

Objective: Technical and Practical Aspects on Sprayed Concrete for Underground Structures.

Tentative Programme

Day 1

Session 1: Introduction and overview: Olivier VION, ITA Executive Director

Application and Use of sprayed concrete for Ground Support and Repair/Strengthening of Underground Structures; Main methods of application

- 09.00 – 09.30: Welcome and Opening: **Felix Amberg**, Secretary of the Council of Foundation and representative of Nepal
- 09.30 – 10.30: Short overview of case histories for ground support and building / repairing / strengthening underground structures (state of the art)
- 10.30 – 11.00: Coffee break
- 11.00 – 11.45: Main methods of Application: Wet, Dry, Moist
- 11.45 – 12.30: Equipments for Sprayed Concrete
- 12.30 – 14.00: Lunch

Session 2: Mix design and Components: Gustav BRACHER, ITA-Industry representative

- 14.00 – 14.45: Specificities of mix design of Wet-Sprayed Concrete compared to casted concrete
- 14.45 – 15.30: Specificities of mix design of Dry/Moist-Sprayed Concrete
- 15.30 – 16.00: Coffee Break
- 16.00 – 16.45: Main technical specifications on components (requirements to introduce in tender documents)
- 16.45 – 17.30: Structural and other types of Reinforcements (against fire...)
- 17.30 – 18.00: Questions and Answers

Day 2

Session 3: Certification and Control: Volker WETZIG, General Manager–Hagerbach Test Gallery

- 09.00 – 09.45: Why Certify Nozzle Operators? Manual/Robotic application, presentation of existing certifying bodies
- 09.45 – 10.30: Organising Pre-construction Tests, Quality Control, Working Procedures
- 10.30 – 11.00: Coffee break
- 11.00 – 11.45: Specific tests for Sprayed Concrete – part 1: on fresh concrete
- 11.45 – 12.30: Specific tests for Sprayed Concrete – part 2: on hardened concrete
- 12.30 – 14.00: Lunch

Session 4: Case histories applied to Himalayan conditions (including Design, Scheduling and Costs Aspects) and future developments: Harald WAGNER, ITA Special adviser

- 14.00 – 14.30: Application of Sprayed Concrete in deep/highly stressed long Tunnels by **Felix AMBERG, ITACET Foundation**
- 14.30 – 15.00: Sprayed Concrete in Tunnelling under Himalayan conditions by **Dr. Krishna K PANTHI, Norwegian University of Science & Technology (NTNU)**
- 15.00 – 15.30: Case study: WET Shotcrete Performance in Sikkim,India by **Milon MUKHOPADHYAY, NORMET**
- 15.30 – 16.00: Coffee break
- 16.00 – 16.30: Case study: High wet quality sprayed concrete technology by **Enrico DAL NEGRO, MAPEI ITALY**
- 16.30 – 17.00: Case study: Composite tunnelling linings via advances in permanent shotcrete technology by **Jaymes KHELL, BASF**
- 17.00 – 17.45: Future development of Sprayed Concrete lining and associated methods by **Harald WAGNER, Expert to ITA Executive Council**
- 17.45 – 18.00: Discussions & Closing