

## Power Plant Wilhelmshaven

### Project Owner:

GDF Suez

### Client:

DEMLER Spezialtiefbau GmbH & Co. KG

### Quick Info:

Deep foundation of cooling water ducts in section C 112 with GEWI-Plus  $\varnothing$  75 mm with single and double corrosion protection combined

### Technical Information:

System:	GEWI-Plus/ $\varnothing$ 75 mm steel grade BSt S 670/800, SKS/DKS combined
Quantity:	283 pcs.
Length:	33 m
Service Load:	826 kN
Test Load:	1.652 kN
Technique:	overburden drilling
Building Ground:	clay / silt / sand
Time Frame of Works:	March - May 2011

Adjacent to the waterway leading into the Jadebusen bay, a hard coal power plant is being built according to latest efficiency and environmental standards. The new plant is scheduled to live in 2012, only four years after the foundation stone had been laid. Our job in this endeavour included the production of micropiles for the deep foundation of cooling water ducts inside the header building pit in section C 112. In sum, we drilled 283 piles of type GEWI-Plus with  $\varnothing$  75 mm with a total steel length of more than 9.3 km.



Image 2: Mounting a fold-out muffle to a GEWI-pile



Image 1: Lifting our drill rig onto the work platform

An intense time schedule compelled us to work with two bore and grout units simultaneously. As work space and access to heavy-lift cranes were limited, we conducted our job almost exclusively in night shifts, such that concreting and steel tying works nearby were not obstructed by our presence. The enclosed nature of our working area required extensive planning and coordination on our part.

For quality assurance, we insisted on the use of a digital drill data measuring system. Our system captures drill progress, contact pressure, torque, grout pressure, and grout quantity during bore and grout

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works. These data enabled us a precise and transparent analysis of our works. For instance, in combination with a suspension scale we were able to accurately monitor cement consumption, and adapt material usage for optimal pile production. Such predictions enabled us to keep material cost low and satisfy our client's demands. The GEWI- bars were inserted recessed by 8,50 m into the bore hole. As simply letting the heavy steels bars fall to the bottom may have caused damage to the double corrosion protection, we provided for a controlled placement of the load bearing element. The bridging of the 8,50 m gap took place via a system consisting of fold-out nut and a special coupling device that was connected to the GEWIbar and lifted to the upper entry into the bore hole. A two-piece muffle was attached, as shown in Image 2, in order to hold the steel bar in place and then lower it slowly to the bottom of the drill hole, where it was released.

We routinely verified the correct by checking the protrusion of our coupling device from the bore hole. Thanks to our flexibility and competence we managed to complete our job timely and to the satisfaction of our client despite the challenges posed to us. We especially owe a great deal of respect to our work crews, who persistently delivered top performance in night shifts for more than eleven weeks.



Image 3