

## FIRST TROUGH LIFT AT NEW NIEDERFINOW SHIP LIFT



**LIFTING EQUIPMENT FOR SMOOTH SHIPPING TRAFFIC  
BETWEEN BERLIN (GERMANY) AND STETTIN (POLAND)**

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## First trough lift at new Niederfinow ship lift

Since 2009, the new Niederfinow ship lift has been under construction as part of the German federal government's „anti-congestion program“. Once it is opened, it will replace the oldest ship lift in Germany, which is still in operation from the 1930s. Since 1934, this protected industrial monument has enabled watercraft to surmount a 36-metre height differential on the 250-year-old waterway. The new ship lift at the eastern end of the Havel-Oder federal waterway will be additionally supported by the old lift for a certain period after opening.



The terrain level to be overcome at the new ship lift is 36 m.

The new Niederfinow ship lift is of great importance for transport infrastructure networking in Europe. The new construction will eliminate a major bottleneck on the only trans-European east-west waterway link between Szczecin and Duisburg. The new construction will enable modern freight and container ships, which are becoming ever wider and longer, to also utilise this waterway with up to 104 standard cargo containers.

This fulfils the valid European standard and also creates the prerequisite to increasingly shift freight transport to the environmentally compatible and cost-effective mode of water transport. The end of the construction and commissioning work as well as the opening are planned for the beginning of 2021.

Due to the positive experience with the virtually trouble-free operation of the old ship lift for decades, the basic mechanical principle was retained for the new ship lift so that the approximately 20,000 watercraft per year can continue to surmount the incline in the terrain without any problems.

Just as with the old ship lift with its up to 150,000 visitors per year, the new lift will be on display. The interior can be explored via lifts and bridges, and the process of raising and lowering the watercraft can be observed in the visitor galleries at a height of almost 50 metres.



On the left is the old ship lift, which will support the new lift on the right for some time after its opening.

### **SIEMAG TECBERG is responsible for the sophisticated machine technology**

As a partner to ARGE Niederfinow, the SIEMAG TECBERG group with its knowledge-based services in the fields of engineering / implementation planning, procurement, production supervision, assembly supervision and support during commissioning is responsible for the sophisticated machine technology. This includes for example the trough drive, trough safety device, trough holding device, trough guides and counterweight system. In future, vessels up to 11.45 metres wide and 110 metres long will be able to pass through the 115 metre long Niederfinow trough.

This is enabled by the ship lift's lifting technology, which functions according to the Archimedean counterweight principle like a Koepe hoisting machine, as the mass of the waterfilled trough remains the same when a ship enters.

The SIEMAG TECBERG group is contributing its decades of experience with counterweight systems in shaft hoisting to this project. In the new elevator, the filled trough hangs on 224 60-mm diameter steel cables, which are connected to the counterweight groups on both sides via 112 double cable pulleys with a diameter of 4 metres.



View of a part of the total of 112 installed double cable pulleys. In the background left the old ship lift.

The counterweight principle minimises the drive's installed output for lifting and lowering the approximately 9,800-tonne ship's trough. A total of 1,280 kW of drive output is installed in four drive units.

This results in a travel time for the 36-metre lifting height of approximately three minutes compared to around five minutes for the old lift. For potential accident scenarios, a trough safety system analogous to the old lift is installed, which consists of four turning bolts with internally-threaded columns attached at the pylons and which will hold the ship trough securely in case of excessive imbalance.



View of the trough with the steel cables as connection between trough and counterweights.

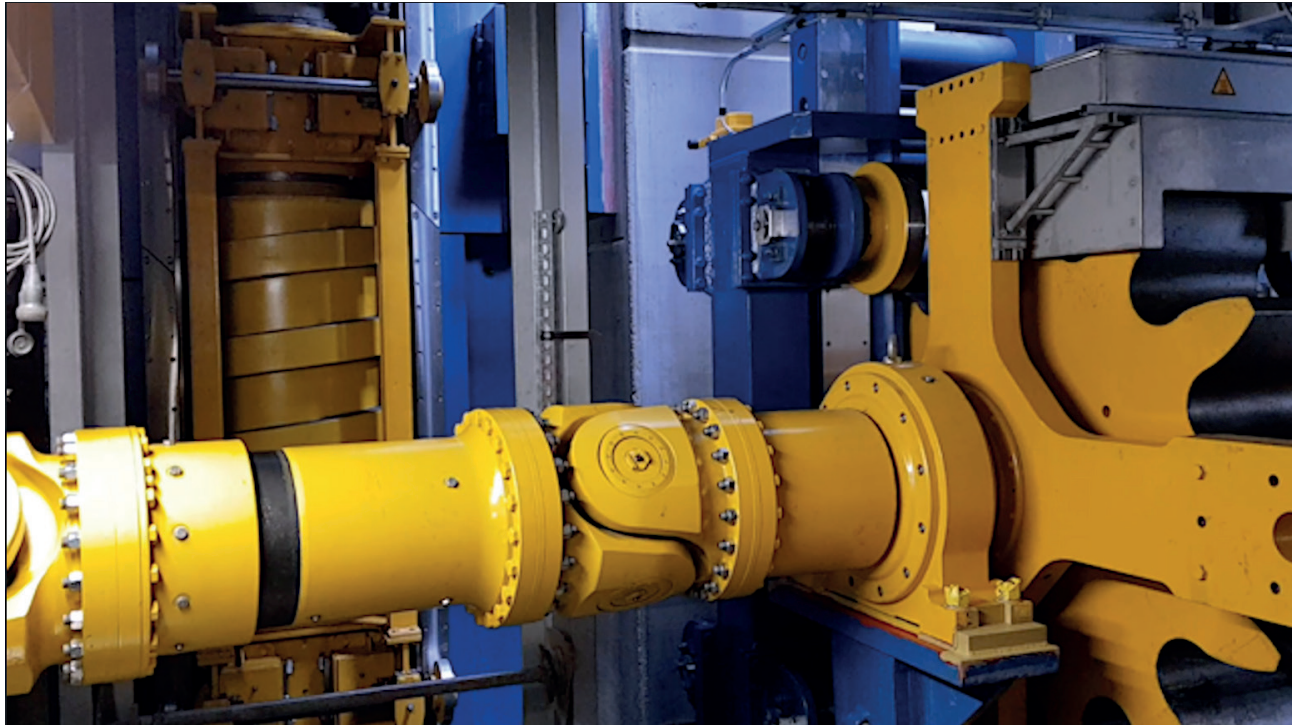
Based on the client's concept, the SIEMAG TECBERG group further completed the hydraulically operated trough holding devices in the upper and lower berthing positions as well as the horizontal trough guiding devices in the longitudinal and transverse direction of the structure.

During commissioning in April of this year, a first trough lift was carried out as an empty lift - without ship, but with water-filled trough - to the upper berthing position in order to successfully test the trough drive for functionality.



After the first trough lift the trough incl. superstructures is located in the upper berthing position and thus at the upper duct level.

This allows a view into the trough or under the trough (small picture). On the right side you can clearly see the now lowered counterweight groups with their yellow painted car frames.



On the left side trough safety device with turning bolt in the internally-threaded column, on the right drive pinion with cardan shaft.

### *The company*

The SIEMAG TECBERG group is the world's leading supplier of shaft hoisting technology.

The group provides knowledge-based services for the supply of individual machines and systems for a total of six industrial applications: Shaft hoisting technology for raw material hoisting as well as storage of contaminated raw materials, hoisting and transport of heavy materials loads, ventilation and cooling of underground mines, technologies for the horizontal conveying of bulk materials including handling technology for raw materials, as well as technologies for the efficient use of energy in hoisting technology, ventilation and cooling.

The SIEMAG TECBERG group focuses its technical activities on the development, design, manufacture, commissioning and technical service of shaft hoisting systems for vertical and inclined hoisting of raw materials. The SIEMAG TECBERG group has distinctive engineering competences for mechanics, hydraulics, drive and automation technology. Worldwide unique reference projects prove the overall plant competence and leading position of the SIEMAG TECBERG group.

The technology of the niche specialist emerged from a blacksmith's shop founded in 1871 in Siegerland, which produced equipment for local ore mining and the iron and steel industry. Following a management buy-out in 2007, SIEMAG TECBERG was founded by Jürgen Peschke, who is still CEO and managing partner today.

The SIEMAG TECBERG group is represented on all continents by at least one subsidiary and cooperates with partners worldwide. In addition to the headquarters with assembly plant in Haiger, north of Frankfurt am Main, there are locations in Rugby/UK, Katowice/Poland and Moscow/Russia, supplemented by further locations with their own assembly plants in Tianjin/China, Sydney and Mayfield East/Australia, Johannesburg/South Africa and Milwaukee and Denver/USA. The group employs around 400 people worldwide. The business volume amounts to approx. EUR 120 million per annum. (as of 12/2019).

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