

PROJECT

TSANKOV KAMAK DAM BULGARIA



PROJECT NAME

Tsankov Kamak Dam

CLIENT

NEK (Nat. Elektr. Comp. Bg.)

ENGINEER

Pöyry Energy GmbH

GENERAL CONTRACTOR

Alpine Bau GmbH Bulgaria

SPECIALIST CONTRACTOR

RODIO GmbH

CONTRACT VALUE

EURO 2,45 Mio. CHF 3,90 Mio.

BEGINNING OF WORKS

October 2008

END OF WORKS

November 2009

■ JOB DESCRIPTION

The double-curvature concrete arch dam of Tsankov Kamak is under construction in the Rhodopian Mountains (near to Greek border) with a maximum height of 130 m will allow for a reservoir volume of 111 Mio. m³. Tsankov Kamak dam is the third of four hydraulic barriers of the so called Dospat-Vacha-Cascade and with a crown height of 130 m is the highest dam of Bulgaria. The 110 mio cu.m water reservoir feeds an hydro power plant with two Francis turbines with a power of 40 MW each. The rock under dam's foundation consists mainly of metamorphic rocks of Vacha motley suite consisting of marbles, amphibole-biotite gneisses and thin intercalation of gneissic slates. The dick veins of pegmatite and quartzite are very hard to drill and extremely and abrasive. RODIO has built an 80 m deep waterproofing grout curtain under the whole foundation of the dam. In total 20.800 m full face drillings (D 90 mm) using a water powered down-the-hole hammer and 1.300 m NQ-cored boreholes (D 76 mm) by means of impregnated diamond core barrels have been executed. All drillings started from dam's foundation from inside a 2,40 m high and up to 80% inclined pilot tunnel. The well known GIN grouting method developed by Dr. Lombardi has been applied for the automated control of grouting operations and for the interpretation of grouting results.

■ WORK QUANTITIES

20.800 m of full face drillings D 90 mm (Injection + Drainage)
1.300 m of NQ (D 76 mm) cored boreholes

■ MAIN EQUIPMENT

1 type VD400 rig placed on a drill wagon
1 fully computerized grouting plant CIRO 10 with 10 pumps
1 GERTEC Mixing plant
Recording of grouting parameters by means of IDE System



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Rock Grouting



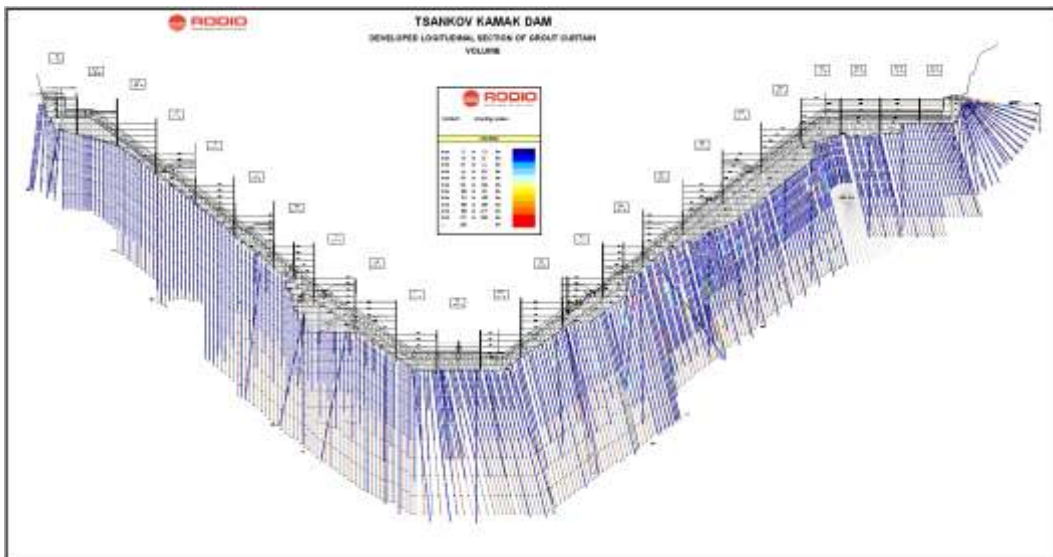
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RODIO mixing and Grouting installations on dam abutment



Drill rig inside the Pilot tunnel



3D view of the overlapping between jet grouting umbrellas, compensation grouting and ground anchors



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