



Training Course WTC 2011, Helsinki - Friday 20 – Saturday 21 May 2011

Conventional Rock Tunnelling and sprayed concrete technology

Programme, resume of the lecturers, abstracts and illustrations used during the courses

Day 1: Friday, 20. May 2011

08.00 - 08.15 Welcome and Opening – Objectives of the Course - A.ASSIS and K.KORHONEN

Session 1: Rock Tunnelling Excavation, Support and design

08.15 - 09.00 General aspects of Rock Tunnelling - **Jian Zhao**

09.00 - 09.45 Excavation Methods: Drilling - **Gustav Nord**

09.45 - 10.30 Excavation Methods: Blasting: - **Mari Teikari**

11.00 - 11.45 Types of Rock Support: Examples of relevant case histories - **Felix Amberg**

11.45 - 12.30 Design of Rock Support - **Fulvio Tonon**

Session 2: Sprayed Concrete technology

14.00 – 14.45 Sprayed concrete application: general concepts and methods - **Tarcísio B. Celestino**

14.45 – 15.30 Health and Safety in sprayed concrete application - **Donald Lamont**

16.00 – 16.45 Best practice and future potential - **Ross Dimmock**

16.45 – 17.30 High quality wet sprayed concrete technology - **Enrico Dal Negro**

Day 2: Saturday, 21. May 2011

Session 3: Reinforcements

08.15 – 09.00 Sprayed concrete reinforcement: Mesh – Steel/polymer fibers - **Marc Vandewalle**

09.00 – 09.45 Equipments for sprayed concrete - **Janne Lehto**

09.45 – 10.30 Testing - Quality control - Nozzelmen certification - **Gustav Bracher**

Session 4: Special aspects

11.00 – 11.45 Design and construction of waterproof tunnels employing pre-grouting for water ingress reduction and tunnels linings with sprayed concrete and sprayed membranes - **Gunnar Holter & Wolfgang Aldrian**

11.45 – 12.30 Shotcrete as permanent lining - **Eivind Grov**

Session 5: Practical demonstration

14.00 – 18.00 at Finlandia Hall underground parking cavern worksite, Contractor LEMMINKAINEN

Demo-Group 1: EFNARC best spraying practices – organised by NORMET O-B. KLEVEN

Demo-Group 2: Sprayed concrete quality control – organised by VSH Hagerbach Test Gallery R. WEISS

Demo-Group 3: Sprayable membranes – organised by MEYCO-BASF K. G. HOLTER

Demo-Group 4: Fibre reinforced sprayed concrete – organised by MAPEI E. DAL NEGRO