
Cutterhead for biggest TBM tunneling project in China

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It is reported that Sheffield heavy engineering company DavyMarkham has fabricated and shipped a 320 tonnes Cutterhead for a 12.4 meter diameter tunnel boring machine being built by The Robbins Company of Ohio.

As per report, fabricated in six sections and test assembled at DavyMarkham's Sheffield works prior to dispatch, the Cutterhead and associated Main Beam TBM are being finally built by Robbins in a massive underground launch chamber, pre excavated by drill and blast methods. The same on-site assembly technique was also employed on the earlier Niagara Falls TBM contract for which DavyMarkham again supplied the Cutterhead.

In a contract valued at EUR 1.15 million, the Sheffield firm applied precision engineering standards to the heavy machining and fabrication. In order to improve competitiveness when dealing with such large steel pieces, DavyMarkham employed a newly developed cutting tool for rough machining, which resulted in a metal removal rate 5 times faster than normal, and deployed the latest carbide U-drill technology, which cut holes 8 times faster.

After test assembly, the Cutterhead was disassembled and shipped in manageable sections from Southampton to Shanghai, for onward freighting to Sichuan Province. Tunneling is scheduled to start in spring 2008 after on site assembly, with the TBM boring the first of four headrace tunnels through a complex geography of marble, shale and limestone, as well as coping with large inflows of water.

It has been dispatched to the mountains of Sichuan Province in China where it will be instrumental in one of the biggest TBM-driven tunneling projects in Chinese history for the new 4,800MW Jinping II hydropower station on the Yalong River. Once completed in 2010, this will be the largest power station in an ambitious project for owners Ertan Hydropower Development Company which will transmit electricity to many eastern provinces and such cities as Shanghai and Beijing.

For the Jinping II project, the 12.4 meter TBM will bore a headrace tunnel almost 17 kilometer long and one of the longest in the world, which will deliver water under pressure to the turbines of the hydropower plant currently under construction. DavyMarkham fabricated the machine's main Cutterhead in six separate sections, for ease of shipping and lowering below ground: one inner head weighing 60 tonnes, another at 52T and four outer segments each weighing 38T, all incorporating free-issue 19" cutters supplied by Robbins.

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