



## High-Pressure Pumps for Nuclear Power Plants

# Safety does not allow a second chance!

Which is why Wepuko PAHNKE high-pressure plunger pumps are used in nuclear power plants across the world. The reliability of our pumps is greatly valued in different types of reactors. Our product portfolio for nuclear power plants conforms to relevant norms and certificates like OIT, HAF 604, ISO 9001:2015, KTA 1401 and AVS D 100 / 50.



Wepuko PAHNKE pump unit in a German nuclear power plant (delivered in 1979).



DP 408-100 at the test stand.

## Applications

- Boric acid solution supply into the reactor.
- Feeding and adjusting of emergency systems with boric acid solution.
- Hydraulic tests of the plant intended for feeding and adjusting of emergency systems with boric acid solution.
- Emergency water pumps for flushing and cooling of the reactor coolant pump seal
- Emergency cryogenic reciprocating pumps for the shutdown system (GCR type reactors\* in the United Kingdom)
- Replacement of high pressure cen-

trifugal pumps with plunger pumps in various systems of nuclear power plants.

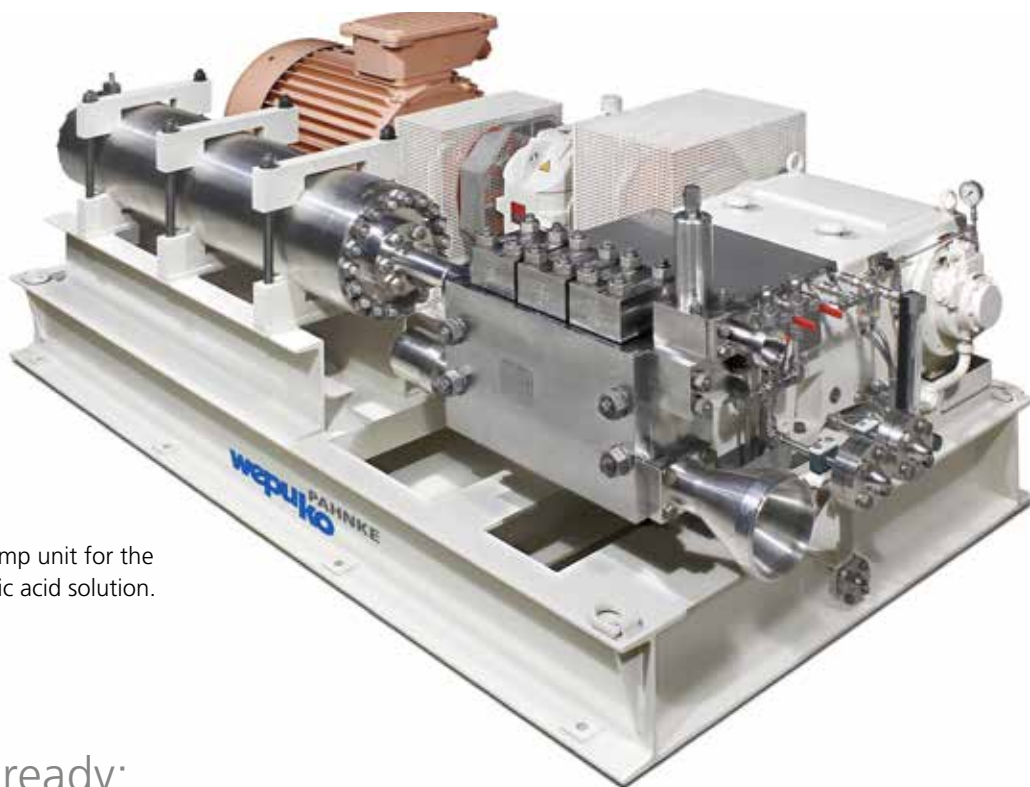
Compared to centrifugal pumps, plunger pumps are significantly more efficient.

Wepuko PAHNKE pumps are available for the following pressure and delivery ranges:

- operating pressure from 100 to 1500 bar (1450 to 21756 psi)
- flow rates from 16.6 to 3500 l/min (1 to 210 m<sup>3</sup>/h or 4.39 to 924.6 gpm). Possible delivery depends on the operating pressure.

## References (BWR, PWR and GCR reactor types\*)

- China: Tianwan (units 1-4)
- India: Kudankulam (units 1 and 2)
- Russia: Baltic (units 1 and 2), Lenin-grad-2 (units 1 and 2)
- Switzerland: Beznau
- Finland: Research NPP
- Sweden: Oskarshamn
- United Kingdom: Hinkley Point B and Hunterston B
- Germany: Krümmel, Gundrem-mingen, Philippsburg 2, Grohnde, Obrigheim, Isar 2, Neckarwestheim 2, Emsland



DP 408-100 pump unit for the injection of boric acid solution.

## Always ready: DP 408-100

In nuclear power plants using a PWR or a BWR type reactor\*, our pumps are used to inject boric acid solution into the reactor in emergency situations.

High reliability of the equipment is essential for such an application: Should any primary safety systems fail, such as the retraction or hydraulic drive of the control rods, then the pump injects a boric acid solution into the reactor. The boron serves to absorb neutrons to stop the chain reaction.

Wepuko PAHNKE has delivered DP 408-100 pump units to:

- China: Tianwan (units 1-4)
- India: Kudankulam (units 1 and 2)
- Russia: Baltic (units 1 and 2), Lenin-grad-2 (units 1 and 2)

## Contact

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\* PWR: Pressurized light-water-moderated and cooled reactor, BWR: Boiling light-water-cooled and moderated reactor, GCR: Gas-cooled, graphite-moderated reactor



# We perform under high pressure.

Wepuko PAHNKE is the merger of two well established, market leading 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 Norheimo 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 PMSD drive.

Today, the company is managed by Michael and Tanja Pahnke and remains a strong innovator in its fields.

The Wepuko PAHNKE group includes companies in Germany, 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