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ITC NEWS

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An ITC 120F2 in the tunnel of Lauterüberleitung near Coburg

Fig. 1: ITC 120 F2 during Tunnel Heading

Creation of a sough with shotcrete resp. pressure water density internal leaf. Break out section: 16 m²

Inner tunnel section: 8.44 m², length: 1751 m

Conventional tunneling and heading acc. to NATM

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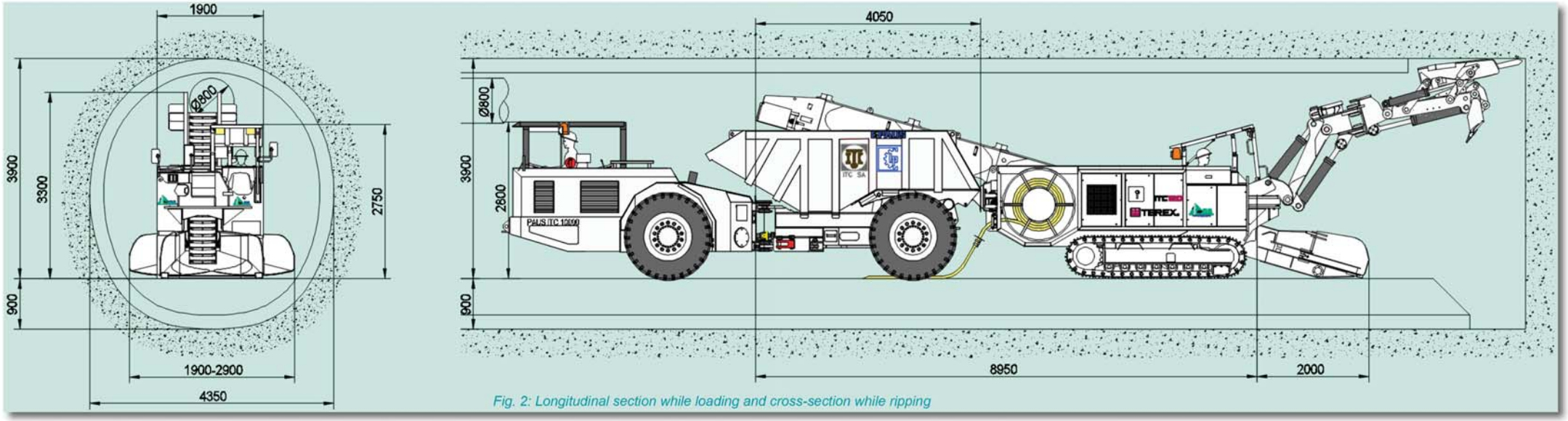


Fig. 2: Longitudinal section while loading and cross-section while ripping

Project presentation «Lauterüberleitung»

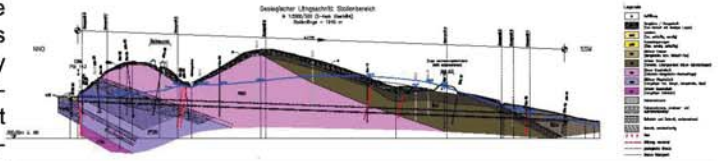
August 2010

By attorney of the watershed management office Kronach the company Alfred Kunz Untertagebau, branch of August Reiners Bauunternehmung GmbH Bremen, creates at the moment approx. 5 km in the north of Coburg in Oberfranken the tunnel Lauterüberleitung. What is known as «Lauterüberleitung» is a part of the flood prevention concept of the city Coburg and serves to protect the municipality of Lautertal as well as the city of Coburg from flood water. Starting in the inlet structure in the north of the municipality Oberlauter, also a part of the contract works, the regularly appearing flood water of the river Lauter shall be diverted through the 1'945 m long tunnel into the Goldbergsee in the northwest of Coburg. The break out section of the tunnel is only 16m² and will be constructed with mining construction method on 1'751m and open construction method on 194m.

After the contract award in the middle of August 2009 and an initial run of 3 months for planning, preparatory work and job site installations they could start the mining heading on 16.11.2009. Since then the jobsite is working around the clock on 7 days per week except Christmas break. The heading is carried out acc. to the terms of reference of the new Austrian tunnel construction in the shotcrete work (NATM). The break out is carried out, due to the small tunnel section, in cuts of part break outs of the top heading with bench and invert, within the invert is traced after 4 shots. The pull length are changing due to the consistence of the rock between 1,00m and 2,00m. After now 930 m heading the medium heading performance is by 4 shots per day. Out of geological view the heading will be occurred along the first 600m in the stratum of the lower Keupers. They will also pass under the highway BAB 73 with approx. 16m cover in this area. After this the heading will change in the upper shell limestone which is changing after approx. 1'650m in medium shell limestone. According to the results of the survey the upcoming rock mass is in this last area partially cliffy and contains probably karst hollows. Therefore they first have to carry exploration wells out from the tunnel. Until now the rock breaking was carried out exclusive by excavating with the tunnel and heading machine ITC 120 F2 with ripping bucket resp. moil points. The broken material is loaded over the conveyor belt, which is built in the machine, into a Paus dump truck type ITC 10.000. After the excavating the hollow is secured with reinforcement mesh, steel arches and wet shotcrete as well as rock anchors if needed. By reason of the small tunnel section the shotcrete has to be reloaded from the jobsite into a Paus dumper type ITC 10.000 with mixer, because a normal mixer can't run in the small tunnel.

For the security of the tunnel workers there has been installed each 450m security containers which are protecting the personnel in case of fire from the smoke gas until the fire brigade arrives. The containers are kept under overpressure through external air supply resp. through breathable air bottles fixed on the container. Like this is it impossible that smoke gas can enter. The contact with the outside world is guaranteed with a tunnel telephone. By reason of the small tunnel section of 3,10m width and 3,60m height the tunnel had to be enlarged to double size where the containers were installed. The expansion niches parallel to the tunnel serve as well as parking space for the tunneling machines and are at the same time the only place where cross traffic is possible. Additionally there will be made each 50m so-called man-niches which protect the personnel from running tunneling machines. Subsequent to the heading works, which are probably finished end of December 2010, the tunnel will be supported with a water-proof concrete inner shell. The concrete works are effected step-by-step in 10m blocs with a full round carriage made of steel and will continue until end of 2011. After the fabrication of an outlet structure as well as a dam structure, a service building and the steel construction for hydraulic engineering in the intake area, the sough should be given over ready-to-operate to the constructor on 30.08.2012

Fig. 3: Geological longitudinal section



Main Data		
Basic machine Schaeff , Type	ITC	120 F2
Width of basic machine	mm	1900
Inside width of conveyor	mm	620
Electric drive, Power @ 400 Volt, 50 Hz	kW	55
Tramming speed	km/h	0-3,6
Conveyor chain speed	m/s	0,6
Conveying capacity	m³/h	200
Specific ground pressure	kp/cm²	1,0
Pulling force	kN	140
Global weight approx.	t	22

Fig. 4: Loading of the ITC 10'000

Fig. 5: rock breaking with hammer

Fig. 6: layered geology

Fig. 7: fast loading

TUNNEL HEADING and LOADING MACHINE Type ITC 120 F2

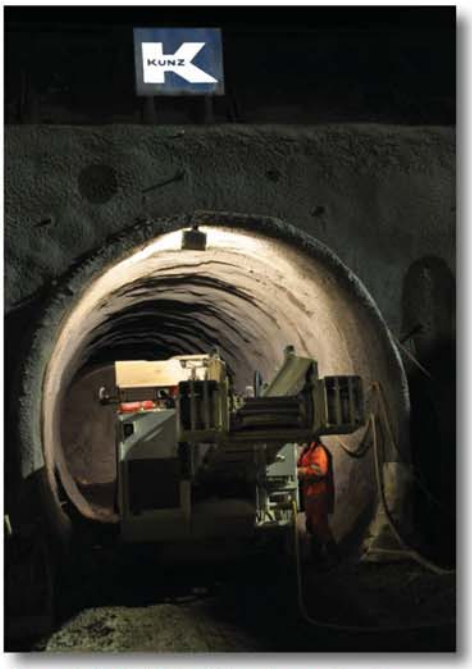


Fig. 8: ITC 120 at the tunnel entry

Fig. 9: Dumper ITC 10'000

Fig. 10: Tight circumstances