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VM 10048

Putzmeister –

Top in mind – Top at dam\*



*The better Ideas...*

**Putzmeister**

**- qualitative ? – innovative ? – prepared ? – flexible ? – competent ? – value conscious ? -**

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## XiLuoDu Dam project

### Telebelt TB110G at the World's Third Largest Hydropower Station

XiLuoDu Hydropower station is located at the downriver of JinShaJiang, with the state investment of 7.36 billion USD. It is a double-curved arch dam, water holding capacity is 12.67 billion m<sup>3</sup>. Its maximum dam height is 278 m and the crest length is 700 m. Crest elevation above sea level is 610 m.



金沙江溪洛渡水电站鸟瞰图

The annual electric power generated by this station is expected to be 57.1 to 64.0 billion kilowatt hours, numbered as the world's third largest hydropower station. The total earth excavation of this project would be 39.81 million m<sup>3</sup>, among them 25.61 million m<sup>3</sup> is up ground excavation and the other 14.20 million m<sup>3</sup> is tunnel excavation. The total concrete needed to be poured on this project is 16.72 million m<sup>3</sup>, and the main body of the dam needs as much as 6.60 million m<sup>3</sup> concrete. Concrete pour has started already in 2008, the first group of generating sets is expected to be assembled in June 2012, first electric generation is planned for June 2013, and

the entire project will be finished in 2015. XiLuoDu Hydropower station is first a power station but it also has multiple functions such as flood control, sediment storage, shipping condition improvement and so on, the station will show its comprehensive benefit on both the natural environment and social economics sectors.

The flood discharging structures of XiLuoDu dam include seven 12.5 m × 13.5 m openings of spillways and 8 midlevel outlets 6 m × 6.7 m on the dam body plus 4 extraordinary large spillway tunnels (up to 15 meters diameter) 2 on the right bank and the other 2 on the left bank. The total spillway capacity of the project is up to 49,923 m<sup>3</sup>/s; spillway power is close to 100 million kilowatt, which is the largest worldwide. The 4 spillway tunnels are the largest spillway tunnels in the world, the discharging rate is up to 16,000 m<sup>3</sup>/s, which is close to 1/3 of the total discharging capacity of the station. It is not only that they are large, but also the water flow speed (up to 50 m/s) is the fastest in the world. As these 4 spillway tunnels are designed to deal with an extraordinary fast and large amount of water flow for long terms, the concrete used must be of very good quality.

Innovatively, in this jobsite Putzmeister's Telebelt is used to pour earth dry "normal" dam concrete other than the traditionally pumpable concrete. The difference of these two kinds of concrete lies mainly in the proportion of cementitious material to be used. The pumpable concrete demands relative high flowability so as to be able to flow through pipes, therefore it needs more cementitious material such as cement and fly ash. However, the high fines and water contents generates unacceptable shrinkage and high hydration heat.

The Telebelt telescopic belt continuously and pulsation free moves any kind of concrete down to dry aggregate with up to 120 mm stones in the mix and especially this so-called roller compacted, extreme dry concrete used here.

**1. Is it true ? Am I honest ? 2. Is it fair ? 3. Does it serve goodwill and friendship ? 4. Will it be beneficial to all concerned ? -**

Verfasst nach den Regeln der PORGA 880818  
Issued according to PORGA 880818



Due to these proven features a first Putzmeister Telebelt TB105 started in China service at Three Gorges Project in 2000. Until now this machine has run over 20,000 working hours and is still running properly. This strongly demonstrates the durability and reliability of Putzmeister's Telebelt system. Therefore, Three Gorges Company purchased 2 new Telebelts version TB110G for the SinoHydro Bureau 7. The machine is easy to operate. As it can telescope, swing, lift, and go down very smoothly, the 2 TB110Gs are very popular on the jobsite. SinoHydro Bureau 7's operator praise the machine "It makes the pour be so easy!". However, the working load for the people on the jobsite is hard, normally the belt machine needs to continuously pour more than 1,000 m<sup>3</sup> concrete at one time. Just thinking about these numbers it is not difficult to imagine how hard the jobs for these front line operators would be without the Telebelt!



XiLuoDu hydropower station is a world class jobsite, it has various different sub-projects running at the same time, so it needs a unite coordination and the construction teams have to cooperate and support each other. Telebelt is a self moving equipment which is convenient to drive on the jobsite, so the belt machine is quite often to be seen moving on to the next jobsite when the previous pouring has just been finished. The high movability of this machine makes it possible to support the front line at any time.

Accordingly, this Putzmeister TB110G not only serves at SinoHydro Bureau 7's jobsites e.g. the spillway tunnel, cable platform, up ground pouring, etc. but also strongly supports Hydro Bureau 6's and Hydro Bureau 14's jobsites e.g. the tailrace surge chamber, the tail water outlet, the main transformer room and so on. For example, once the Telebelt has moved among five jobsites in six days, continuously pouring 4,800m<sup>3</sup> concrete for the spillway tunnel, cable platform, and the tail water outlet. The high efficiency of the belt machine is another well-known feature on the jobsite. e.g. at the job to pour the cable platform, normally the TB110G needs 2.5 minutes to discharge a 6 m<sup>3</sup> mixer, and when the speed be added up it only needs 1.8 minutes to clear the mixer. This very high pouring rate of the machine is very helpful to finish the job within the schedule.

When the first sunlight shines into XiLuoDu the great hydropower station, where thousands of people work day and night, it is one more step closer to the day when electric power will be generated.

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\* According to PUTZMEISTER's motto "Top in mind – Top in choice"