



# Heavy Duty Slurry Pumps

# About Us

MHWirth is a leading global provider of first-class drilling solutions and services designed to offer our valued customers with the safer, more efficient and reliable alternative. Our company vision drives an unparalleled commitment to quality and major economic advantages for our customers and stakeholders.

MHWirth has a global reach covering five continents with offices in 16 countries. Drawing upon our global market success, we continue to seize opportunities through an established strong regional presence.

Our dedicated professionals consistently strive to enhance customer satisfaction and form meaningful collaborations by creating a personalized experience.

MHWirth has been manufacturing piston diaphragm slurry pumps for more than 45 years and is a pioneer in slurry pump technology. More than 1 000 positive displacement pumps have been built with power ratings of up to 3 000 kW.

Wirth™ slurry pumps by MHWirth are used for various heavy duty applications in the mining industry, such as mine dewatering, autoclave and digester feeding, and transport of tailings and concentrates.

The unique features of Wirth™ slurry pumps guarantee maximum availability at minimum cost of ownership.



# Quality – in Products and Personnel

MHWirth is renowned for its maximum reliability, professional customer support and state-of-the-art equipment. The ongoing transfer of technology from recent projects is a guarantee of continuous improvement and provides additional benefits to all our customers.

Our management system holds the following certifications by notified bodies:

- Quality management system to DIN EN ISO 9001:2015 and ISO 3834-2
- HSE management system to BS OHSAS 18001:2007

Our products conform to the relevant standards, e.g. IEC, DNV, ABS, ISO, DIN, ASME, ANSI, API, NORSOK.

MHWirth cares about the environment and has accordingly designed all its products to comply with the latest HSSE requirements and beyond:

- Reduced noise and vibration pressure
- Use of environmentally-friendly coatings, grease, oil and lubricants
- Easy and safe maintenance (e.g. hydraulic quick release system)
- Non-leaking connections

- Energy-efficient motors
- Easy accessibility to all interfaces
- Strict accordance with international codes and standards

## High-quality training

Professional training plays an important role in our approach to quality. The courses we hold at our training center in Erkelenz, Germany enable professional handling of technical complex systems and equipment. They provide the skills technical personnel needs to achieve marked improvements in safety and equipment handling, which in turn leads to considerable reductions in downtime. Our training courses offer a unique, tightly-integrated combination of theoretical content, simulator training and practical skills.

Training courses are available for our customers and are part of the continuous qualification programme of our service personnel. To meet the high standards of qualification, all courses in our training programme have been developed in cooperation with independent training experts from the internationally renowned Chamber of Commerce and Industry in Germany.

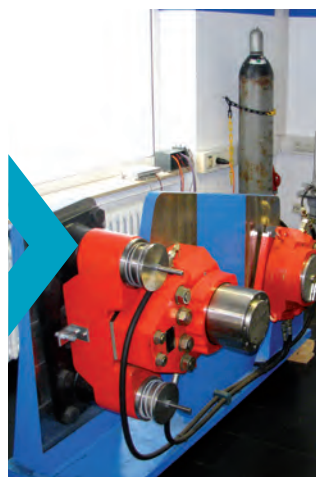
## eLearning



## Classroom Training



## Technical Training Lab



## Workshop Training



# Product Line

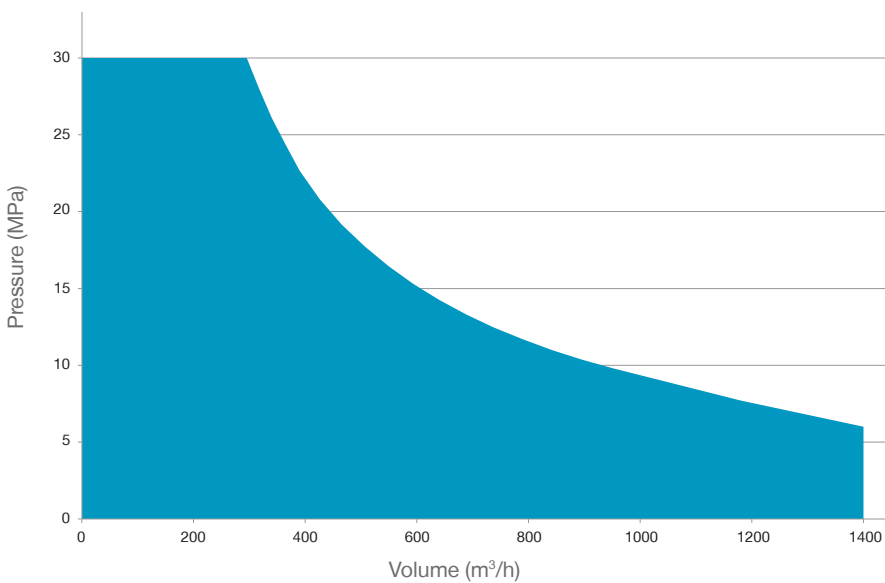
MHWirth offers a full line of high-pressure slurry pumps covering every type of slurry application. These field-proven heavy duty pumps have power ratings all the way up to 4 080 hp (3 000 kW).

Wirth™ heavy duty slurry pumps can be supplied in several designs:

- Piston or piston diaphragm
- Duplex or triplex
- Single- or double-acting
- With electric motors and VFD configuration
- Pressure ratings of up to 30 MPa and flow rates of up to 1 400 m³/h

Wirth™ heavy duty slurry pumps are available in five different product lines. The exact specifications of a product depend on customer requirements, and consequently the highest quality and a tailor-made solution are guaranteed.

All Wirth™ slurry pumps are designed, manufactured and tested in Erkelenz, Germany.



	DPM	DPK	TPK	TPM	TDPM
Flowrate, max.	3 302 gpm (us) (750 m³/h)	3 302 gpm (us) (750 m³/h)	3 302 gpm (us) (750 m³/h)	3 302 gpm (us) (750 m³/h)	6 164 gpm (us) (1 400 m³/h)
Operating pressure, max.	4 350 psi (30 MPa)	4 350 psi (30 MPa)	4 350 psi (30 MPa)	4 350 psi (30 MPa)	4 350 psi (30 MPa)
Absorbed power, max.	2 992 hp (2 200 kW)	2 992 hp (2 200 kW)	2 992 hp (2 200 kW)	2 992 hp (2 200 kW)	4 080 hp (3 000 kW)
Cylinder	Duplex	Duplex	Triplex	Triplex	Triplex
Diaphragm	Yes	No	No	Yes	Yes
Acting	Double	Double	Single	Single	Double
Possible applications	High volumes High pressure High abrasivity	High volumes High pressure Low abrasivity	High volumes High pressure Low abrasivity	High volumes High pressure High abrasivity	Very high volumes High pressure High abrasivity

Data is subject to confirmation by the manufacturer.

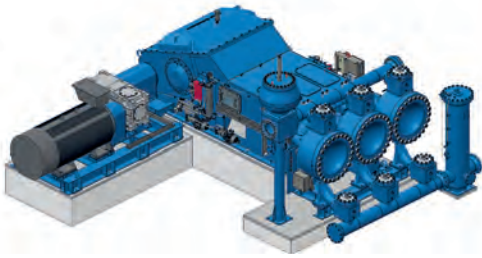
# Applications

Our field-proven slurry pumps can transport any type of slurry and are used frequently in the following industries:

Pipeline Transportation	Mining Processing Industry	Underground Mining	Oil Industry	Power Industry
<ul style="list-style-type: none"> <li>■ Iron ore</li> <li>■ Copper ore</li> <li>■ Nickel ore</li> <li>■ Bauxite</li> <li>■ Gold ore</li> <li>■ Phosphate</li> <li>■ Potash</li> <li>■ Limestone</li> <li>■ Coal</li> <li>■ Sand</li> <li>■ REA gypsum</li> <li>■ Pyrite</li> <li>■ Oil sand and minerals</li> </ul>	<ul style="list-style-type: none"> <li>■ Autoclave and reactor feed</li> <li>■ Digester feed</li> <li>■ Tailing disposal</li> </ul>	<ul style="list-style-type: none"> <li>■ Mine dewatering</li> <li>■ Mine backfill</li> <li>■ Hydraulic ore hoisting</li> </ul>	<ul style="list-style-type: none"> <li>■ Oil sand refining</li> <li>■ Tailing disposal</li> </ul>	<ul style="list-style-type: none"> <li>■ Ash (fly/bottom ash/HCS)</li> <li>■ Coal slurry</li> <li>■ Feeding pressurized, fluidized bed combustion</li> <li>■ Long distance transport</li> </ul>



# Main Benefits



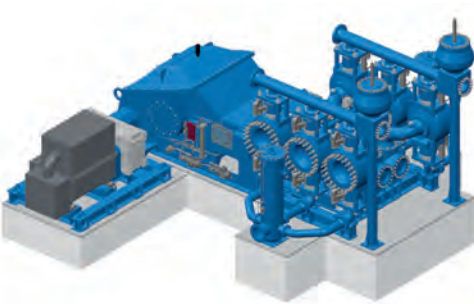
Wirth™ triplex single-acting piston diaphragm pump (TPM)

**-75%** ↓

OPEX savings compared to traditional pumps systems



High-pressure capability reduces the number of pumping stations in difficult terrain



Wirth™ triplex double-acting diaphragm pump (TDPM)

**+100%** ↗

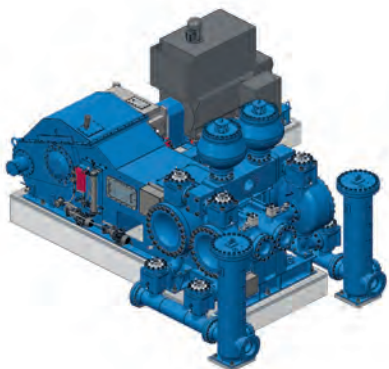
Higher volume per pump compared to largest conventional piston diaphragm pumps

**-50%** ↓

CAPEX savings due to fewer pumps being required



24/7 availability of spare parts hotline guarantees prompt receipt of original spare parts

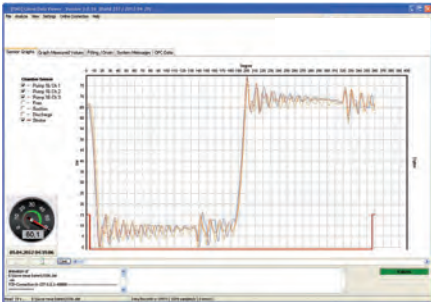


Wirth™ duplex double-acting piston diaphragm pump (DPM)



Global MHWirth network to provide fast and professional on-site support

# Unique Features and Benefits of Slurry Pumps



## -15% ↓

### Downtimes

#### Wirth Pump Monitoring System (WPMS™)

- Real-time monitoring of key pump performance indicators
- Recording and storage (one year) of performance data for review
- Analyses of performance data to identify early indications of wear
- Online monitoring of bearing and valve conditions
- Retrofit component for existing pumps

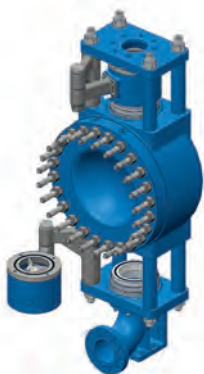


## -50% ↓

### Suction pulsations

#### Fluid accelerator by MHWirth

- Reduces pulsations inside the suction manifold
- Guarantees a harmonised filling process for all types of diaphragm housing
- Field-proven technology



## -25% ↓

### Maintenance duration

#### In-line valves by MHWirth

- Longer lifetime of valves
- Reduced costs for parts
- Reduced wear in valve housings
- Easy and fast access for maintenance work

# References



### Peru/Lima – Antamina Mine

Since 2002, four Wirth™ TPK pumps are operating at a copper mine located 470 km north of Lima at an elevation of 4 200 metres. They transport copper concentrate through a 300-km-long pipeline, running from the mine site to the port of Huarmey, north of Lima.

Each pump has a capacity of 132 m<sup>3</sup>/h; the required discharge pressure is 25.2 MPa, while the installed power is 1 300 kW with variable frequency drives being used.



### South Africa/Kimberley - Central Treatment Plant

Since 2002, three Wirth™ TPM pumps transport re-processed kimberlyte tailings from the Combined Treatment Plant (CPT) to the tailings pond, which is 6 km away from the CPT.

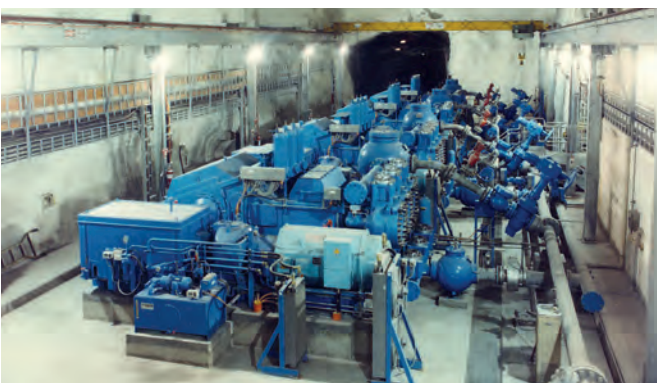
Due to the relatively high solids concentration of > 60 %, the viscosity is rather high, requiring a discharge pressure of 12 MPa. Each pump has a capacity of 380 m<sup>3</sup>/h.



### South Africa/Richards Bay - Fairbreeze Mine

Two Wirth™ slurry pumps have already been performing in Tronox' Hillendale Mine for more than 15 years. To meet the increased capacity requirements of the new Fairbreeze Mine they were refurbished and complemented by a new, stronger model in 2015.

The pumps transport heavy mineral tailings through a 6-km-long pipeline. The new Wirth™ TPM slurry pump has a capacity of 620 m<sup>3</sup>/h.



### Australia/New South Wales - Broken Hill Mine

Since 1991, four Wirth™ TPM pumps transport 100 m<sup>3</sup> of dirty, unsettled, mine water every hour from a depth of 1 065 metres to the surface in one stage. The required discharge pressure is 13 MPa.

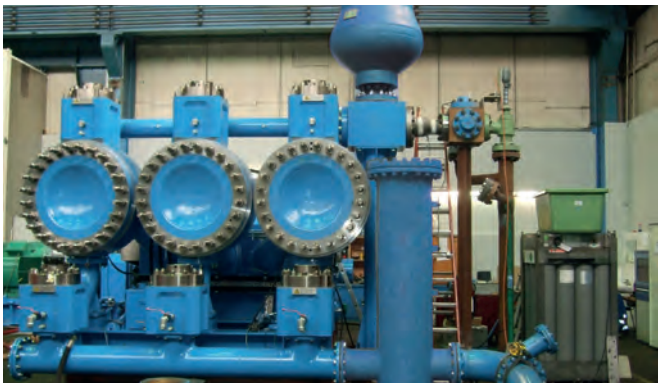




#### Australia/Gladstone - Yarwun Alumina Refinery

The Yarwun Alumina Refinery, owned by Rio Tinto Alcan, has an alumina production rate of 1.4 million tons per year (MTPY). Eighteen Wirth™ TPM pumps (eight of which were installed in 2004, and the other ten in 2009) are used as digester feed pumps.

The pumps transfer respectively 390 and 425 m<sup>3</sup> of caustic bauxite to tube digesters every hour at a pressure of 9.6 MPa.



#### Saudi Arabia/Eastern Province - Ma'aden Alumina Refinery

Since 2012, eleven Wirth™ TPM pumps are operating for the alumina refinery owned by Ma'aden (Saudi Arabian Mining Company) and Alcoa.

Eight pumps are used to feed digesters with caustic bauxite, each pump with a flow rate of 480 m<sup>3</sup>/hr at a pressure of 9.1 MPa. Three more TPM pumps transport red mud (residual product of the digestion process) from the refinery to a tailings pond. Each "red mud" pump has a flow rate of 274 m<sup>3</sup>/hr at a pressure of 12.6 MPa.



#### New Caledonia - Goro Nickel Plant

Since 2009, six Wirth™ DPM piston diaphragm pumps are used to feed HPAL autoclaves at a laterite nickel processing plant.

The pumps are equipped with cooling leg type heat exchangers between the valve and diaphragm housings which reduce the slurry temperature from 230 to 80 °C at the diaphragms. Each pump has a flow rate of 460 m<sup>3</sup>/hr at a pressure of 6.5 MPa.



#### Canada/ Saskatchewan - McArthur River/Cigar Lake Uranium Mine

The McArthur River mine, owned by Cameco, is the world's first hydraulic ore hoisting operation. Uranium ore is crushed underground, mixed with water and pumped to the surface as slurry where it is further processed.

In 1998, two Wirth™ TPM were installed at McArthur River, each pump with a flow rate of 80 m<sup>3</sup>/hr at a pressure of 12.5 MPa. In 2012 two more Wirth™ TPM pumps were supplied to Cigar Lake, each of these with a flow rate of 80 m<sup>3</sup>/hr at a pressure of 9.2 MPa.

# Worldwide Service for Slurry Pumps

At MHWirth, leading-edge technology and first-class service go hand-in-hand. To us, consistent customer orientation means: quick response times, fast implementation and flawless execution.

Sales, service and support, replacement of parts and training are all handled by our global network of regional service hubs. We guarantee the constant availability of all critical replacement parts.

Utilizing the latest and greatest of available tools our experienced support engineers are able to quickly identify and troubleshoot reported incidents. This allows us the flexibility to resolve small problems before they become complex and costly. Our specialists are ready and available to support you in resolving any problems that may occur – within a matter of hours, if need be.

With our Wirth Pump Monitoring System (WPMS™) we support you to reduce downtimes and optimize pump operation.

Continuous training at our in-house training centre enables the professional handling of technical complex systems and equipment.

Individual long-term service and maintenance packages can be tailored according to the requirements of each project.



