

Training/Workshop on Operation and Maintenance of Hydropower Plants

1. Organizers

**Independent Power Producers' Association, Nepal (IPPAN)
International Finance Corporation (IFC)**

2. Course Objective

The main objective is to conduct a training/workshop on 'Operation and Maintenance of Hydropower Plants'. The workshop is intended to provide knowledge on standard practice of plant operation and maintenance, upgrading with latest technology, and case studies of operational power plants in Nepal and Canada.

3. Course Content

The training/workshop shall be conducted in a participatory approach covering the following topics:

Day 1- Hydro and Introduction

- Nepal – Case Study of IPP Hydro Plants
- Canada – Case Study of IPP Hydro Plants
- Sustainable Hydropower O&M
- Consequences of O&M Failures and Failure Modes
- Workplace Safety – Hydropower Operations
 - Health & Safety Plan
 - Typical Training of Hydropower Operators/Maintenance Workers
 - Tailboard Meeting
 - Lockout Tagout Program
 - Arc Flash / High & Low Voltage Hazards
 - Public Safety Around Dams
 - Site Observations / Deficiencies
 - Discussion on Workplace Safety Culture

Day 2 – Industry Best Practices

- Asset Management
 - Industry Standards
 - Site Data Collection & Processing
 - Trend Analysis
 - Maintenance Program Design
 - Reliability Centered Maintenance (RCM)
 - Root Cause Analysis (RCA)
 - Computerized Maintenance Management Systems (CMMS)
 - Digitization of Hydropower Stations
- Diagnostic of Existing Fleet

- Maintenance or Replacement?
- Opportunities for Uprating & Re-purposing
- Operation Plan
 - Preparing annual operation budget
 - Preparing CAPEX budget
 - Availability, Production, Revenue
 - Assembling Operating Expenses
 - Cash Flow and Distributions
 - Draft Operation Plan
 - Approval and Implementation of Operation Plan

Day 3 – O&M Strategy and Discussion (1/2 Day)

- Group discussion
 - O&M challenges in Nepal
 - O&M Strategic Models
 - Fear of Digitization
 - Other topics (as required)
- Next Steps and Feedback

4. Target Group

The course is aimed for Power Plant Managers/In-Charges, Engineers, Technicians, and Developers. Participants can be from private hydropower sector or government officials engaged in hydropower plant operation and maintenance.

5. Duration of Training

Four days (including one and half days travel)

6. Course Dates and Venue

The course will be conducted from March 3rd to March 6th 2019 in Pokhara, Nepal. Detailed course program and other relevant information will be provided to all selected participants in due course.

7. General

The resource person is Mr. Baber Khan from Manitoba Hydro International Canada (MHI). Babar Khan is a professional engineer and experienced hydropower expert with 15 years of first-hand experience in the operation, supervision, and management of hydroelectric generating stations. Before joining MHI, Mr. Khan held the position of director of development and operations at Regional Power Inc. and managed the operations and maintenance (O&M) activities of 11 hydroelectric generating stations located in three different time zones and watersheds.

Mr. Khan has managed the full cycle development of five greenfield hydroelectric generating stations (inception to commercial operation). He has successfully transitioned the projects from the construction phase to operating facilities. Mr. Khan was responsible for staffing and establishing O&M for these facilities.

Mr. Khan led a team of MHI experts in Nepal to develop a business plan for a special purpose company (SPV) to offer hydropower O&M services to third party owners. Through this initiative Mr. Khan: reviewed SPV's existing O&M experience in Nepal; managed training of SPV's staff utilizing MHI's online training platform, MHI Academy; provided on-site classroom training for SPV Staff on O&M best practices; outsourced modalities including O&M Management Contracts; and managed a study tour showcasing best examples of IPP outsourced O&M and internal O&M projects.

Mr. Khan specializes in hydroelectric mechanical and electrical systems and has managed all aspects of major mechanical overhauls of turbine / generators and associated electrical protections. Mr. Khan has successfully managed three large reservoirs with seasonal storage, downstream flooding concerns, recreational users, and cascading plant operation. Mr. Khan has implemented decision support systems (DSS) to improve energy output and associated revenues at several hydropower projects including management of models to run inflow calculations and forecast operation of reservoirs.

Mr. Khan has worked in Canada, Mexico, Nepal, and Rwanda and has superb project management skills. He has an excellent reputation for diligent management of complex projects and financial acumen in both investment strategy and risk management. He has successfully built and lead diverse teams while providing the direction and vision necessary to ensure adherence to the organizational mission.

Participants are encouraged to share their experience in plant operation along with relevant information.

8. Admission Requirements

- Applicants should hold minimum bachelor's degree in engineering from a recognized university and should have experience in plant operation, construction, or development
- Hydropower Developers with experience in project development can also apply
- Overseers with experience in hydropower plants operation and maintenance can also apply
- A minimum of 3 years of working experience for engineers and 6 years for overseers
- Proficiency in English Language is mandatory

The admission fee of the course is NRs. 30,000.00 for IPPAN Members (Nepalese participants), NRs. 35,000.00 for Non-IPPAN Members (Nepalese Participants) and US\$ 400 for International participants. The organizers will cover the cost of lectures, materials, accommodation, meals during the training period and necessary travel arrangement from Kathmandu only. Other expenses are not covered by the fee and should be borne by the participants.

Women participants are encouraged to apply.

9. Application Procedure

Please fill in the attached form and you may directly contact Mr. Uddhav Ojha at +977-1-4169175 or email at info@ippan.org.np/uddhav@ippan.org.np/prabal@ippan.org.np.

Notice of selected candidates will be given shortly after the application closing date.

The organizers reserve the right to accept or reject any application on the basis of their qualification and experience and availability, as the space for the program is limited.

Application deadline: Feb 25th February 2019 before 15:00 hours.