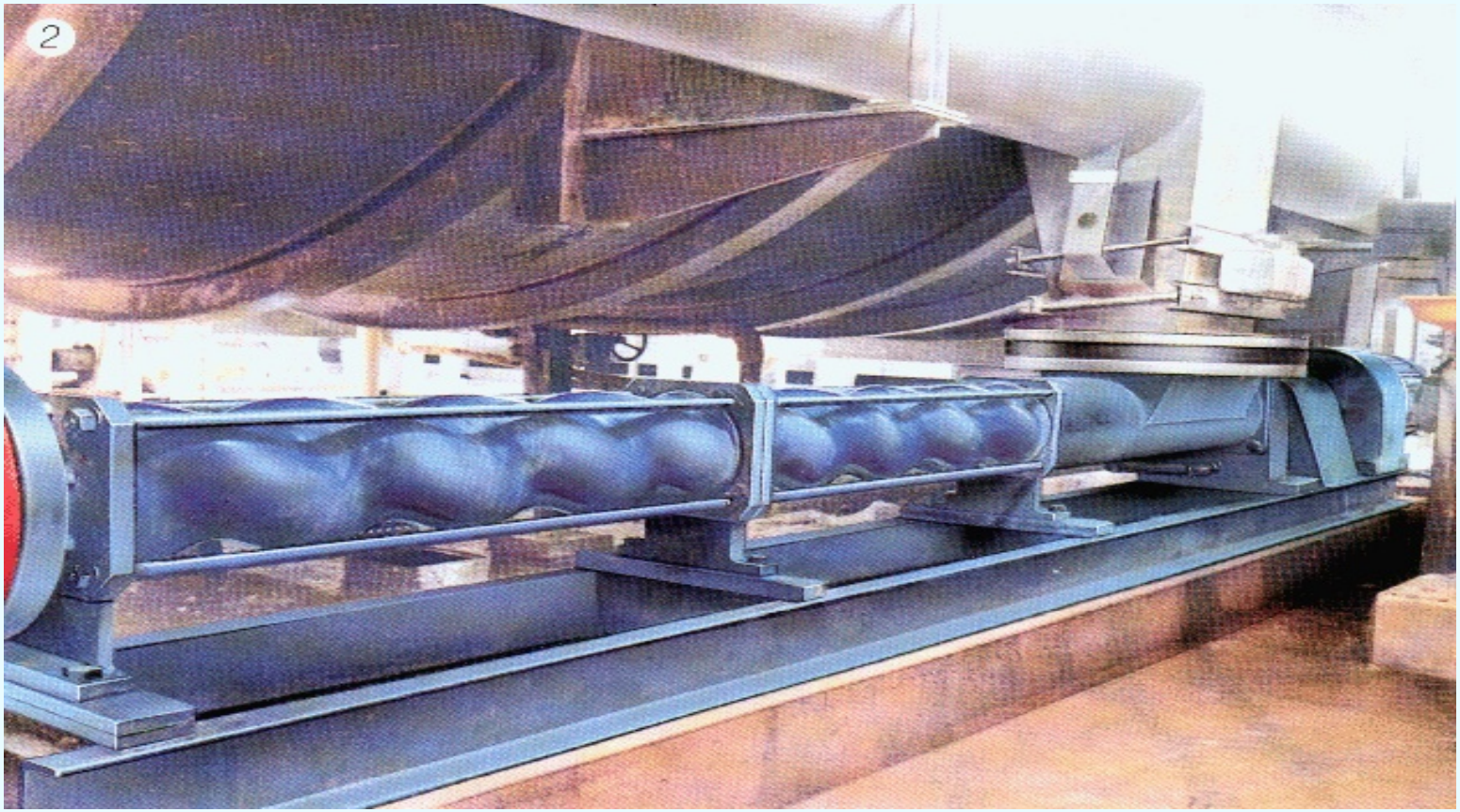
Progressing Cavity Pumps

PC Pump for Pumping Magnesium Hydroxid with high dry solids content



SHZP 1450.2+2 at NEDMAG, NL

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LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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Progressive Cavity Pumps in Refinery

SHP 380.2 with Diesel & Electric Drive for Fire Fighting Foam in a Thai Oil Co. Ltd Sriracha Refinery

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Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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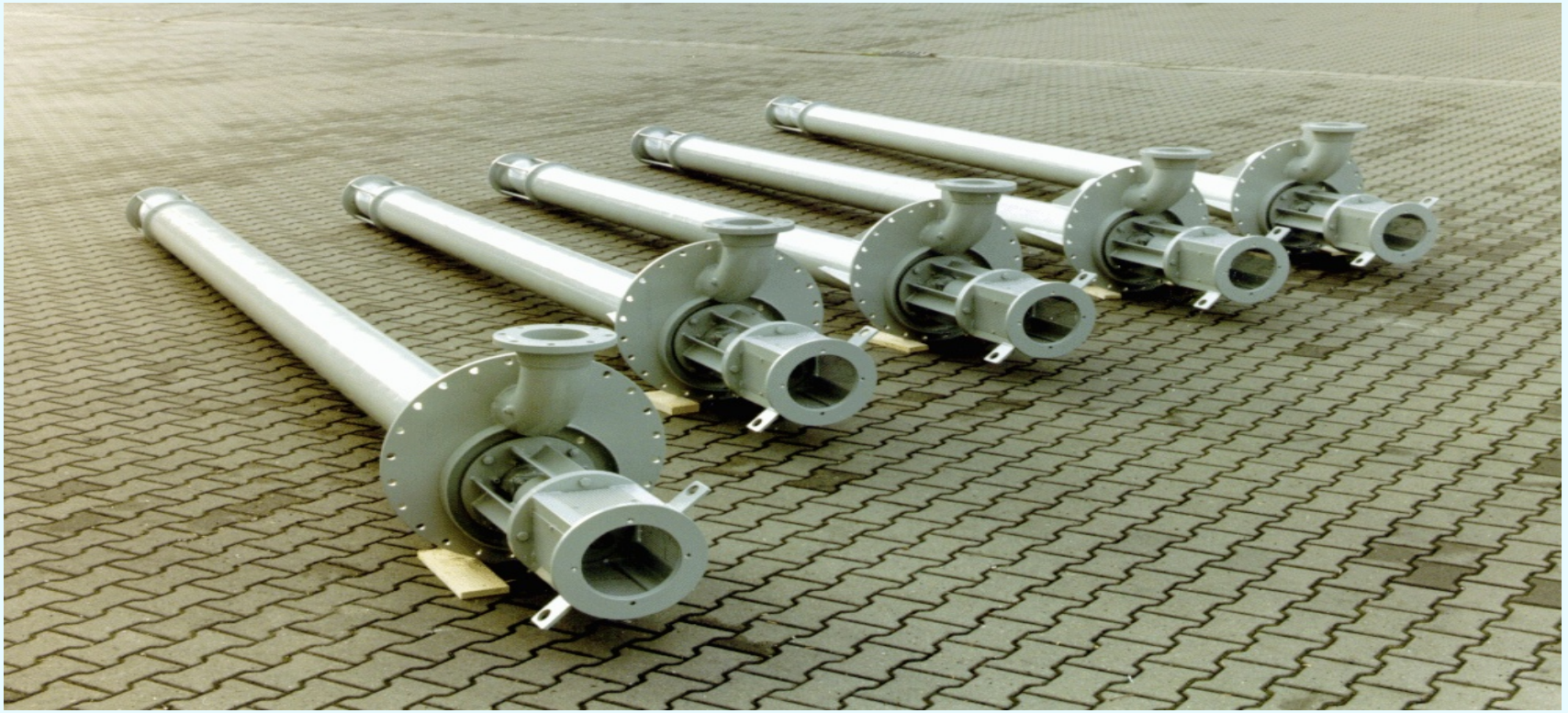
Progressing Cavity Pumps

Tank top Mounted Pumps, Series SETP



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Imo Pump

LSC Lubrication Systems Company

Portland Valve

TUSHACO® PUMPS

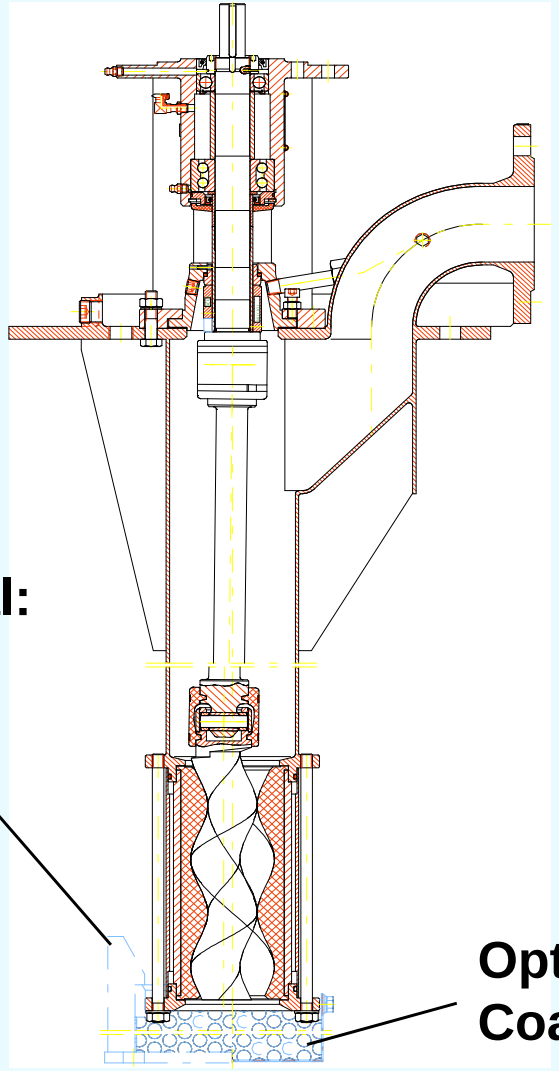
Warren® Pumps

Zenith® Pumps

Colfax Corporation

Progressing Cavity Pumps

Vertical Tank Top Mounted Progressive Cavity Pumps



Optional:
Steady
Bracket

Optional:
Coarse Strainer

- Sizes up to 9500
- All pressure ranges
- Installation length up to 8000 mm
- Squared and circular mounting flanges
- All construction materials
- Ideal for pumping changing viscosities
- Replaces vertical turbine pumps
- Applications in chemical & petrochemical industries as well as in the waste water industry

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LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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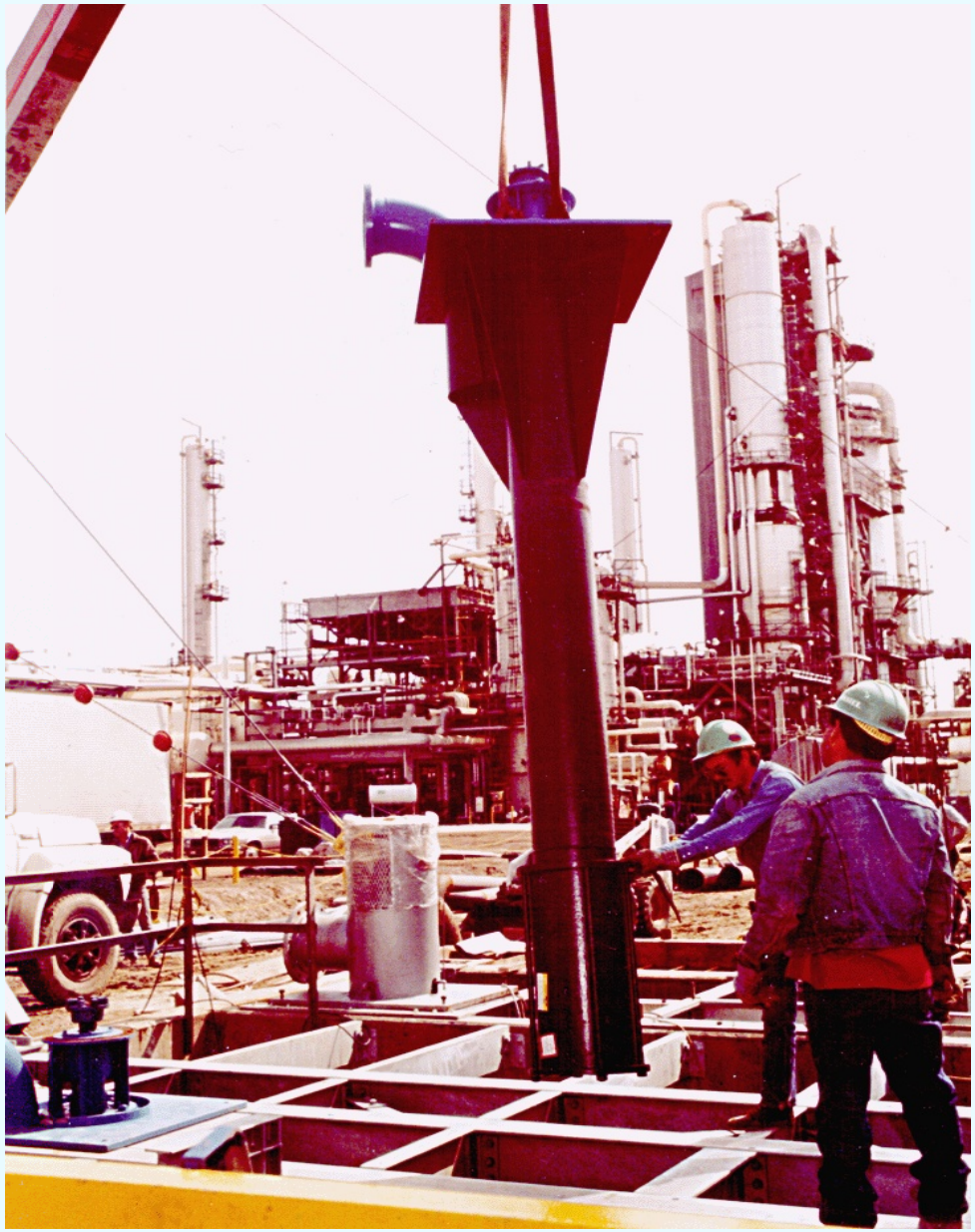
Progressing Cavity Pumps



Vertical Pumps Installed in a Refinery Pumping Slops

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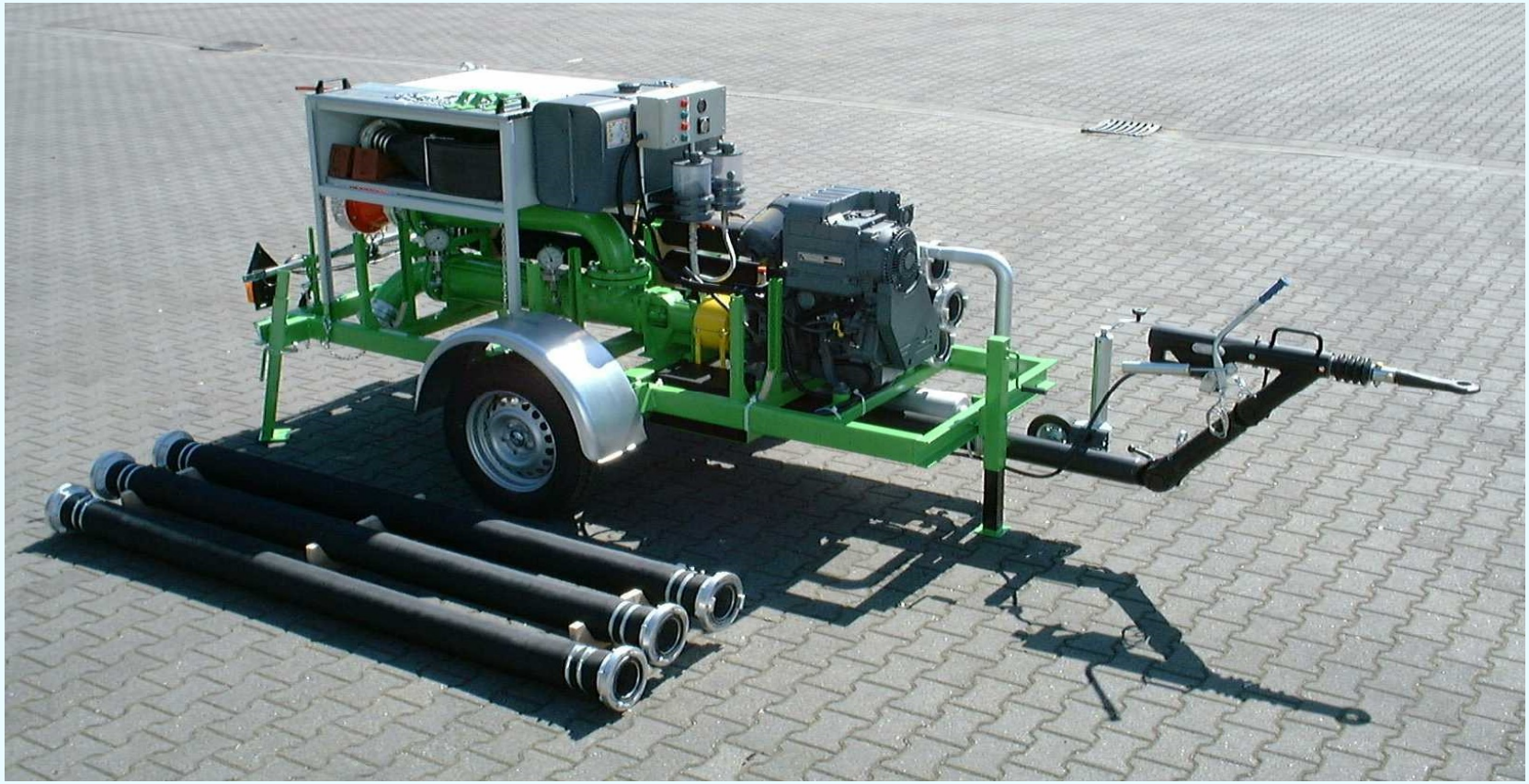
Imo® Pump
LSC Lubrication Systems Company
Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

Trailer Unit for Pumping Oily Sludge in a Refinery



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Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
Colfax Corporation

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Waste Oil Sludge Pump in Northern Alberta

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Portland Valve
TUSHACO® PUMPS
Warren® Pumps
Zenith® Pumps
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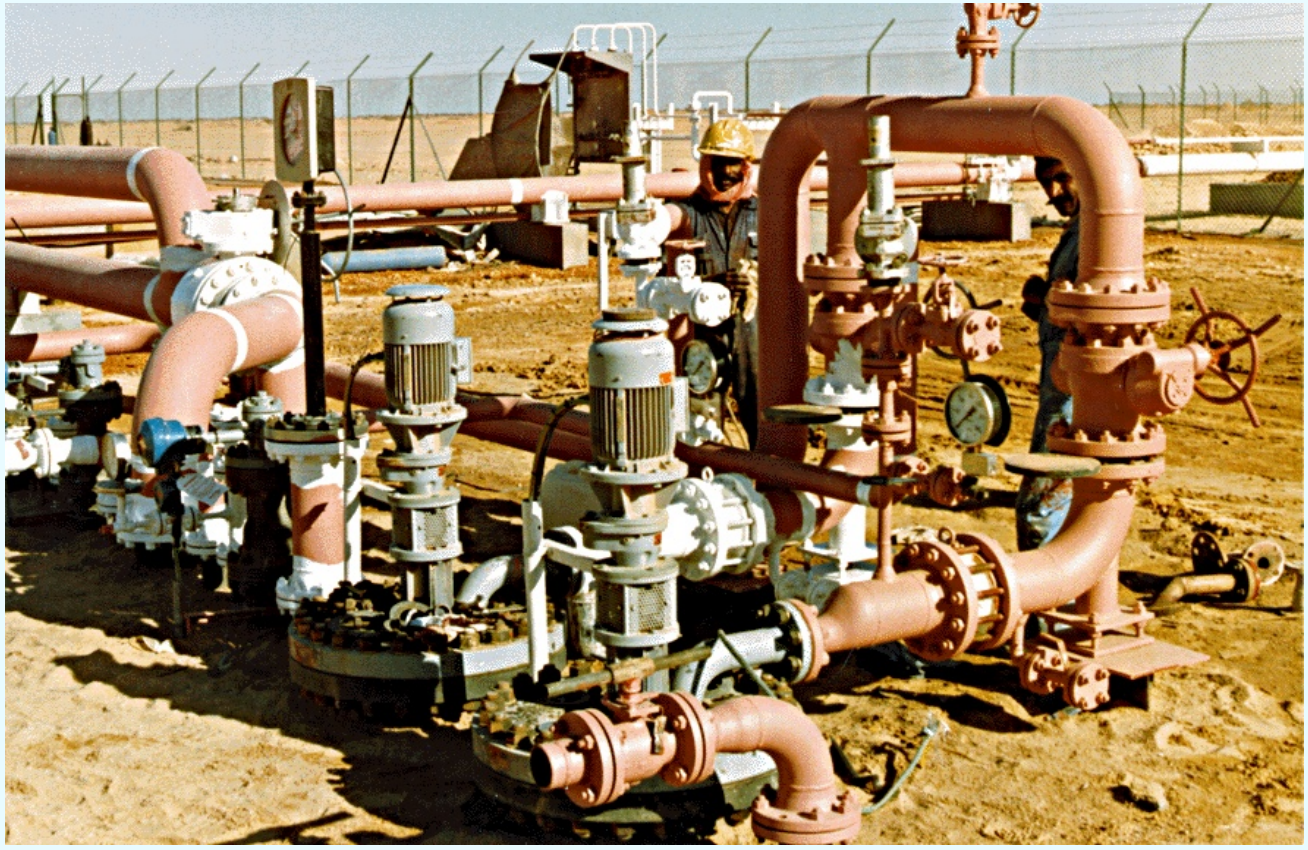
Progressing Cavity Pumps

Progressing Cavity Pumps on Oil Fields



Vertical Tank Top Mounted Pumps SETP 100.2 on an Oil Field in Oman (PDO)

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Portland Valve
TUSHACO PUMPS
Warren Pumps
Zenith Pumps
Colfax Corporation

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Allweiler PC Pumps in a Tank Farm
Bonny Terminal – Shell Nigeria

AE1+1N5000-ID
AE1E5000-ID and
AE1E1450-ID
for pumping:

Crude Oil Emulsion,
Emulsion/Produced Water
and Desand Water

till 146 m³/h and 12 bar

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Warren® Pumps
Zenith® Pumps
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Offshore Industry

Progressing Cavity Pumps

Progressive Cavity Pumps on Oil Fields

- On-Shore and Off-Shore Applications
- Pumps for Oily Water
- Pumps for Crude Oil
- Pumps for Formation Water
- Pumps for Liquid Mud
- Pipeline Re-Injection Pumps
- Open and Closed Drain Vessel Pumps
- Separator Feed Pumps
- Sample Pumps

Pumps according to API 676

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Zenith® Pumps
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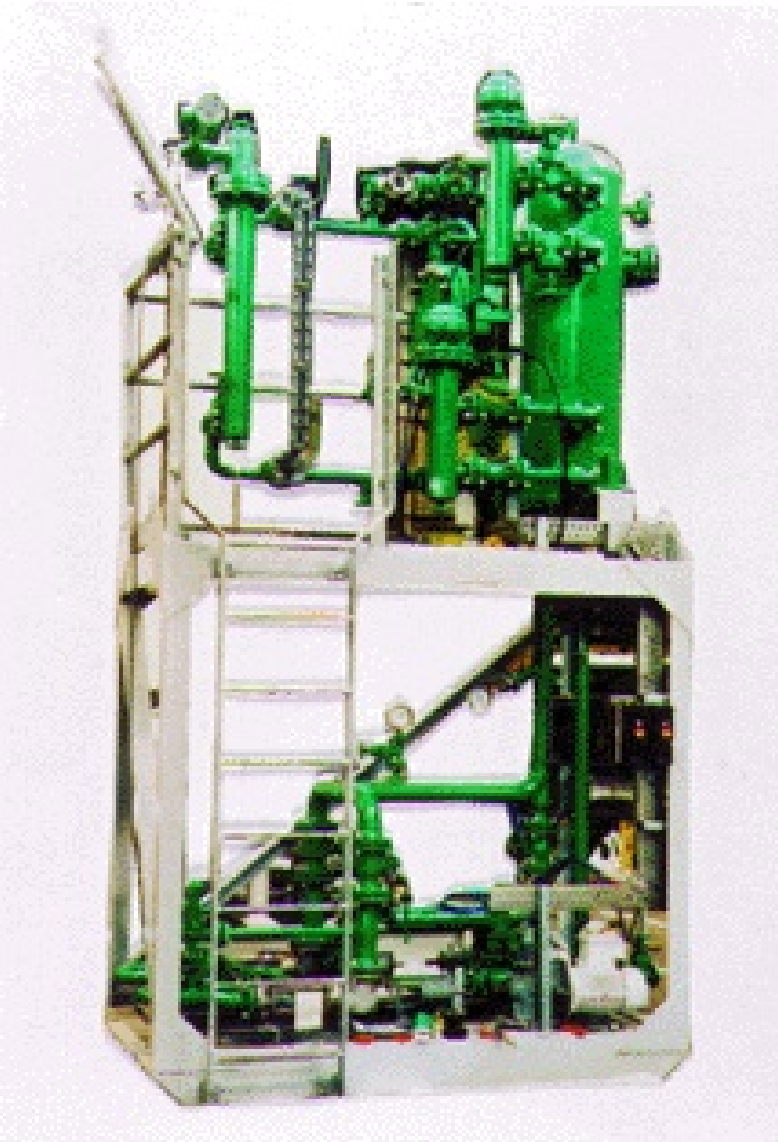
Progressing Cavity Pumps



Progressive Cavity Pumps on Offshore Platforms

Reject Oil Pump Package for the Texaco Tartan Alpha Platform

SEP 100.1V31 G11 G 444 PP XFV
Produced Water & Oil
Flow rate 27,6...110,5 dm3/min
Differential pressure 2,76 bar
Speed 135...480 rpm

The pumps comply with API 676 and NACE MR 01 75

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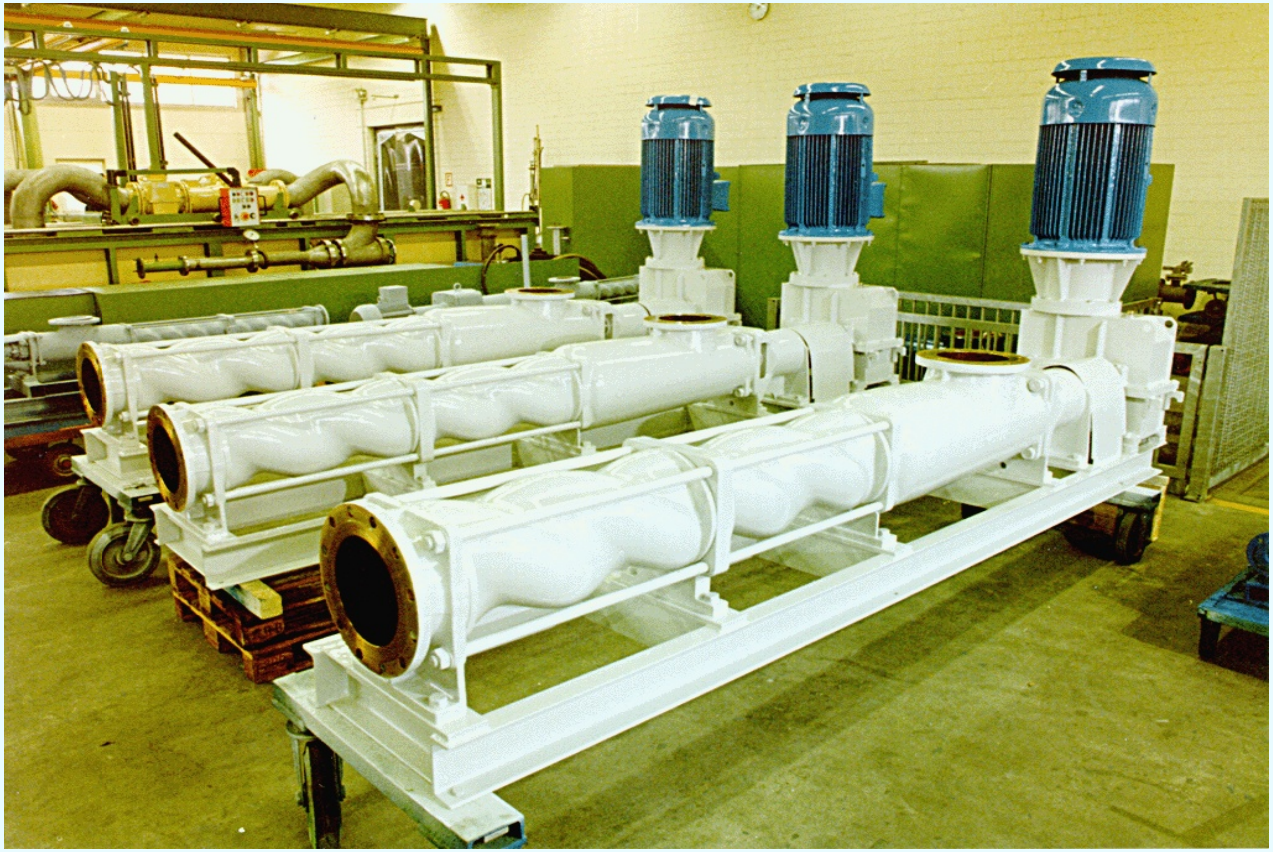
Allweiler PC Pumps in the Offshore Industry
Dehydration Booster Pumps



PC pumps on platform Congo / Loango

Oil / Water
140 m³ / h
Speed 210 RPM
Pressure 14 bar
Viscosity 200 cp

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Allweiler PC Pumps for FPSO Applications

Sludge Drain
Oily Bilge Water
Drilling Mud Transfer
Produced Water
Desalter
LP + HP Flare
Closed Drain Pump

2 Sludge Pumps AE4H200 + 2 Bilge Pumps AEB1E100 supplied to HHI for BP Angola FPSO Vessel Greater Plutonio in 2004

FPSO (Floating, Production, Storage and Offloading):
a converted or custom-built ship-shaped floater, employed to process oil and gas and for temporary storage of the oil prior to transhipment.

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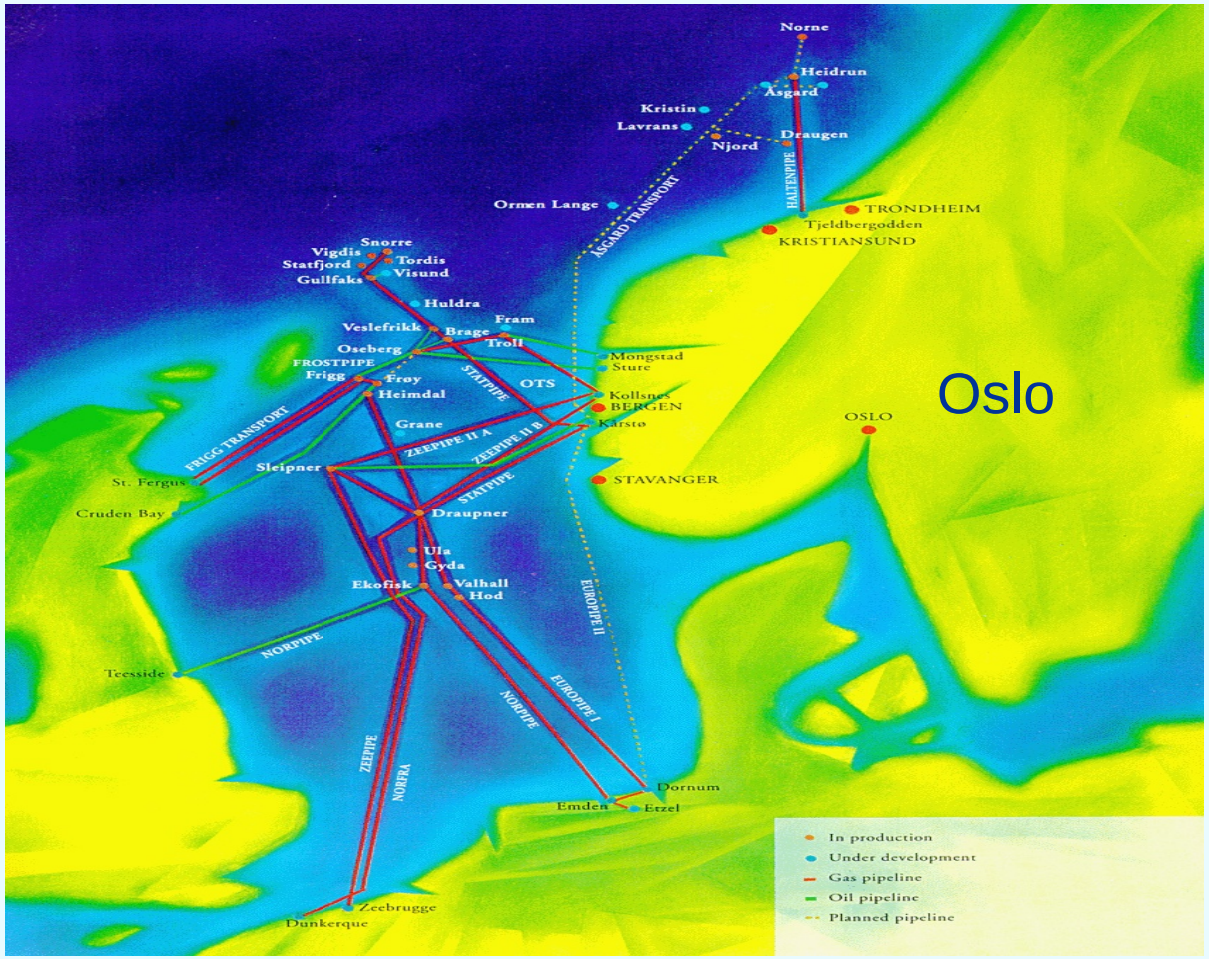
Progressing Cavity Pumps

Allweiler PC Pumps in the Offshore Industry



Oil platforms in the North sea between the coasts of Norway and Grait Britain are equipped with Allweiler PC pumps

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Allweiler PC Pumps in the Offshore Industry

Platform	Platform design	Operator
- Oseberg Sor	Steel platform	Norsk Hydro
- Veslefrikk	Steel platform	ELF
- Oseberg East	Semi submersible floating platform	Norsk Hydro
- Brage	Semi submersible floating platform	Norsk Hydro
- Statfjord	Concrete platform	Statoil
- Sleipner	Concrete platform	Statoil
- Ula	Concrete platform	BP
- Varg	Production ship	Saga
- Jotun	Production ship	Esso
- Texaco Capt.	Production ship	Scotland/Texaco
- Gulfaks	Concrete platform, product. a. drilling	Statoil
- Draugen	Concrete platform, product. a. drilling	Shell

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Progressing Cavity Pumps

Installation List, Allweiler PC Pumps
Pumps for Offshore Industry

Pump Type	Liquid / Application	Installation / Client	Country
SHTP 750.2	Closed drain pump	Gyda	Norway
SHP 1450.2	Burner feed pump	Oseberg 2	Norway
SETP 750.1	Drain pump	Oseberg 2	Norway
SEP 5000.1	Mud pumps	Oseberg 2	Norway
SNTP 750.1	Recl. Oil sump pump	Sleipner A	Norway
SHP 750.2	Drain sump pump	Statfjord A	Norway
AE2N 750	Produced water	Vesle Frikk	Norway
AE4+4 100	Vent knock out drum pp	Jotun	Norway
SNZP 380.1	Waste water	Troll-OLJE	Norway
AED2N 380	AFFFM, Foam f. Firer fighting	Troll C	Norway
STXP 750.2	Oil / Separator	Kvaerner Eng.	Norway

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Progressing Cavity Pumps

Installation List, Allweiler PC Pumps
Pumps for Offshore Industry

Pump Type	Liquid / Application	Installation / Client	Country
SETP 50.1	Water & Condensate	Brown & Root/Shell	GB
SEP 1450.2	Sand slurry	Chevron, ALBA Platform	GB
SHP 100.2	Sea water / Oil	Judy Joanne / Phillips	GB
SHTP 25.4	Sour oil/Cond.Emuls.	Mc Dermott/Mubarek	GB
SNTP 50.2	Water, HC Condens.	J. Brown/ELF Petrol.	GB
AED1E 2300	Crude oil / Water	Texaco Captain	Scotland
AE1+1N 5000	Oil / Water	Congo / AGIP	Congo
SHP 750.2	Liquid Mud	appr. 500 units on supply vessels all over the world	
SHP 1450.2 and SHP 2700.2			

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Warren® Pumps
Zenith® Pumps
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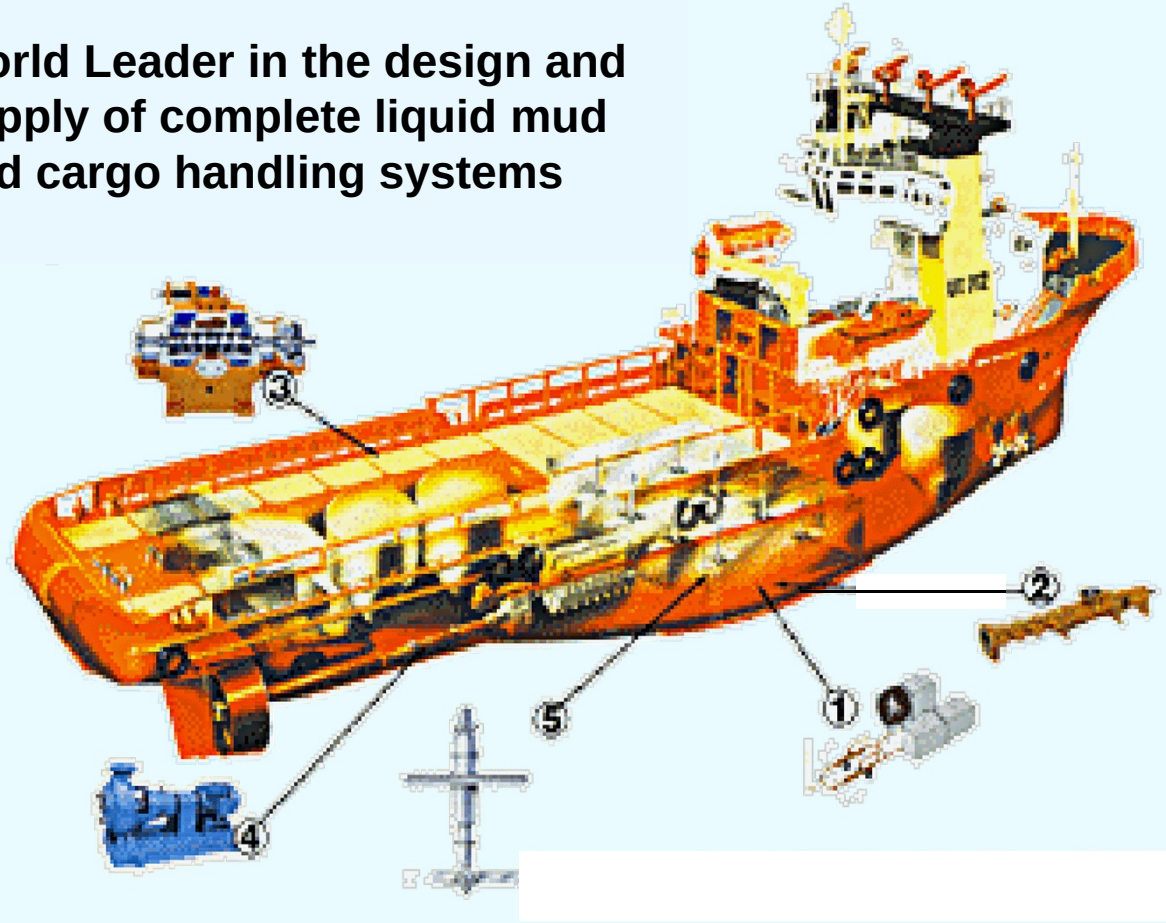
Progressing Cavity Pumps

Allweiler PC Pumps for Offshore Industry
PC Liquid Mud Pumps

World Leader in the design and supply of complete liquid mud and cargo handling systems



1. **Oil based liquid mud agitation and circulation system.**
2. **Liquid mud pump**
3. **Multi-purpose cargo pump for brine, fuel, drill-water and oil recovery.**
4. **Circulation pump**
5. **The agitator**

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Progressing Cavity Pumps

Allweiler PC Pumps on Supply Vessels
Liquid Mud Pumps

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LSC Lubrication Systems Company

Portland Valve

TUSHACO® PUMPS

Warren® Pumps

Zenith® Pumps

Colfax Corporation

Progressing Cavity Pumps

Installation List, Allweiler PC Pumps
Pumps for Oil Production

Pump Type	Liquid / Application	Installation / Client	Country
SETP 380.2	Water/Oil Slops	AGIP GELA	Italy
SNP 1450.1	Crude oil	AGIP Ragusa	Italy
SETP 9500.1	Oily waste water	SNAM Progetti	Abu Dhabi
SETP 380.1	Asphalt	Dubai Natural Gas	Dubai
SNP 750.2	Oil/Water/Sand	PT Caltex Pacific	Indonesia
SNP 380.1	Sludge and chemicals	PT Petrokima	Indonesia
SEP 380.1	Crude oil / Slops	Texaco	Columbia
SETP 200.2	Crude oil / Water	Texaco	Columbia
SETP 100.2	Oily water / HC	Shell/Fluor	Oman
SHTP 380.2	Crude oil / Formation water	Shell/Kellogg	Oman

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Progressing Cavity Pumps

Installation List, Allweiler PC Pumps
Pumps for Oil Production

Pump Type	Liquid / Application	Installation / Client	Country
SETP 50.1	Water & Condensate	Brown & Root/Shell	GB
SEBP 200.1	Crude oil / water	Texaco	Germany
SETP 50.1	Condens., HC/ Sour water	NAM	NL
SETP 1450.1	Oil / Water	Exxon Mobile Bay Proj.	USA
SEP 2700.1	Crude oil sludge	Chinese Petr. TAO-YUAN	China
SETP 1000.1	Slops	Kuwait Natio. Petr. Comp.	Kuwait

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Progressing Cavity Pumps

Available techn. data, tests, documentation

Quality Assurance	**: acc. to DIN ISO 9001**
Material	**: DIN, equivalant to US standard and NACE standard MR 0175-98**
Pump design	**: API 676**
Welding	**: ASME standard**
Differ. Pressure	**: up to 16 bar / 230 psi (special design 96 bar)**
Flow rates	**: up to 12000 dm3/min. / 3170 USGPM**
Max. Oper. Temp.	**: up to 150 ° C / 300 ° F**
Max. Viscosity	**: up to 250 000 mPas**
Max. Solid Content	**: up to 60%**

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Portland Valve
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Warren® Pumps
Zenith® Pumps
Colfax Corporation

Progressing Cavity Pumps

Available techn. data, tests, documentation

Tests:	**pressure, performance, running, strip, noise, vibration, paint, hardness, non destructive examination NDE: X-ray, ultrasonic, dye-penetration**
Material Certificates:	**EN 10 204, 2.1 - 3.1 A, B, C**
Documentation:	**individual quality plan, fabrication schedule, drawings, parts list, operating & maintenance instruction**

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Agriculture Industry

Progressing Cavity Pumps

PC Pumps for Handling Menure in the Agriculture Industry

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Food Industry

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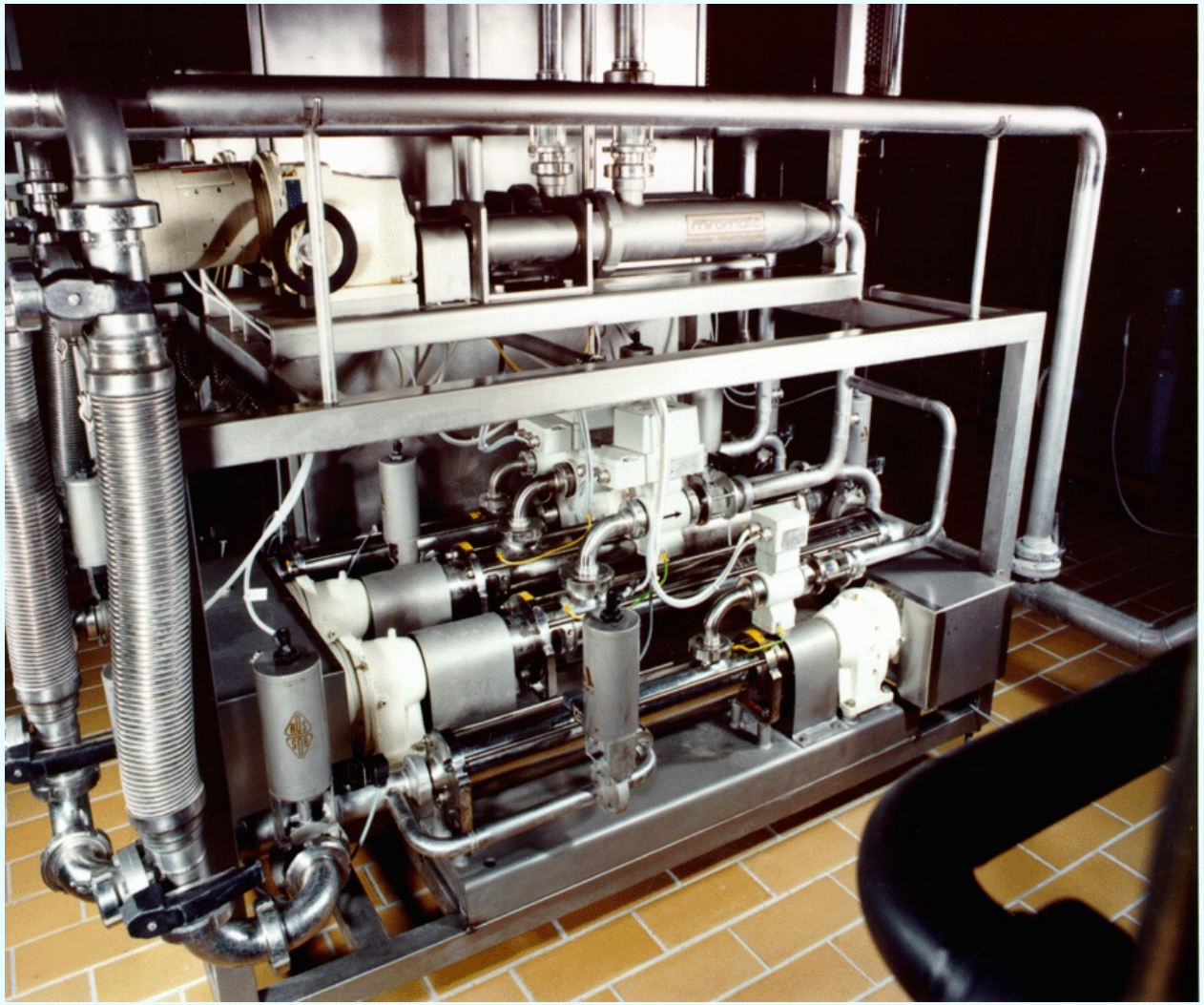

PC Sanitary Pumps in a Dairy, Pumping Yoghurt and Fruit - Concentrate

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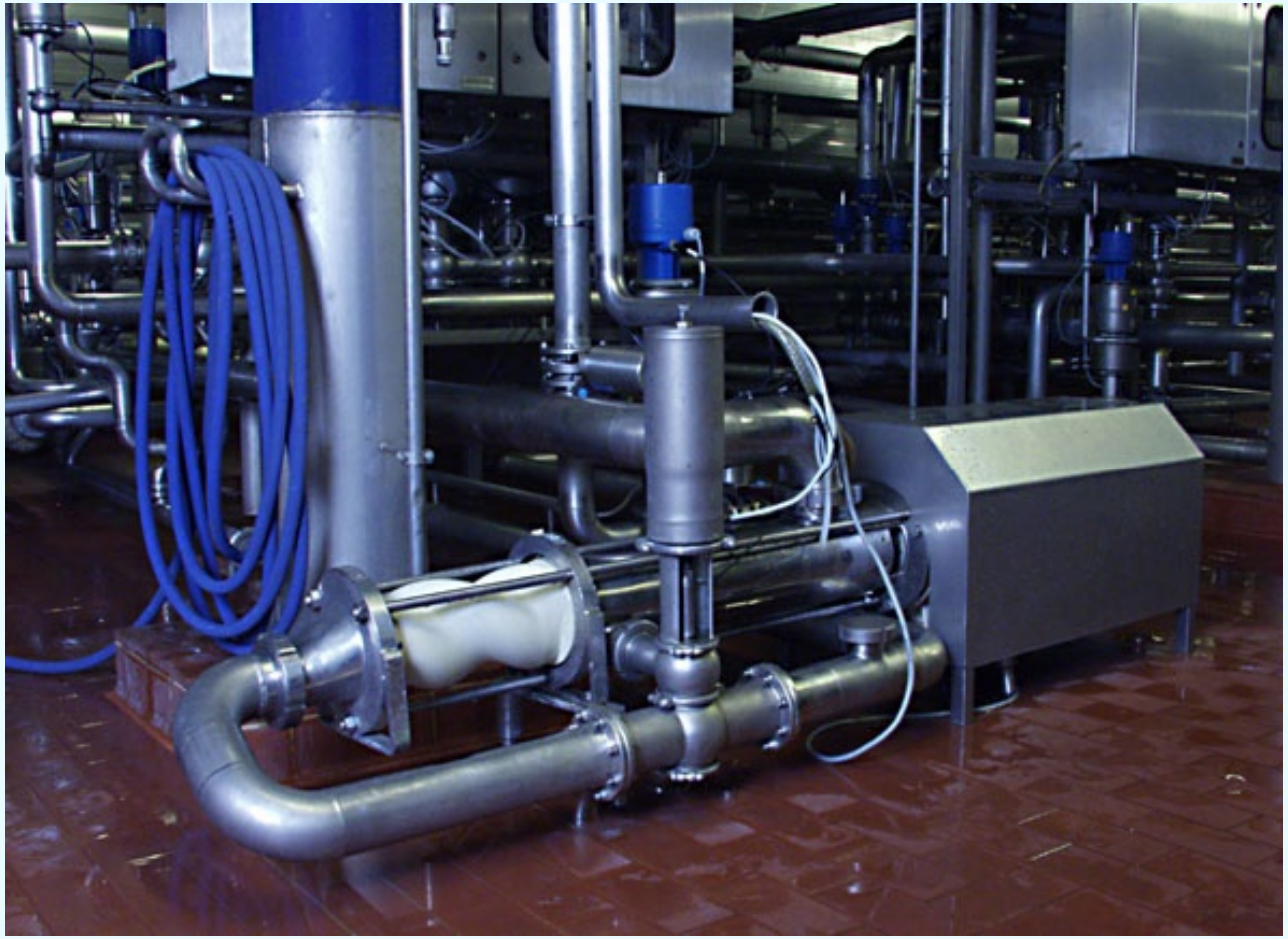
ACNP in the Dairy Industry for Milk



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PC - Pumps in the Milk Industry

ACNP pumps in a British Dairy

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PC Pumps In CIP - Execution for Dairies

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Portland Valve

TUSHACO® PUMPS

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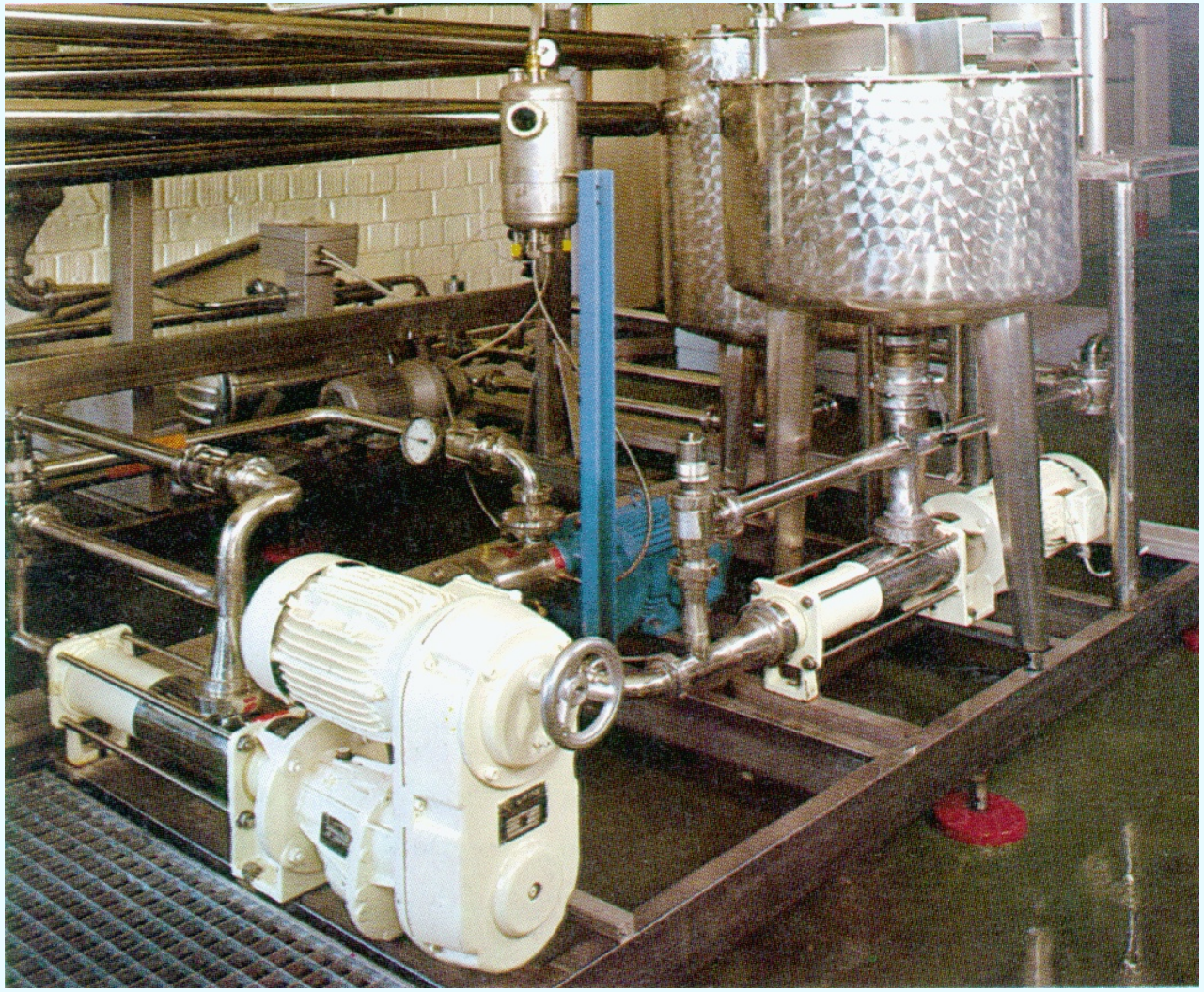

PC Sanitary Pumps in a Coca Cola Filling Station

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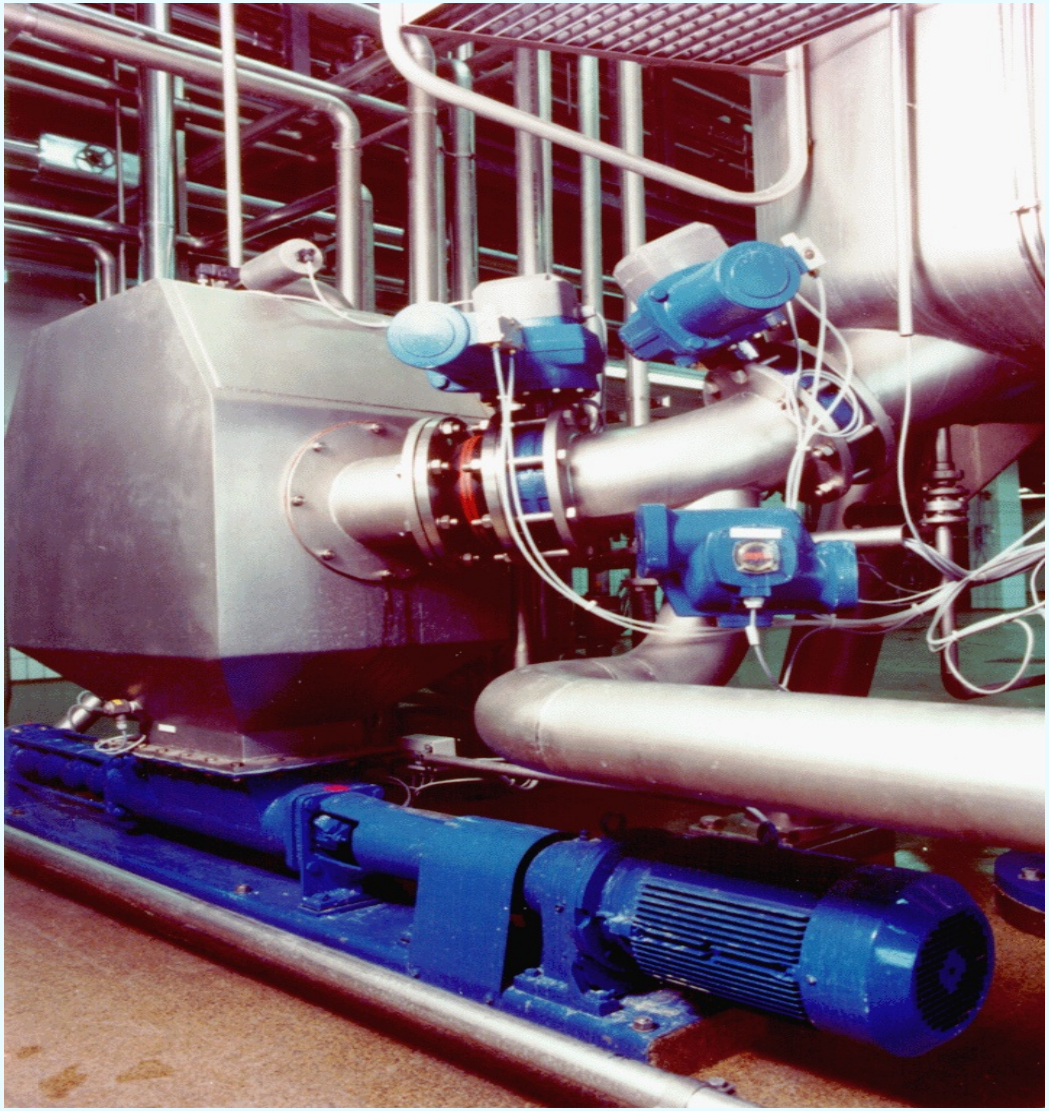

Pump Range SZP
Applied for Pumping Diatomite in a Beer Filtration Process
Hofbräuhaus
Freising, Germany

Viscosity approx.
200 000 cP

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Dosing Pump – Series ANP

Pumping sealing compound PVC Plastisol in a factory for metal closures

Pump in stainless steel with Viton food grade stator

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Zenith Pumps
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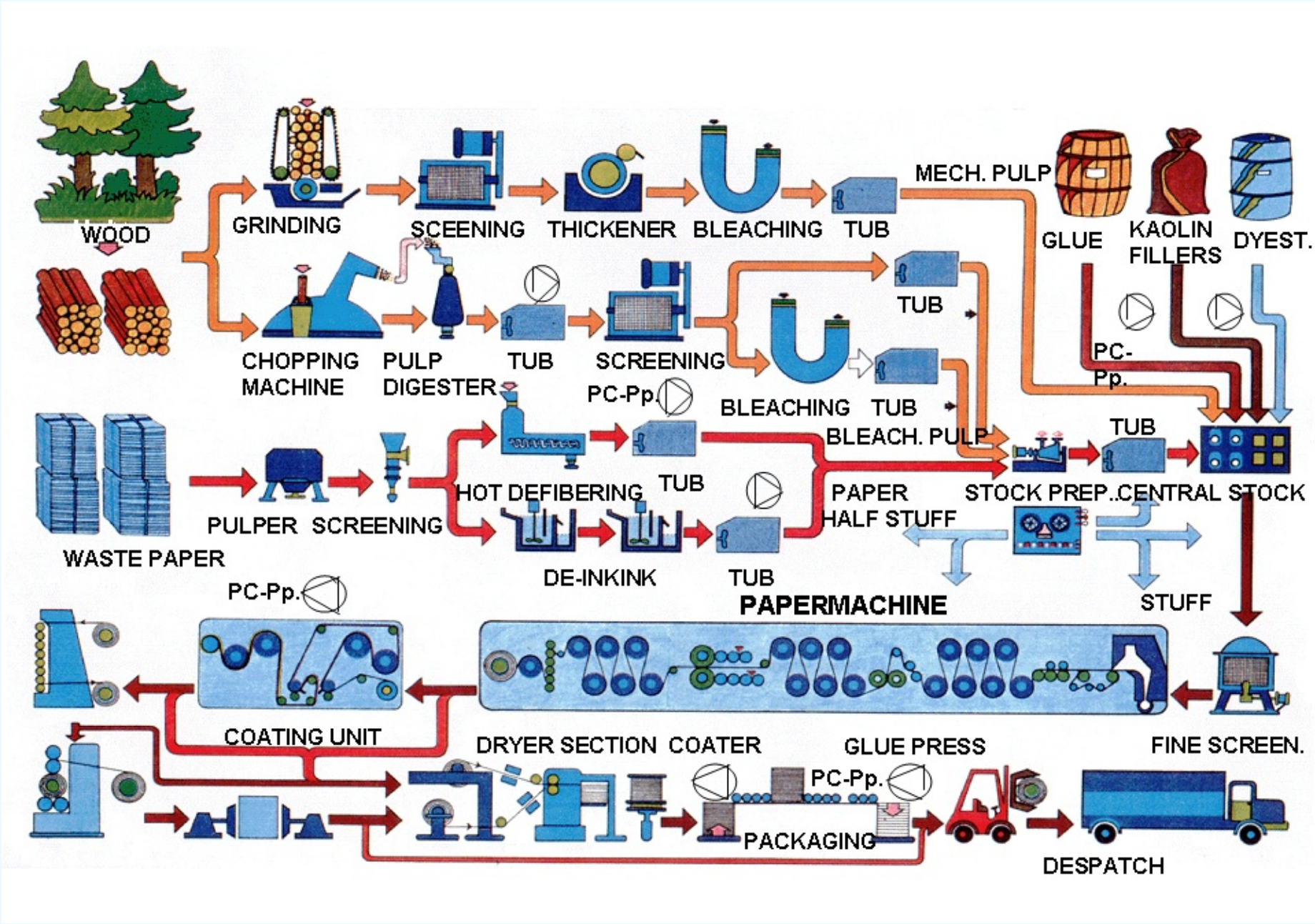
Paper Industry

HOW PAPER IS MADE



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Progressing Cavity Pumps

PC Pumps are used for pumping:

In Stock Preparation

- Paper Stock
- Additives as Glue, Kaolin and Dyestuffs

Paper Machine

- Additives as Glue, Starch Solutions

Coating & Laminating

- Pigments as Kaolin, TiO2, Satin White, Calcium Carbonate
- Binders as Starch and Latex
- Additives as Bentonite and Caustic Soda

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Transfer Paperstock from Tub to Central Stock

Series SEZP 5000.1

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Portland Valve

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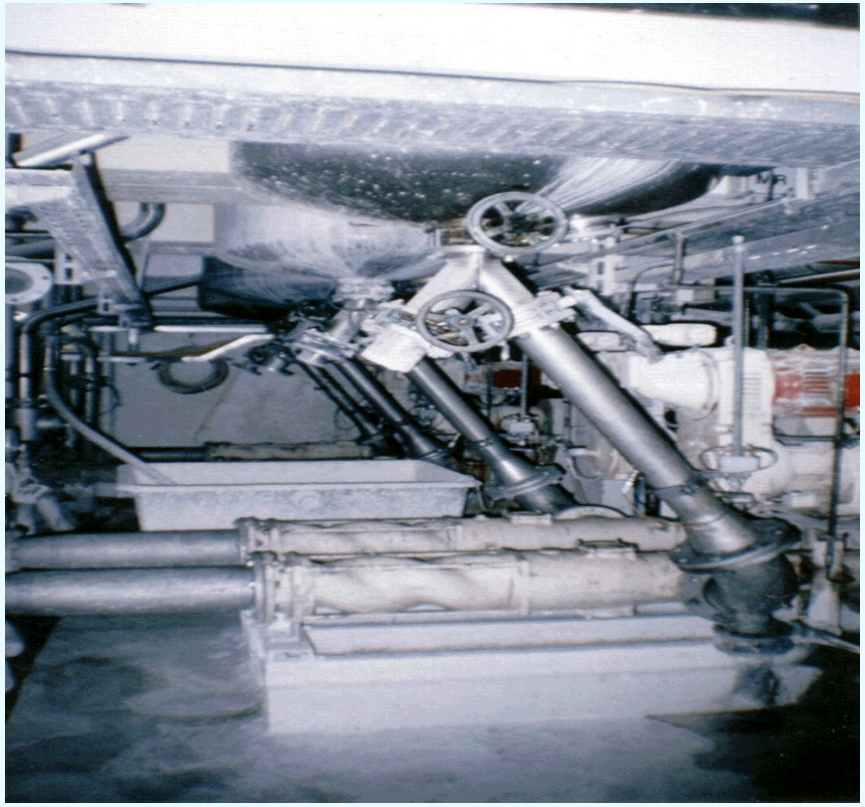
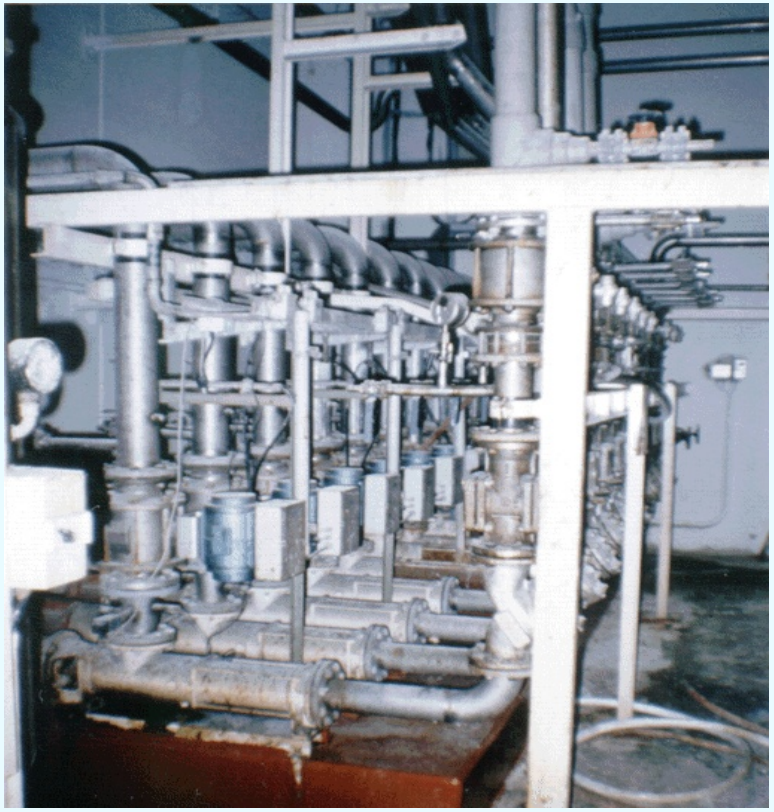
Transfer of Additives to the Paper Central Stock

Glue, China Clay, Fillers, Colors, Latex





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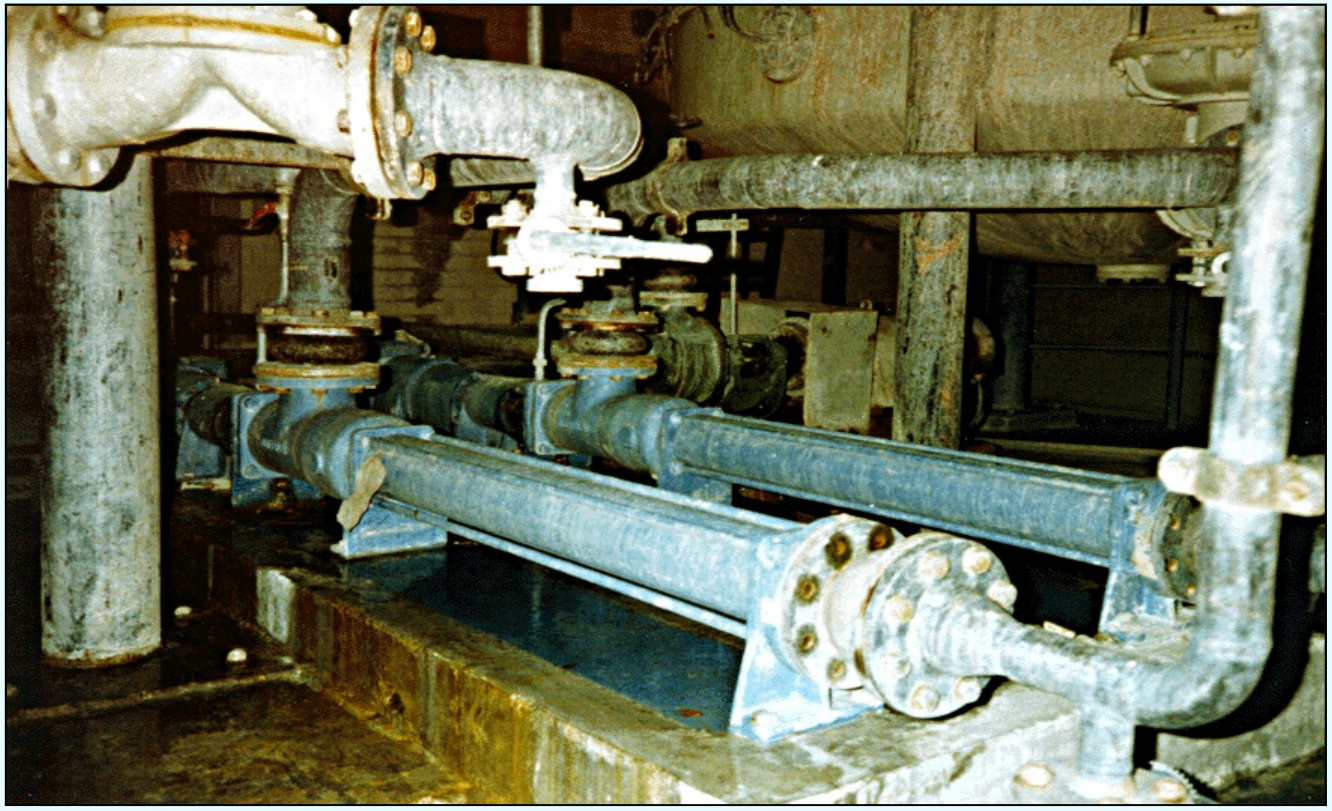
Progressing Cavity Pumps in the Paper Industry



SHP 200.4 for China Clay in the Coating Kitchen of KNP, Maastricht The Netherlands

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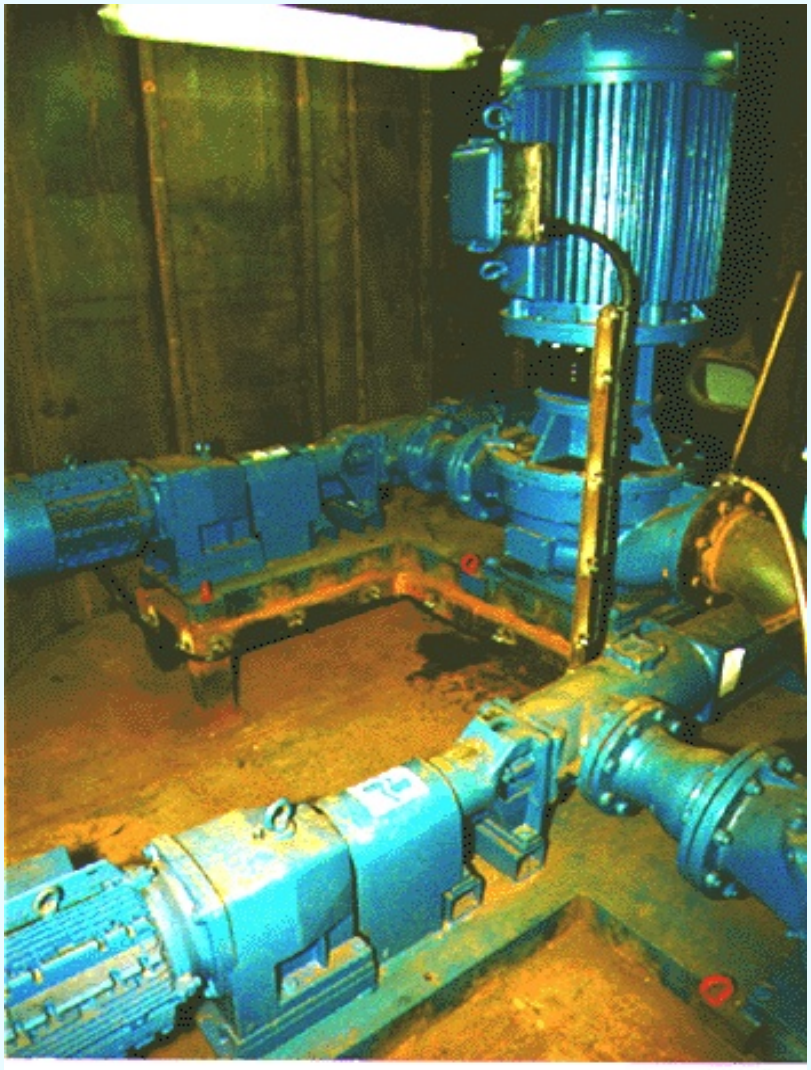

Progressive Cavity Pumps in the Fish Industry

AED 1E1200-ID Pumps and AM 160 I-Macerators on the Tyson Seafood Fish Processing Vessel “ARCTIC V”.

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