



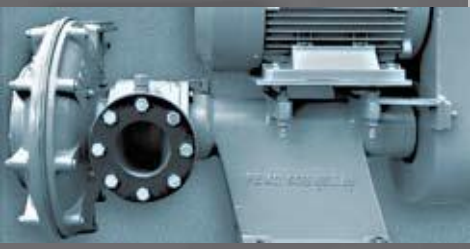


**Min-tec**  
Best Solution, Most Efficiency

**MIN-TEC (Caspian Mineral Processing Co.)**

Official Exclusive Representative In  
IRAN

**PEMO PUMPS**

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- 
- 
- ABRASION resistant
  - ACID resistant

Caspian Mineral Processing Co - MINTEC

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No.21, Flat 6

# Perissinotto s.p.a.

POMPE **PEMO**

PER IL SOLLEVAMENTO DI TORBIDE ACIDE E ABRASIVE  
CENTRIFUGAL PUMPS FOR THE CONVEYANCE OF ACID AND ABRASIVE MIXTURES

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TEL. +39/02.250731 - FAX +39/02.2500371  
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## EXCLUSIVE REPRESENTATIVE CERTIFICATE

**The present certificate hereby certifies that**

**KANI-FANAVAR CASPIAN Eng Co. (MIN-TEC) in Iran**

Is Exclusive Representative and is fully authorized to Collect Enquiry,  
Submit offers, negotiate and sell Slurry, Mining and Chemical Pumps  
and Pumping Solutions of

**The Perissinotto S.p.A. Company (PEMO PUMP) Italy**

General Director of  
**The Perissinotto S.p.A. Pump Industry Co.**

The logo for Perissinotto s.p.a. is repeated, featuring the company name in a stylized font above the text 'POMPE PEMO'. Below this, the address 'Via Pascoli, 17 20090 VIMODRONE (MI) - ITALY' is printed. A large, handwritten signature in blue ink is written over the logo and address.

**PEMO PUMPS** Optimum Pumping Performance for  
Abrasive & Corrosive Slurries

**PEMO PUMPS**



PEMO, headquartered in a 20000 m<sup>2</sup> factory complex in Vimodrone - Milan, Italy, is world renown for designing and manufacturing customized centrifugal pumps for the most difficult abrasive and/or acid applications.

Since opening our doors in 1947, we have built and shipped over 30,000 pumps. We have representatives & agents selling PEMO pumps around the world including Spain, Portugal, France, Holland, Poland, Brasil, Egypt, Singapore, USA, Perù and Chile.

**MAIN APPLICATIONS**



**Built Rugged for Exceptionally Long Life in Tough Applications.**

**Mining, Aggregate, Quarry & Mineral Extraction:** PEMO pumps are commonly used to feed hydrocyclones and transfer slurries in these applications.

**Filter press Feed:** Thanks to the unique Double Stage design, PEMO pumps stand alone in the filter press feed industry.

**Stone Processing:** PEMO is a world leader in the granite and marble industry.

**Ceramics:** PEMO is a world leader for pumps that transfer ceramic slip.

**Chemical Process:** PEMO pumps are used in the chemical industry for applications with both acids and abrasive slurries.

**Steel Mills:** Robust PEMO pumps are widely used to transfer hot water up to 100°C (180°F) containing oil and /or metal particles.

**Power Plants:** PEMO pumps are used for coal slurries, flyash, and SO<sub>2</sub> scrubbers.



## PEMO PUMPS Custom Designed, Precision Engineered and Manufactured with a Wide Selection of Material & Configuration Options

### IMPELLERS



- Open Type: typically made of a metal core coated with a thick layer of various types of rubber.
- Metal Type: Hardalloy PEMO (750-800 HB), AISI, Hastelloy C.
- Additional metallurgies available as required.

### CASINGS



- Built with split case design.
- Made mostly of cast iron. Some models are available in Hardalloy PEMO, stainless steel, Hastelloy or other metals.
- For rubber-lined versions, the interior is protected with vulcanised or separable lining with different compositions depending on the properties of the slurries.

### EXTENSIVE RANGE OF PUMP MODELS & CONFIGURATIONS



- 20 basic models of pumps are available in Vertical, Horizontal, Submersible and Multi-Stage versions, for a total of more than 2,000 different custom designs and configurations.
- Capacities range from 1 to 1500 m<sup>3</sup>/H (5 to 6,613 gpm).
- Head for single-stage pumps can reach 90 m (295 ft) in the Hardalloy PEMO versions.
- All shafts, bases and bearings are over-sized to extend pump life.
- Complete pump packages are compact, with an industrial grade design.

**PEMO PUMPS** Pemo Horizontal Pump Design

**AO/TI and AO/TD SERIES**



- Designed for heavy duty slurry and/or acid applications.
- These are end suction pumps with single or double mechanical seals.
- Capacities from 1 to 1500 m<sup>3</sup>/h (5 to 6613 gpm).
- Usually maximum discharge pressure should not exceed 3 bar or 43 psi.

**AO/AB SERIES**



- Designed for slurries and/or acid applications.
- The heart of the PEMO product line, the AO/AB Series pumps are truly unique. Due to the side inlet, the maximum pressure the mechanical seal will see is the fluid inlet pressure, greatly increasing life of the seal.
- When pumping acid liquids, the shaft and the mechanical seal housing can be made of special alloys.
- Maximum particle size is 2 mm though this is dependent on the specific application.
- Capacities from 1 to 900 m<sup>3</sup>/h (5 to 3,968 gpm).
- Maximum discharge head is 90 m (295 ft) in the Hardalloy PEMO design.

**AO/AB/DC SERIES (double stage versions)**



- Designed for slurries and/or acid applications.
- The AO/AB/DC Series is the perfect solution for filter press feed or slurry transfer.
- When pumping acid liquids, the shaft and the mechanical seal housing can be made of special alloys.
- Maximum particle size is 1 mm, though this is dependent on the specific application.
- Capacities from 5 to 600 m<sup>3</sup>/h (22 to 2,645 gpm).
- Maximum discharge head is 590 ft in the Hardalloy PEMO design.

**PEMO PUMPS** Pemo Vertical Pump Design

**VEC SERIES**



- Designed for heavy duty slurry and/or acid applications.
- The VEC Series pumps are custom built to customer specifications.
- The shaft is always supported above the baseplate by two bearings inside the base.
- The pump-motor coupling is an elastic joint or V-belt. The maximum length of the pump under the base can reach 4-5 meters (13-16 ft).
- Using a sleeve bushing as the sealing system, the VEC Series pumps cannot run dry under a certain level.
- Capacities from 5 to 1500 m<sup>3</sup>/h (22 to 6,613 gpm).
- Maximum discharge pressure from 6 to 7 bar (88 to 103 psi).

**MEC SERIES**



- Designed for heavy duty slurry and/or acid applications.
- The MEC Series only has direct transmission by means of an elastic joint. There is always a metallic structure around the motor with a lifting eyebolt at the top.
- Lengths under the bases are standard and do not exceed 2 meters (7 ft).
- Using a sleeve bushing as the sealing system, the MEC Series pumps cannot run dry under a certain level.
- Capacities from 5 to 1500 m<sup>3</sup>/h (22 to 6,613 gpm).
- Maximum available pressure from 6 to 7 bar (88 to 103 psi).

**AUS SERIES**



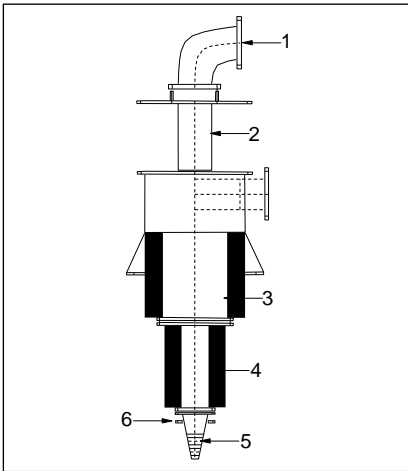
- Designed for heavy duty slurry and/or acid applications.
- The AUS Series pumps can run dry since there is no mechanical seal.
- Mechanically speaking these pumps are the same as the VEC series, but the maximum length of the AUS Series pump under the base seldom exceeds 2 meters (7 ft).
- Usually the fluid inlet is above the casing but in some versions it is also near the bottom (double sided impellers).
- The AUS Series pumps can be installed inside or outside tanks.
- They can be used to pump abrasive and/or acid liquids.
- Capacities from 5 to 1500 m<sup>3</sup>/h (22 to 6,613 gpm).
- Maximum available pressure from 6 to 7 bar (88 to 103 psi).

## PEMO SUBMERSIBLE PUMP DESIGN



- Designed for heavy duty slurry applications.
- The standard PEMO submersible pumps are manufactured with power ranging from 1 to 100 hp, and speeds from 735 to 3,500 rpm.
- Standard capacities up to 360 m<sup>3</sup>/h (1,585 gpm).
- Maximum available pressures from 6 to 7 bar (88 to 103 psi).
- Casings are rubber lined or made of Hardalloy PEMO.
- All the mechanical seals are made of Silica or Tungsten Carbide.
- Bearings are grease lubricated and made to deliver long-life.
- All PEMO Submersible pumps are provided with thermal probes (for the control of motor temperature), and one oil level probe (for slurry leak detection inside the oil chamber).
- PEMO Submersible pumps all are sold with an electric device for the analysis of the signals from the thermal probes.

## PEMO HYDROCYCLONES



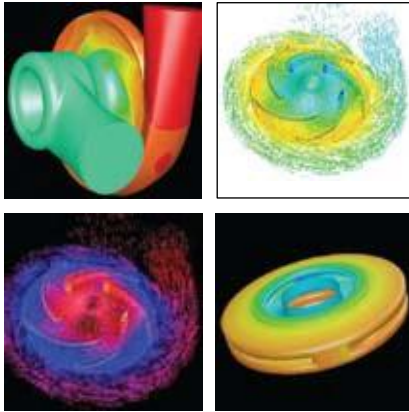
- Coated internally with rubber, polyurethane or ceramic, PEMO Hydrocyclones consist of modules that can be assembled in manifolds to obtain different sizes.
- Flows for PEMO Hydrocyclones range from 50 to 500 m<sup>3</sup>/h (220 to 2,200 gpm) with a maximum working pressure inlet of 2 bar (29 psi).

## COATED PINCH VALVES



- PEMO's Coated Pinch Valves are designed and used for highly abrasive materials, and are made with separable linings of different rubber compositions.
- They are available in both manual or pneumatic models, with inner diameters up to 250 mm (9.8").

### PEMO RESEARCH & DEVELOPMENT



- Every year 4-5% of all sales income is invested for research and development.
  - Continuous interaction with our customers and suppliers.
  - Fluid Dynamic studies.
  - Constant research on new materials.
  - Continual revision and update of existing pump models.
- 
- Introduction of at least one new model every year.

### PEMO AFTER SALES SUPPORT



- Rugged PEMO pumps provide long reliable service. We have customers that are still buying spare parts for pumps manufactured more than 40 years ago. Because of this we are committed to the availability of spare parts for the complete life of every one of our pumps.
- Our attention to the customers starts before a pump is sold. As soon as a quotation is requested, we carefully check the customer's submitted specifications to identify the optimum pump solution for their application.
- PEMO customers know they can rely on our effective after-sale service. We have more than 8,000 pump components and spare parts continually in stock, and our state-of-the-art inventory system allows parts to be picked and shipped with very short lead times. In fact, 90% of our spare parts orders are shipped within one week.





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**PEMO PUMPS**

for filter press



## PEMO PUMPS for filter press

### SINGLE and DOUBLE STAGE FILTER PRESS FEED PUMPS



- Pemo's Filter Press Feed Pumps are specifically designed for this application and there is little direct competition in this market due to the wide variety of models developed for this purpose.
- The main advantage of the Pemo Filter Press Pumps is the Side Suction on the Horizontal Design. The seal in this design only sees the feed pressure of the feed slurry instead of the high pressure from the discharge of the pump. This allows simple mechanical seal flushing systems to be used. The seal flush system is sealed so no water or sludge will leak during the flush cycle.
- Pemo Filter Press Feed pumps are designed specifically for abrasive and/or corrosive applications using a variety of materials such as rubber lining, Hardalloy Pemo (750-800 HB), Stainless Steel or Hastelloy.
- Capacities when filling the filter press can reach 900 m<sup>3</sup>/h (3968 GPM).
- Final Pressure can reach 20 bar (290 psi) for some Double Stage Models creating a much dryer cake than single stage pumps can provide.
- Mechanical Seals are all Silica Carbide or Tungsten Carbide.
- The bearings are all specifically designed for filter press applications and are oil lubricated.
- Lubrication of the 2 mechanical seals can be done by use of clean water at 2 bar (30 psi) maximum pressure. It can also be done by use of oil in a closed pressurized system.
- Some PEMO filter press pumps can also be provided in Submersible or Vertical versions.

### PRIMARY MARKETS for PEMO FILTER PRESS FEED PUMPS



- Mining, Quarries and Mineral Extraction.
- Power Plants.
- Aggregate Industry.
- Stone Industry (Granite and Marble).
- Ceramic Industry.
- Chemical Industry.
- Steel Mills.
- Industrial Wastewater Treatment.



## PEMO PUMPS for filter press

### the SINGLE STAGE RUBBER-LINED VERSION



- Currently there are 8 different Models available: 302, 403, 503, 603, K125, 1004, P200, I-270.
- Capacities when filling the filter press range from 20 to 900 m<sup>3</sup>/h (88-3968 GPM).
- Discharge pressures range from 4 to 10 bar (59 to 147 psi).
- These pumps are highly recommended for abrasive and corrosive slurry applications.
- Custom designed Pumps can be provided for specific applications.

Pump model	Maximum Flow		Max Head		Max Pressure	
	(m <sup>3</sup> /h)	(gpm)	(m/H <sub>2</sub> O)	(ft)	(Bar)	(psi)
302 AO/ABM	20	88	30	98	4	58
403 AO/AB-B3	50	225	50	164	6	87
503 AO/AB-B3	60	264	50	164	6	87
603 AO/AB-B5	100	440	60	196	7.5	108.75
K125 AO/AB-B75	180	793	75	246	10	145
1004 AO/AB-B75	250	1102	50	164	6	87
P200 AO/AB-B10	560	2469	50	164	6	87
I-270 AO/AB-B10	900	3968	50	164	6	87

Table with standard versions of single stage rubber lined PEMO Pumps

### the DOUBLE STAGE RUBBER-LINED VERSION



- Currently there are 5 different Models available: 503, 603, K125, 1004, P200.
- Capacities when filling the filter press range from 20 to 600 m<sup>3</sup>/h (88-2469 GPM).
- Standard discharge pressures range from 203 to 217,5 psi.
- These pumps are highly recommended for abrasive and corrosive slurry applications.
- Custom designed pumps can be provided for specific applications.

Table with standard versions of Double Stage rubber lined PEMO Pumps

Pump model	Maximum Flow		Max Head		Max Pressure	
	(m <sup>3</sup> /h)	(gpm)	(m/H <sub>2</sub> O)	(ft)	(Bar)	(psi)
503 AO/AB/DC-B5	60	264	120	393	15	217.5
603 AO/AB/DC-B7	100	440	120	393	15	217.5
K125 AO/AB/DC-B75	180	793	120	393	15	217.5
1004 AO/AB/DC-B10	250	1102	110	360	15	217.5
P200 AO/AB/DC-B10	560	2469	100	328	14	203

- Specifically designed for applications with coal slurry where higher pressures are required.
- Operate at higher temperatures and long cycle times.
- Currently there are 4 Models in the Single and Double Stage currently available with additional models being introduced and available later in 2010.
- Recommended primarily for highly abrasive sludges.
- Model 503 AO/AB/DC-B5 is one of the smaller Double Stage Models and is highly recommended when longer cycle times at high pressure are required. This is more cost effective than expensive positive displacement pumps.
- Custom Designed Pumps for specific applications can also be provided.

*Table with standard versions of PEMO Pumps for filter press with Hardalloy casings*

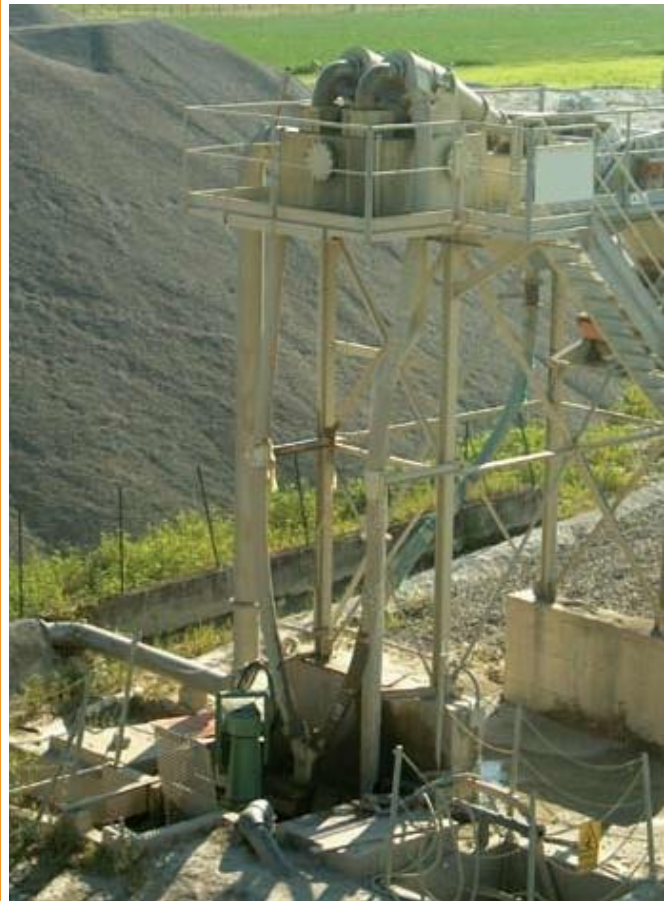
Pump model	Maximum Flow		Max Head		Max Pressure	
	(m3/h)	(gpm)	(m/H2O)	(ft)	(Bar)	(psi)
503-H AO/AB-B3	60	264	75	246	10	145
603-H AO/AB-B5	100	440	80	262	11	159.5
K125-H AO/AB-B75	180	793	80	262	11	159.5
P200-H AO/AB-B10	560	2469	70	229	7.5	108.75
503-H AO/AB/DC-B5	60	264	140	459	16	232
503-H AO/AB/DC-B7	60	264	150	492	20	290
603-H AO/AB/DC-B7	100	440	140	459	18	261
K125-H AO/AB/DC-B75	180	793	140	459	17	246.5
P200-H AO/AB/DC-B10	560	2469	120	393	15	217.5



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**PEMO PUMPS**

## Mining & Aggregate Applications



## **PEMO PUMPS** Mining & Aggregate Applications

### MINING and AGGREGATE EXCAVATION



- Pemo Pumps are used extensively in these markets due to the wide variety of Models and Configurations. Pumps available for this application include Horizontal, Vertical and Submersible Designs.
- Pemo Pumps used for this application are designed specifically for abrasive and or acid/corrosive fluid applications and are available in a number of materials including Rubber Lined, Hardalloy PEMO (750-800 HB), Stainless Steel and Hastelloy.
- Some Models can operate to a maximum pressure of 20 bar (290 psi).
- Some of the applications for PEMO pumps include, slurry transfer in ponds, hydrocyclone feed and yellowcake slurry transfer.

### SLURRY and SLUDGE TRANSFER APPLICATIONS



- Pemo pumps are used for transfer of slurries. The main Models for these applications are the Horizontal, Vertical and Submersible Models.
- The Horizontal Models of the AO/AB and AO/AB/DC series are the primary Pemo Models used to transfer concentrated slurries from thickeners to ponds or to filter press systems when there are high pressure losses due to long pumping distances. The side suction design reduces the maximum pressure on the seal to the fluid inlet pressure instead of the higher pump discharge pressure. This reduces maintenance on the seals greatly increasing the life of the seal and reliability of the pump.
- Some Models can operate up to 1500 m<sup>3</sup>/h (6613 gpm).
- Maximum head on some models can reach 150 m/H<sub>2</sub>O (492 ft).



## **PEMO** PUMPS Mining & Aggregate Applications

### HYDROCYCLONE FEEDING APPLICATIONS



- Any of the PEMO pump Models can be used to transfer slurry to hydrocyclones for separation of sand and heavy particulates.
- Some Models can operate up to 1500 m<sup>3</sup>/h (6613 gpm).
- Standard pressures up to 3 bar (44 psi).
- Solution contact surfaces for the PEMO pumps used in this application are all rubber lined or made of Hardalloy PEMO (750-800HB).



### NEW TECHNOLOGY for HYDROCYCLONE FEED APPLICATIONS



- In 2008, Pemo upgraded the AUS series Vertical pumps to include larger and higher output models. These new models were promoted to many existing customers and were then tested versus a number of horizontal pumps that traditionally have been used to feed Hydrocyclones. Due to the seal-less design, open impeller and other features of the AUS Series Vertical pumps, the cost to operate these pumps versus horizontal pumps showed energy savings of 15-30% in most applications.
- The AUS Series pumps can be effectively used for this application if the suction is from buffer tanks that are maximum of 2 m (7') in height.



**PEMO PUMPS** Mining & Aggregate Applications

PEMO PUMPS for WATER TREATMENT PLANTS



*Horizontal double stage PEMO pumps for filter press*



*Concentrated slurries by PEMO pumps in 2 x 2 meters filter press*



*Vertical PEMO pumps for transfer of slurries*



*AUS PEMO pump for Hydrocyclone feed application*



# MOVING POWER

Perissinollo s.p.a.



## PEMO PUMPS IN THE WORLD

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