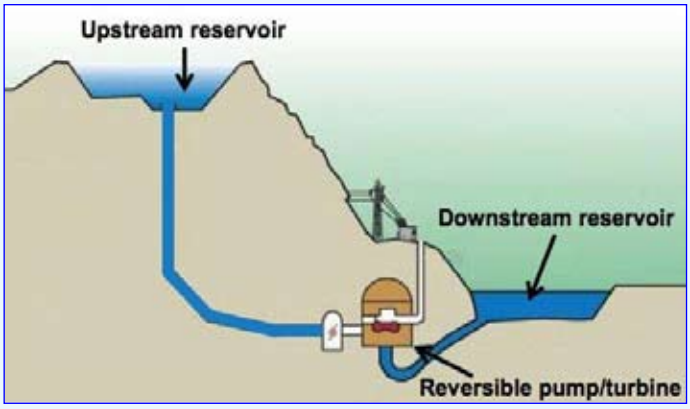
Online Training

Renewable Energy Grid Integration through Hydro Pumped Storage

20-21 August 2020



Key Speakers

- Shri Probodh Mallick, Advisor Marubeni
- Shri N.S. Namasivayam, SE, Hydro-RMU TANGEDCO
- Shri P K Shukla, CE, CEA
- Shri Anil Kumar, IGEF

Organised by

Central Board of Irrigation & Power
ESTD. 1927
New Delhi
ISO 9001:2015

In association with

igef Indo-German Energy Forum Support Office

Indian National Hydropower Association
INHA

INTRODUCTION

Government of India has set an ambitious program for increase of renewable energy generation and has set a target of 175GW by the year 2022 comprising 100GW of Solar, 60GW of Wind, 10GW from small hydro and 5GW from Biomass energy. Generation from wind and solar has increased substantially during past few years and forms a significant proportion of the total generation in the grid. This renewable generation is concentrated in a few states of Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Gujarat, Maharashtra and Rajasthan. These states contribute more than 80% of total renewable generation.

During a day wind generation does not take place during peak hours. Solar generation also occurs partly during off peak hours and partly during peak hours. Wind and solar plants are subject to strong natural fluctuations. They cannot always provide electricity in the required amount and at the required time. Excess renewable energy needs to be stored so that it can be used when needed.

Integrating a significantly increasing amount of wind and solar facilities into the electricity supply system requires balancing strategies and storage options. While many forms of energy storage systems have been installed globally, pumped storage hydro plants are playing an increasingly important role in providing peaking power and maintaining system stability in the power system of many of the developed countries. Pumped storage technologies is the only long term technically proven, cost effective, highly efficient and operationally flexible way of energy storage on a large scale and is available at a short notice. It is only pumped storage hydropower that can meet many of the grid-scale energy storage needs as no other storage system can meet all grid demands. PSP has added benefits to reduce the effects of greenhouse gases on the environment. Developing pumped storage particularly in the areas with concentrated wind and solar generation, would significantly improve the grid reliability.

The other advantages of pumped storage development are availability of spinning reserve at almost no cost to the system, regulating frequency to meet sudden load changes in the network. Voltage and power factor correction are additional benefits of Pumped Storage Schemes when Pumped storage plants (PSP) operate in a voltage regulation mode like a synchronous condenser and can reduce losses as well as maintain the quality of service to the consumers.

As on 31 May 2020, the installed capacity of 09 constructed pumped storage plants is 4,785.6 MW, out of these only 06 plants with aggregate installed capacity of 3,305.6 MW are being operated in pumping mode. In addition, 03 pumped storage plants with planned installed capacity of 1,580 MW are at various stages of construction. Constriction of 01 project, with planned installed capacity of 1,000 MW, will start shortly. Another 09 plants with planned installed capacity of 8,730 MW are under survey & investigation.

While benefits of having pumped storage hydro power are known but current market structures and regulatory frameworks do not present an effective means of achieving this goal. Policy changes are needed to support the timely development of additional grid scale energy storage that encourages development of pumped storage hydro power. Since deregulation of the electric industry, there is no regulatory mechanism or market incentives for effective integration of new generation, energy storage and transmission or that makes the PSP a commercially viable proposition. Regulatory commissions may consider bringing out regulations.

From all the energy storage technologies available in the world, pumped storage hydropower is the only commercially proven technology available for grid-scale energy storage as no other storage except PSP can meet all grid demands. A wide variety of storage technology options have been evaluated but still greater than 98% of the worldwide energy storage is in the form of pumped storage hydro power. PSP has added benefits to reduce the effects of greenhouse gases on the environment. Developing pumped storage particularly in the areas with concentrated wind and solar generation, would significantly improve the grid reliability.

OBJECTIVE

1. Getting insights in the economic viable operation
2. Gaining knowledge on role of PSP for Renewable Energy Grid Integration in India through online training

Apart from the above the introduction and basics of pumped storage; general design options and criteria, boundary conditions; typical unit arrangements, special operating modes; CAPEX / OPEX for a PSP project in India; typical ancillary services and other contributions offered by pumped storage; current economic problems of PSP in a case study and increasing demand for flexibility and provision of services in the grid; and a case study on pumped storage expansion, installation of adjustable speed PSPs for better efficiency etc. This will also provide the STUs and other stakeholders an opportunity to share their experiences / success stories and also learn from the experiences of other STUs.

WHO SHOULD ATTEND?

The training program is open to various utilities and industry organizations/ individuals in the field of power system.

COVID 19 SPECIAL REGISTRATION FEE

The duration for each on line training will be of 2 day (2 hrs on each day) out of which 1hr 30 minutes will be for technical session followed by 30 minutes for question/ answer session. The Registration fee for training will be Rs. 3,000/- per participant (for 2 days)

- 18% GST will be extra.

The program is limited to 200 participants. Which will be on First cum First serve basis.

TO REGISTER

The perspective participants, desirous of attending the above training may register themselves by sending the following details to CBIP along with necessary payments:

Name: _____

Designation: _____

Organization: _____

Mailing address: _____

Phone / Fax/E-mail: _____

Note : After registration, the participants will be provided the link 1 day prior to the session to participate in the Technical session

(GST No. 07AAAJC0237F1ZU)

Payments of registration fee should be made by cheque at par/Demand Draft drawn in favour of “Central Board of Irrigation and Power”, payable at New Delhi or by transfer the amount to HDFC, Bank, Address : 209-214, Kailash Building, 26 Kasturba Gandhi, Marg, New Delhi 110001, Saving Bank Account No. : 00031110004411; Swift Code: HDFCINBBDEL; IFSC: HDFC 0000003 MICR Code: 110240001

Address for Correspondence

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