



Power Plant Moorburg

Project Owner:

Vattenfall Europe Generation AG & Co. KG
und Hamburg Port Authority (HPA)

Client:

Wayss & Freytag Ingenieurbau AG

Quick Info:

Building pit anchorage, tie-back of a flood protection wall, deep foundation of a coal conveyor belt and several building cranes, and low pressure injection works for the construction of the coal power plant in Hamburg-Moorburg

Technical Information:

TITAN-Micropile:

242 pcs. / type 103/51, 103/78 and 73/35 / length 25,50 – 40,50 m / self-bore percussion drilling / service load up to 1050 kN

SUSPA Temporary Strand Anchor:

449 pcs. / type 6-2, 6-3, 6-4 and 6-5 / 2- 5 strands \varnothing 0,6" / length 9,50 – 23,00 m / single head rotary percussive flush drilling / service load up to 570 kN

BBV Temporary Strand Anchor – Removable:

13 pcs. / type L4 Strand Anchor – Removable / 8 strands \varnothing 0,62" / length 28,50 m / single head rotary percussive flush drilling / service load up to 1090 kN

DSI Gewi-Micropile:

21 pcs. / type DYWIDAG Gewi-Micropile SKS / steel diameter 50 mm / length 11,50 – 18,50 m / single head rotary percussive flush drilling / service load up to 500 kN

Tubes-à-Manchette Injektions:

11 pcs. / length 17 – 19 m / 5 – 10 bar / CEM I 32,5 R / 50 kg per valve

Building Ground: sand

Time Span of Works: March 2008 – January 2010 in multiple stages



Image 1

After years of planning and despite strong public resistance, construction works for the erection of the Power Plant Moorburg finally began in October of 2007. With two hard coal driven blocks with 1.650 megawatt electric power production and 650 megawatt teleheating, the 2,6 billion Euro power plant is supposed to go live in 2012 and modernize the region's power supply decisively with cutting-edge technology. In the course of this project, several building pits and a new flood protection wall had to be created. We participated in this effort by anchoring the building pit walls, by securing the new flood protection wall, by producing deep foundations for a coal conveyor belt and for several building cranes,

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and by stabilising various building structures with low pressure injections.

Detail Gurtung / Ankeranschluss M 1:10 Querschnitt Ost 1, Ankerneigung 50°

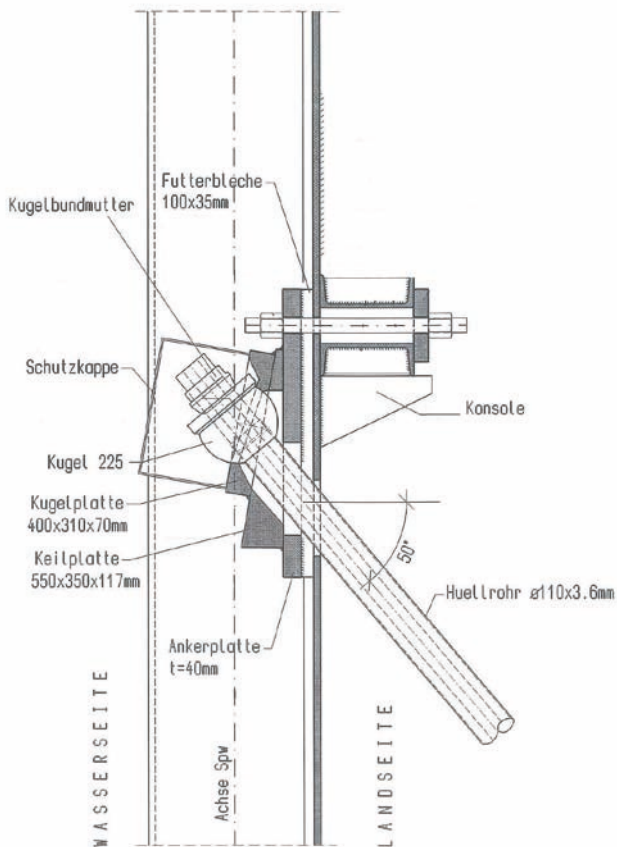


Image 2

The strand anchor production for the sheet pile walls of the main building pit became our primary task in this project. Meeting the strict safety requirements imposed by the project owner due to special hazards inherent in power plant constructions became a top priority at all times. In total, we installed 449 temporary strand anchors, partially in double layers, in the main foundation pit, in the cable duct, in the run-off water reservoir, and in the water treatment plant. Meanwhile we drilled 21 Gewi-micropiles for the deep foundation of various construction cranes, which were employed for the erection of the plant towers, and we produced 13 temporary removable

strand anchors with 8 strands each in order to anchor a cofferdam. An additional 9th strand placed in the centre of the other 8 serves as a "release cord", which when pulled tears apart the grout body such that the remaining steel strands can be removed in entirety once the static function of these anchors has expired, leaving only behind the torn-up remains of the grout body.

In order to protect the plant premises from flooding, the whole area was lifted from 6 m NN to a flood-safe level of 7,5 m NN and furnished with a flood protection wall, which needed to be anchored, consisting of a coated sheeting with a capping beam on top. After the successful conduct of load tests on several test piles we decided to use a TITAN-micropile with a special head structure consisting of a spheric-plate and a sphere (an example is depicted in Image 2), in order to be able to perfectly adjust to any angular variance inherent in the production process. The pile production was immediately followed by the mounting of the TITAN-pile head in order to enable the hardening in one and the same position to take place such that only the protective cap had to be welded on top later on. In order to be able to reach the highest drill points located up to 2,50 m above work platform under consideration of the specified angularity (see Image 3), we retrofitted our drill rig customarily prior to arrival on site.



Image 3

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Moreover, we were able to seal a joint gap between an existing structure made of concrete and a new sheet pile wall against the Elbe river water by conducting low pressure injections through 19 m long perforated tubes-à-manchette, which we forced open with targeted injections via injection packers. We succeeded in this endeavour despite initial concerns. At last, we conducted the deep foundation of a coal conveyor belt connecting the coal warehouse with the steam generation bunkers, in which the coal will be milled, dried up, and directed to the fire room in the future. Despite biting winter weather in January of this year we fulfilled this task by boring TITAN-micropiles for 5 different foundation plates.



Image 4