



REPORT OF TWO-DAY TRAINING ON SPRAYED CONCRETE

Introduction

Nepal Tunnelling Association (NTA) and ITACET Foundation jointly organised 2-day training program on "Sprayed concrete (shotcrete) in tunnelling under Himalayan Conditions" on 9-10 December 2011 in Kathmandu, Nepal. The training was supported by Independent Power Producers' Association, Nepal (IPPAN) and Nepal Hydropower Association (NHA). More than 180 participants from Nepal, India, Bhutan and China attended this training. The training was inaugurated jointly by NTA, President Dr. Sandip Shah, ITA-Executive Director, Mr. Oliver Vion, ITACET Foundation, Mr. Felix Amberg, IPPAN President, Dr. Subarna Das Shrestha and NHA Vice President, Mr. Kiran Malla with short speech.



Welcome speech in Inauguration session

Participants

Participants from Nepal, India, Bhutan and China attended this training. Total attendants were 182.

Attendants	Number
Registered participants	146
Speakers	11
NTA & IPPAN	14
Sponsors & others	11

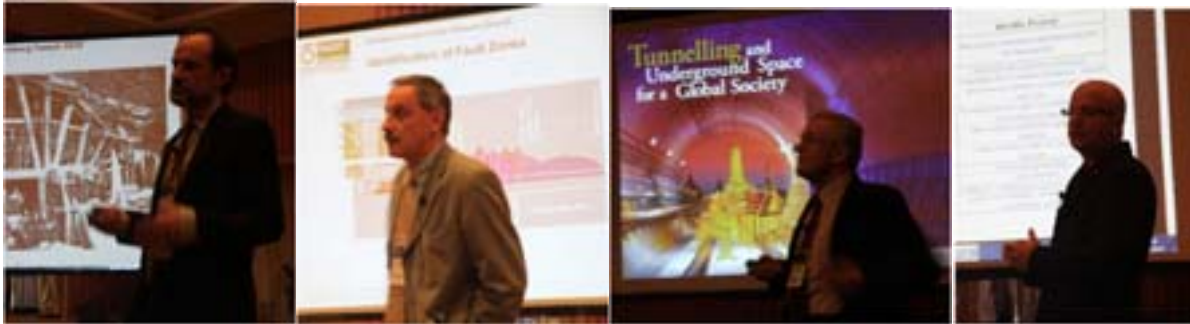
Objectives

The main objective of this training was to train Engineers, Geologists and tunnel technician working in field of tunnelling on complete technical and practical aspects of sprayed concrete. Other objectives were:

- To learn world wide application of shotcrete
- To learn types of shotcrete and methods of application
- To learn mix design and standard
- To learn technical specifications
- To learn quality control and different test methods
- To learn future development for tunnel lining and associated methods
- To learn planning, design, contract preparation and construction management phases of sprayed concrete

Training sessions

The training program and internationally renowned speakers were organised by ITACET Foundation to conduct this training. Mr. Olivier Vion (ITA-Executive Director of ITA) gave lecture on application, case histories, use of sprayed concrete, main methods of application and equipment in first session. Similarly in session two, Dr. Gustav Bracher (ITA-Industry representative and Sika) and Dr. Oscar Marazzini (Sika) introduced mix design, specification, main technical specification in tender documents, structures and other types of reinforcement against fire. In session 3, Mr. Volker Wetzig (General Manager–Hagerbach Test Gallery) presented on certification, organising pre-construction tests, quality control, working procedure, specific test on fresh and hardened concrete. Likewise, in session 4, case studies; Mr. Felix Amberg (ITACET Foundation) highlighted on application of sprayed concrete in deep/high stressed long tunnel, Dr. Krishna Panthi (NTNU) presented paper on application on difficult geological conditions, Mr. Mukhopadhyay (Tam Normet) lectured on performance of wet shotcrete in Himalaya, Mr. Enrico Dal Negro (MAPEI) spoke on high wet quality sprayed concrete technology, Mr. Jaymes Khell (BASF) highlighted on composite tunnelling linings via permanent shotcrete technology and Dr. Harald Wegner (Expert to ITA Executive Council) delivered future development of Sprayed Concrete lining and associated methods.



Speakers giving lectures



View of the training participants

Benefits

All participants benefited to upgrade their knowledge covering all technical and practical aspects of sprayed concrete and followed state of art technology by

- Presentation from internationally renowned expert presentations and discussions on Sprayed concrete application in tunnelling under Himalayan Conditions
- Learning about latest techniques on uses, method, design mix, technology, equipment in tunnelling work in difficult ground conditions
- Learning how to prepare specification and tender documents for sprayed concrete.
- Learning complete knowledge on Sprayed Concrete ranging from design, preparation of technical specification/ contract, shotcrete work monitoring, its quality control to safety of underground works

Token of appreciation and certificate distribution

NTA distributed token of appreciation, carved wooden pigeon window, to all speakers and sponsors. Similarly certificates were distributed to all participants.



Distribution of Token of appreciation to speakers



Distribution of certificates to participants

Conclusions

Two days training on Sprayed Concrete in Tunnelling was successfully organised by NTA and ITACET Foundation. Total 146 participants from Nepal, India, Bhutan and China attended the training. All participants were satisfied from this training and expected more such training in near future.

Sponsors

NTA highly appreciated to Royal Norwegian Embassy and Normet, India for their financial support to organise this training successfully.