



Water Hydraulics

Products
Industries
Applications



Contents

- 3 **Foreword**
- 4 **Products**
 - Plunger pumps
 - Pump units
 - Plants
- 8 **Industries**
 - Steel and metal industry
 - Wood industry
 - Plastics industry
 - Rubber industry
 - Automotive industry
- 10 **Applications**
 - Descaling
 - Saw cooling
 - Pressurized water systems
 - Industrial cleaning and deburring
 - Press drives
 - Lubrication of hydrostatic bearings (Morgoil)
 - Special applications
 - Other applications
- 14 **Research and development**
- 15 **About Wepuko PAHNKE**



www.wepuko.com

Follow this link to get more detailed information on the solutions and products of Wepuko PAHNKE.

Dear Reader,

Water is environmentally friendly, available almost everywhere and inexpensive. It is a non-flammable hydraulic fluid. Due to its properties water is particularly suitable for certain applications.

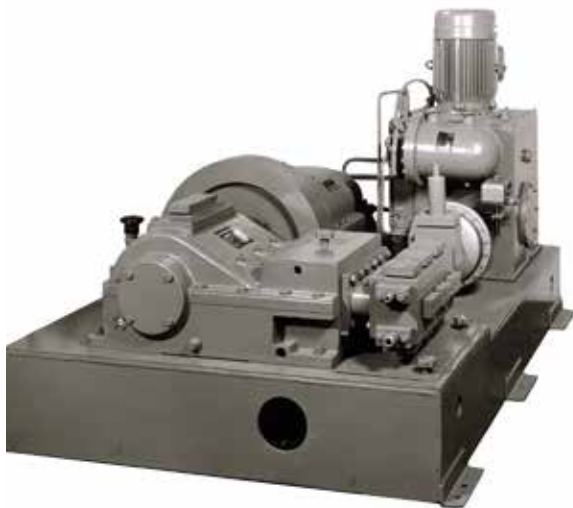
Wepuko PAHNKE has been producing pumps for water hydraulic applications for more than 80 years. In addition, we have also had pumps for oil hydraulics in our product range for more than 50 years. This sets Wepuko PAHNKE apart from most of our competitors and allows our customers to choose between products for water or oil hydraulics from a single source.

The answer to the question which method is the better one often depends on which system the respective manufacturer offers. While the pure water hydraulics suppliers would rather emphasize the environmental friendliness of their medium, their competitors would instead emphasize the lower cost and the lower susceptibility to failure of oil hydraulics.

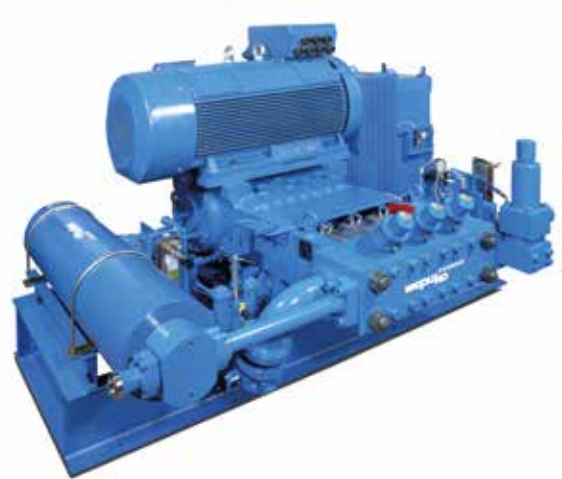
We know the demands of the industry first hand evidently we use our pumps as drives for the hydraulic forging presses of PAHNKE.

Our customers can rely on this: our advice is always neutral and based solely on the respective application and on your success.

The following pages will provide more information about our product portfolio and the numerous typical applications.



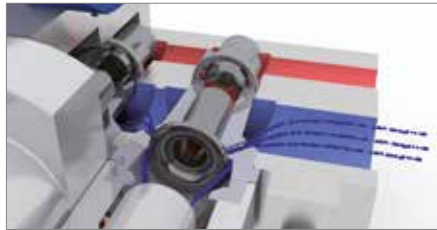
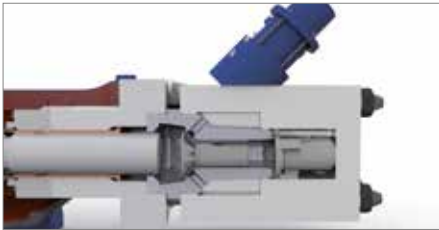
Horizontal triplex plunger pump from the year 1955.



Compact design pump unit for the press drive, equipped with our specialty: the pneumatic suction valve lifting device (PSVA).

Water Hydraulics: The modern classic

Triplex plunger pumps are the core piece of most of our water hydraulic units. Robust, efficient and easy to maintain, they operate around the clock in all kinds of industrial plants.



Plunger pumps

In the Water Hydraulics segment we supply pumps for descaling plants, press drives and other high-pressure applications. Whether individual pumps or complete customized units, we are always the right point of contact for all of your needs.

Special features of the Wepuko PAHNKE water hydraulic pumps and pump units:

- Use of highly wear resistant materials
- Optimized design
- Long operating life cycles
- Designed for continuous operation
- Very maintenance friendly

A conversion to water hydraulics is also an option in the modernization of plants. We will advise you gladly.

Triplex plunger pumps

At Wepuko PAHNKE triplex plunger pumps are used in water hydraulics.

Our plunger pumps basically consist of two main components: the damped-mounted and lubricated drive and the liquid part, consisting of three cylinders and the valve body.

Wepuko PAHNKE triplex plunger pumps are high-pressure horizontal plunger pumps in series. They can be designed for almost any pumpable medium. Three plungers are a good compromise between low pulsation and cost-efficient and maintenance-friendly design.

The housing of the power unit is in one piece in these high-performance machines, a compact and inexpensive solution.

Built-in pressure or wiper lubrication automatically supplies the engine parts with lubricating oil.



Our DP series pumps have a flow rate ranging from about 4 to 5000 l/min, pressures up to 1500 bar and a power range of 5 to 1600 kW. Higher performances and special designs are available on request.

The advantages of plunger pumps at a glance:

- Robust design
- Constantly displaced volumes, independent of the pressure
- Cost-efficient due to high efficiency (volumetric efficiency up to 98%)

Design features

At Wepuko PAHNKE we use the best materials. This is important to ensure quality and durability. In addition, our pumps are designed in a way that guarantees short downtimes and easy maintenance.

The crankshaft is made of high-quality forged steel and the sliding bearing of the connecting rod is made of special bearing metals. The crossheads made of special alloys, slide into special precision-machined (honed) guides.

The piston-cylinder unit is a technically perfect product in terms of ease of maintenance, reliability and durability.

The special design allows the piston-cylinder unit to be dismantled without removing the media-conducting lines:

the pressure collection channel is situated inside the one-piece pump body, necessitating only a few pressure-loaded outer seals on the valve section.

Pressure and suction valves can be dismantled without having to loosen media-conducting lines or remove the valve section.

Pump units

You can acquire our pumps not only as individual units but also as complete assemblies from a single source.

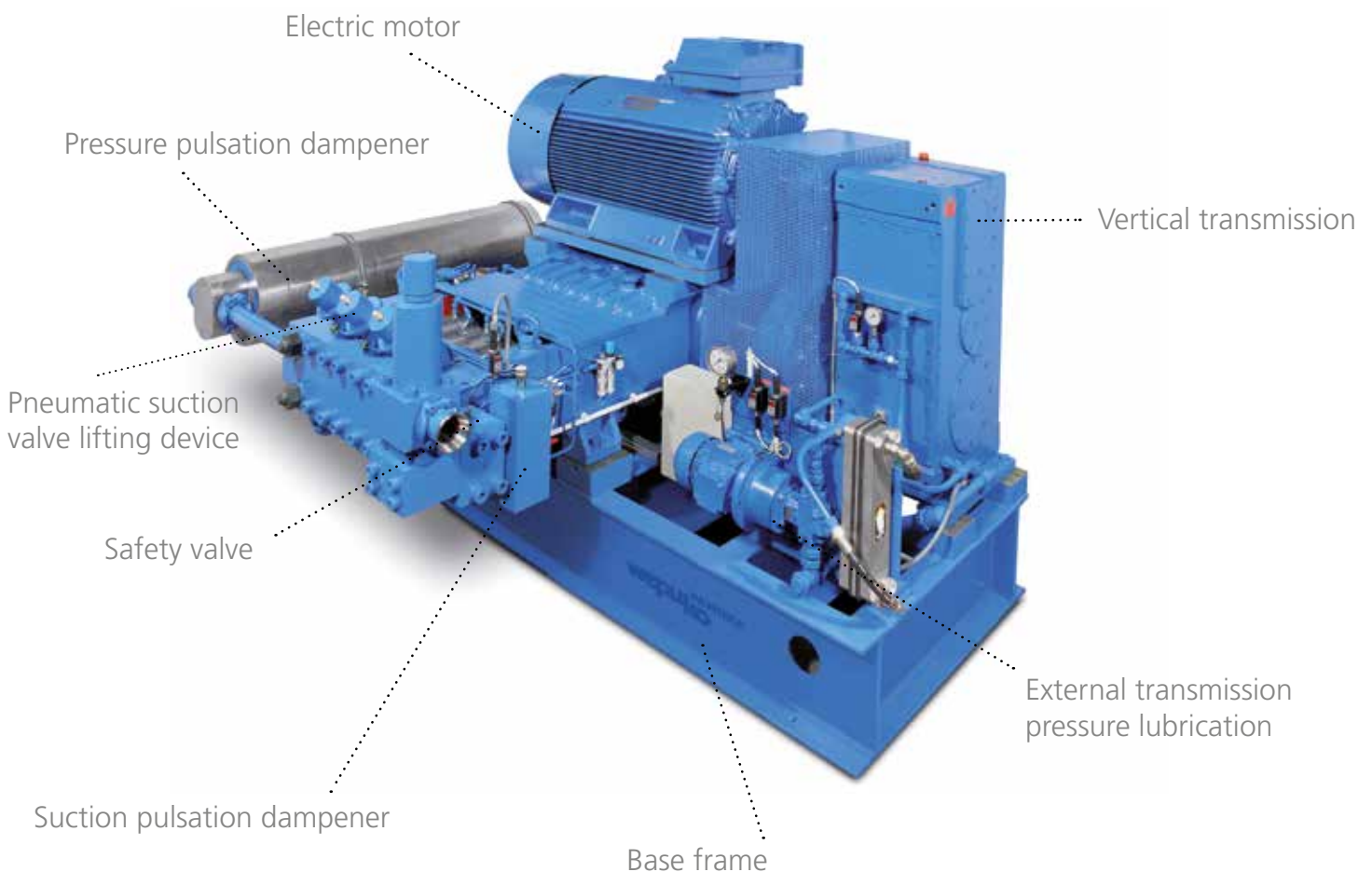
Our extensive experience plays a major role here. We assemble the main assemblies according to customer requirements. We tailor our equipment to meet the local conditions and the needs of our customers.

In the standard version the main components of triplex plunger pump, transmission and motor are installed side by side on one level with the couplings in between. This provides easy access for maintenance and repair.

We also supply a compact version with an extremely space-saving layout. In this version the drive motor is

mounted directly on the pump and connected by a vertical transmission. The design of this unit is unique.

We also offer a wide range of accessories, such as pulsation dampeners, circulation units and safety devices, as well as electronic monitoring and electric controls.



Compact version of the pump unit DP 212.



Pump units in a pressurized water system.



Several plunger pumps to drive an open die forging press.



Spray booth with spray ring for the descaling of billets.

Plants

Our systems are in use worldwide – wherever maximum reliability and durability are required.

The excellent quality of the components and their optimized design make the Wepuko PAHNKE pumps, power units and systems ideal for continuous three-shift operation. 24 hours a day, 365 days a year.

We supply complete systems for high-pressure applications. Below are a few examples:

Pressurized water systems

We supply pressurized water systems, which hold water and compressed air in great pressure vessels. The compressed air accumulates the energy and the water transfers the energy. The pressure accumulator is charged in the pauses between the operating cycles.

Pressure accumulators are especially suitable for applications with long cycle times. This is where they are the most efficient solution that brings significant cost savings with it.

Our pressure accumulators are used where energy is needed on short notice, for example in descaling and for driving hydraulic forging presses.

Water hydraulic press drives

Wepuko PAHNKE has been manufacturing water hydraulic press drives for industrial use for more than 80 years. A large field of application is in the steel and metal industry, but Wepuko PAHNKE water hydraulic press drives are also used in presses in the wood, rubber, plastics and automotive industry.

Descaling systems

Wepuko PAHNKE supplies complete descaling systems that are tailored to the requirements of customers.

Depending on the specified cycle times, descaling systems generally come in two versions: as pressurized water systems or as direct descaling systems.

Wepuko PAHNKE technology proves itself every day in more than 100 continuously operating descaling systems worldwide.

Our strength is in our profound industry knowledge. We manufacture hydraulic forging presses in house and know the demands and the high requirements of the industry.

We have made a name in the steel and metal, wood, rubber, plastics and automotive industries

Wepuko PAHNKE water hydraulic products are found in companies in different industries and sectors. For our customers we develop customized, innovative solutions for new installations and upgrades.



Steel and metal industry

Extremely long service life and the highest reliability of production plants are basic requirements in the steel and metal industry. Our products have been meeting these requirements dutifully for more than 80 years.

From individual pumps to complete hydraulic forging systems, our entire product range can be found in the steel and metal industry.



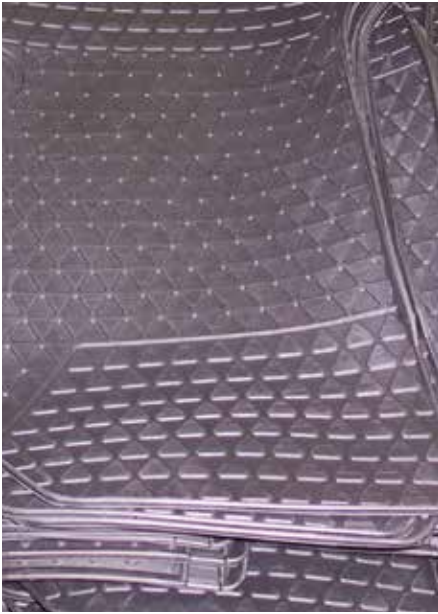
Wood industry

In the wood industry, our systems have proven to be highly reliable, for instance in the manufacture of wooden pallets. Ruggedness is also a must in the production of particle boards. Mostly used are the so-called continuous presses which produce endless chipboards that can be finished later.



Plastics industry

Especially when it comes to plastic, the end user is often not aware of the demands of the production process. In the plastics industry, our press drives and pumps are used for the production of a wide variety of molded parts, such as casings for fluorescent tubes.



Rubber industry

Many of the customers using our pumps and press drives are manufacturers of highly sophisticated technical rubber parts such as tires, floor mats, vibration dampeners or wheel suspensions for the automotive industry.



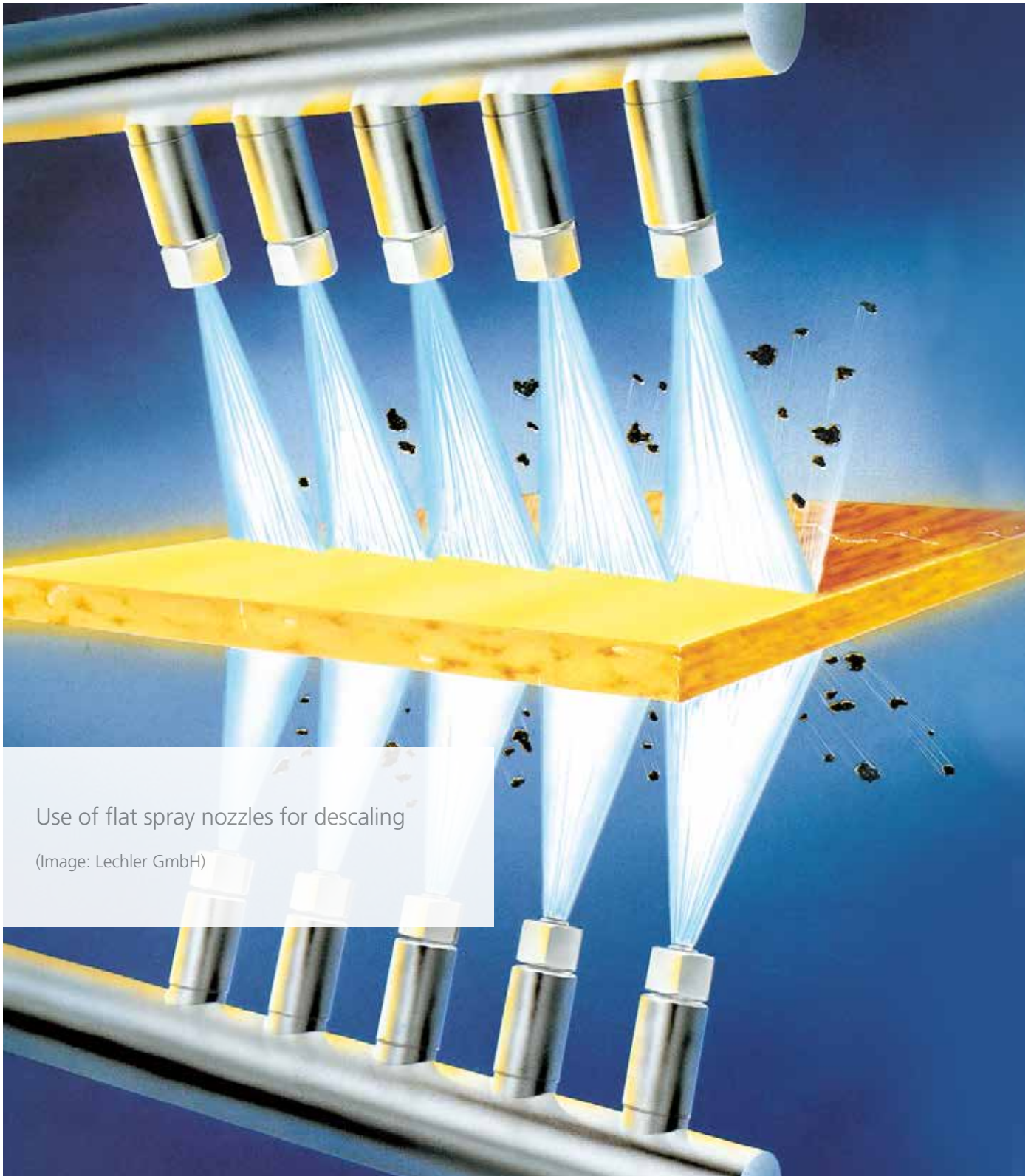
Automotive industry

Three-shift operation is the norm for suppliers in the automotive industry. The special quality of our products makes them particularly suitable in this regard. A great number of our pumps is used in deburring and cleaning equipment. Transmission housings and valve blocks receive their final finishing here, for example.

At Bosch, our high-pressure cleaning systems are used, among others, for cleaning and deburring aluminium and plastic parts, for example the mechanical parts of safety systems such as ABS.

Source of innovation: One medium – multiple applications

Descaling and saw cooling are just two examples in which we introduce the versatility of water as the working medium. At Wepuko PAHNKE we design and manufacture complete hydraulic systems and provide support throughout the entire process – from concept to commissioning.



Use of flat spray nozzles for descaling

(Image: Lechler GmbH)

Descaling

The reliability of our pumps that are used for descaling ensures the continuous operation of production lines. Wepuko PAHNKE is the brand of choice.

Our descaling systems are used locally and internationally; at Buderus in Wetzlar or Posco in Korea, for example.

The scale, or the oxides on the surface, is blasted from the hot steel with a jet of water. Wherever heated steel is shaped, a descaling system increases the quality of the components. At the same time the wear in the forming equipment is minimized.

Saw cooling

Wepuko PAHNKE supplies complete cleaning and cooling facilities for rolling mills. Hyundai in Korea is one of the companies where these are used. The quality of our products and the resulting high service life and cutting performance are essential factors in this regard.

Rolling mills finish their products such as profiles, pipes or merchant steel in standard lengths. High reliability and consistent performance are required, as well as simple maintenance, to ensure continuous operation.

Pressurized water systems

From the steel to the plastics and wood industry: our pumps are used in pressurized water systems of different industry sectors. With a pressure range between 200 and 350 bar, fatigue resistant and durable, they are designed for three-shift operation.

We integrate some of our pumps directly into the corresponding systems. Our pressurized water pumps are also used in press drives.



Typical pump unit for pressurized water systems (DP 212).



Pump unit DP 207 for the descaling of copper.



Dual pump unit DP 403 for saw cooling.

Industrial cleaning and deburring

Our pumps are used for cleaning and deburring at customers who, for example, manufacture motor housings from aluminium, making a significant contribution to the efficiency of the manufacturing processes.

Manufacturers such as INDA or Bosch put their trust in Wepuko PAHNKE pumps for their systems.

Cleaning and deburring take place in closed systems, which usually work in three shifts. The performance and reliability of the pump are therefore important, because pressure and the volume of water must be available around the clock.



Compact version of a pump unit DP 205 for mechanical cleaning and deburring of components.

Press drives

Our product range includes both water and oil hydraulics. As an experienced supplier and not bound to one system, we provide guaranteed application-oriented advice and find the best solution for our customers.

Water is environmentally friendly, inexpensive and as hydraulic medium non-flammable. Our water hydraulic pumps are proving themselves as press drives in all the relevant sectors and bring maximum performance in daily use to continuous operation processes.



Pump unit DP 209 for press drives.

Lubrication of hydrostatic bearings (Morgoil)

With more than 200 installations in all major companies worldwide, Wepuko PAHNKE pumps are used for the lubrication of hydrostatic bearings, for example at LY Steel in China.

This application places high demands on the performance and reliability of our pumps, because these bearings are lubricated at a very high pressure – up to 1500 bar. Our triplex plunger pumps press the lubricant in hot and cold rolling mills between the bearing surfaces, which require highest precision and running smoothness. This ensures the consistent quality of the rolled products.

Special applications

One specific application of our pumps is hydrostatic pressure tests. Water is pumped into a container or a pipe in order to test it for any cracks or leaks, or to verify strengths.

Another field is in the cooling of tools. Milling heads and other tools are cooled with up to 600 bar. Our pumps are for example used at GKN Aerospace (formerly Volvo Aero), a Swedish manufacturer of aircraft engines and components for the aviation and aerospace industry.

Other applications

Was your application not listed? Over and above these examples, there are still various other applications for our pumps.

We will gladly advise you.



Pump unit DP 405 for the lubrication of hydrostatic bearings.



Compact version of the pump unit DP 405 for the cooling of tools including booster pump and filters (suction side) and resonator for pressure pulsation dampening (pressure side).

Close to the market: Research and development

What does the market need? This question excites the developers at Wepuko PAHNKE. Their work involves creating solutions for special customer requirements and opening up new fields of application. Research and development, design and the entire production are located in Metzingen. This means all our competency is consolidated on one site.



Modern simulation tools such as FEM and CFD support the design process at Wepuko PAHNKE.

Innovation on-site

Research and development is of high priority for us. This is the only way to achieve our goal: reliable, sturdy and precise machinery.

Wepuko PAHNKE GmbH combines the knowledge and experience of two great companies: the history of Wepuko with over 80 years of experience with high-pressure plunger pumps and the history of PAHNKE Engineering with over 40 years of experience with hydraulic forging presses. The development team also benefits from the short and quick communication channels at the headquarters, when dealing with the challenges of tomorrow.

Presses and pumps are developed separately due to their product-specific properties. Nevertheless we focus on an intensive exchange of ideas and concepts between the departments. The result: coherent, optimized solutions for our customers.

All of our tests and development take place on our site in Metzingen. This is how we protect our unique knowledge and save time.

Quality standards

Our presses and pumps fulfill extreme requirements when it comes to load capacity and reliability. Many of our products are custom-made, designed precisely to fit the requirements of the customer.

For our prototypes and small series the planning and simulation phase is key. At Wepuko PAHNKE, we constantly reinvent our products for the needs of our customers.

Even small changes, for example in the dimensions, often have major effects on the occurring forces and material stresses. With fluid flow in complex geometries, avoiding cavitation is essential.

Virtual development processes are increasingly gaining importance; they secure high quality with short development times. They offer our customers transparency and security: in many cases, our customers actually receive an initial feasibility study and test calculations with their offer.

It goes without saying; our quality management system is certified in accordance with ISO 9001:2015.

Development with FEM

In order for the development to lead quickly and efficiently to a result, we use the latest simulation tools, the FEM (finite element method) to analyze mechanical stability and CFD (computational fluid dynamics) to inspect the fluid mechanics of components.

This allows us to calculate the mechanical and fluidic properties of individual components from the very first design step, to an optimized final design, leading to a highly efficient product.

Our test bench subjects the end product to an extensive test procedure allowing us to guarantee the requested product properties and total customer satisfaction.

We perform under high pressure... and we perform peerlessly!

Wepuko PAHNKE is the merger of two market leading, traditional companies: Wepuko, the specialist for high-pressure pumps and PAHNKE, the pioneer in the field of hydraulic forging presses. This mixture makes us unique and gives us significant advantages towards the competition.



Wepuko PAHNKE GmbH in Metzingen, Germany.

Wepuko PAHNKE is a German mechanical and systems engineering company, specialized in the design and manufacturing of high-pressure pumps and hydraulic forging presses, including their drives and controls. The company is a global leader in these fields. The range of pumps includes triplex plunger pumps and radial piston pumps with variable and constant displacement. Wepuko PAHNKE also develops and builds units and systems according to customer specifications. Furthermore, the company offers complete descaling systems.

Our solutions can be found in the oil and gas industry, chemical plants, power plants, heavy industry, steel mills and many other applications. Customers include: Otto Fuchs and Citic Heavy Industries in the Hydraulic Forging Presses and Oil Hydraulics sectors, SMS Meer, Vallourec & Mannesmann, Robert Bosch and ArcelorMittal in the Water Hydraulics sector and Shell, Petrobras, Petronas, Statoil, Gaz de France and Hyundai Heavy Industries in the Process Pumps sector.

The company was founded in 1932 by Fritz Thumm in Metzingen, South-West Germany. One of the company's many innovations was the introduction of large radial piston pumps with a very flexible control system and rapid flow direction reversal (1966).

After the takeover of Wepuko by the Pahnke family in 1996, the company was able to introduce the know-how of Hans-Joachim Pahnke, a pioneer in the field of open die forging presses. The outstanding innovations that Hans-Joachim Pahnke developed, include the first underfloor open die forging press featuring a two-pillar design (1956) and the **PAHNKE Modified Sinusoidal Direct drive (PMSD drive)** in 1975.

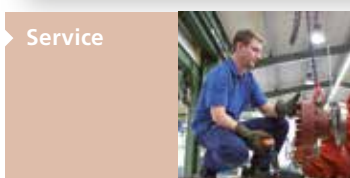
The largest hydraulic system in the world went into operation at Norheincoco in China in 2009, and the world's strongest open die forging press by PAHNKE went into operation in 2011 at Citic Heavy Industries in China. Both using a Wepuko PAHNKE PMSD drive.

Today, the company is managed by Tanja Pahnke and remains a strong innovator in its fields. The Wepuko PAHNKE group includes companies in the USA, China and Russia. Wepuko PAHNKE also has a global presence with representatives in more than 70 countries.

Milestones

- 1932** Wepuko is founded in Metzingen by Fritz Thumm
- 1973** PAHNKE Engineering is founded in Düsseldorf by Hans-Joachim Pahnke, Fritz Thumm Jr. and Eric Koik
- 1996** Wepuko is taken over by the Pahnke family
- 2002** The products of the two companies are consolidated into one company
- 2011** Renamed to Wepuko PAHNKE

At home the world over: with our representatives in more than 70 countries



Wepuko PAHNKE GmbH
Max-Planck-Str. 10
72555 Metzingen, GERMANY
Tel.: +49 7123 1805-0
Fax: +49 7123 41231
wepuko@wepuko.de
www.wepuko.com