



**POLITECNICO DI TORINO**  
Dipartimento di Georisorse e Territorio



GEORESOURCES AND ENVIRONMENT ASSOCIATION



ITALIAN TUNNELLING ASSOCIATION

## **INTERNATIONAL CONGRESS**

# **MECHANIZED TUNNELLING: CHALLENGING CASE HISTORIES**

Politecnico di Torino, 16 – 19 November 2004

## **Moscow Largest Highway Tunnel Construction Project**

### **Astract**

Construction of Lefortovo Tunnel . the biggest urban underground structure in Moscow . was successfully completed in February 2003. The tunnel, which is the final section of the Third Transportation Ring Road in Moscow, will be opened for traffic at the end of 2003. Total tunnel length makes 3.3 km, its main section (2222 m) will stretch under .Lefortovo-Nemetskaya Sloboda. nature reserve, where historical monuments - buildings of the XVIII century, fountains and ponds are situated in a vast park area. The tunnel will have 3 traffic lanes in each direction to provide for the design capacity of 3800 vehicles per hour. Construction was carried out in congested urban environment under extremely challenging geological conditions, which required the use of 14.2 m diameter bentonite slurry pressure balance Mixshield (TBM) manufactured by Herrenknecht AG. In the course of the excavation, several innovative tunneling technologies were applied. Continuous structural and environmental monitoring performed during the construction allowed timely measures to be taken to provide for the work safety and to effectively protect existing buildings, structures and utilities. The adopted innovative technologies along with the adequate construction management allowed the tunnel drive to be successfully completed within 1 year construction period with practically no settlements of existing buildings, structures and utilities.