

POWER GRID'S 1200 KV TEST STATION DEDICATED TO THE NATION

1200 KV NATIONAL TEST STATION LAYOUT AND CONFIGURATIONS

The Test Station is being established with two 1200 kV bays, one single circuit (S/C) transmission line of 1.1 km in length and one double circuit (D/C) transmission line of 0.8 km in length. In the first 1200 kV bay, 400 kV is stepped up to 1200 kV level through a bank of three single phase transformers. The 1st bay has been terminated at the S/C line, which is interconnected with the D/C line. Connections are being made between the D/C line and 2nd 1200 kV switchyard, where the voltage will be stepped down to 400 kV level by another bank of three single phase transformers. Switching and isolation functions of lines were envisaged by means of 1200 kV circuit breakers and isolators. Initially, 1200 kV transformers are to be controlled by circuit breaker on the 400 kV bay till all the phases of 1200 kV circuit breaker are installed. As it is decided to use dead tank circuit breakers which will contain bushing current transformers, usage of separate current transformers was ruled out.

Power flow through the Test Station is planned through the Line-In-Line-Out (LILO) of Satna-Bina-III 400 kV transmission line.

CONSIDERATION IN SELECTION OF EQUIPMENT PARAMETERS

Based on the system envisaged and extensive simulation study of the proposed UHV line configuration and **after giving due consideration to cost and size optimization, equipment parameters were finalized.** It was decided to use single phase transformers because of the high voltage level of system. Insulation levels were kept minimal to control the height during transportation.

Finalisation of parameters for surge arrestors was the trickiest one, as the insulation levels of all other equipments were finalized keeping in view of the protection offered by surge arrestor. Because of the high stress and stringent duty conditions, it was envisaged to use multi column surge arrestors with added energy handling capacity.

Circuit breaker parameters were finalized after carrying out extensive computer simulation studies. Decision to use dead tank circuit breakers was supported by stability and insulation issues with live tank circuit breakers

PRESENT STATUS

Upon completion of successful pre-commissioning tests, equipments are being charged successively from January 2012 onwards.

- First phase transformer along with associated equipments were charged on 27th January 2012

- After completion of stringing on 1200 kV S/C line, it was charged from 1200 kV bay on 29th February 2012
- Other two phase transformers and associated equipments were charged on 26th May 2012.
- 1200 kV D/C line was also charged on 13th October 2012.

Other major equipments viz. 1200 kV Isolator and circuit breaker in Bay-I are about to be commissioned shortly.

With the successful charging of Bay-I and the lines, India has achieved world's highest transmission level voltage. With this POWERGRID and Indian manufacturers have shown to the world, their capabilities in developing the technology indigenously.

Activities for commissioning of Bay-II are ongoing. Foundations for transformers and other equipments were completed. Upon charging of the Bay-II and interconnection to the 400 kV line, equipments can be loaded and extensive field tests will be carried out.

DEDICATION TO NATION

1200 kV National Test Station was dedicated to nation by Hon'ble Union Minister of State for Power (I/C) Shri Jyotiraditya M Scindia on 26th December 2012 in the august presence of CMD and other senior official of POWERGRID and equipment manufacturers.

Speaking on the moment, the Minister said that this is an important milestone in development of India's electric power transmission. It will facilitate the transfer of bulk power from remotely located generating stations to long distance load centers. This effort will also result in saving of huge right-of-way (ROW), minimize the impact on flora and fauna, and ensure cost-effective bulk power transmission corridors in the country.

Speaking on this momentous occasions the Minister also disclosed the government's target of achieving 90,000 MW power production during the 12th Five Year Plan (2012-17) and stated that, "The inter-regional capacity of Indian grid, currently standing at 28,000 MW is expected to escalate up to 48,000 MW in the current plan period". He further disclosed that a total of Rs 12 lakh crore is proposed to be spent out of which Rs 7 lakh crore would be used on electricity production, Rs. 3 lakh crore on transmission and Rs 2 lakh on distribution.

Briefing on the initiative focused towards developing the largest power grid in the world by connecting four major grids in India, Minister said, "This will ensure transmission of 70,000 MW power to all nooks and corner of the country. He said four grids of power grid instituted in 1990 by late

Shri Rajiv Gandhi have been linked and only the southern grid was left to be linked to rest of the four grids. This would be accomplished by 2014, he said. Following this, India will have the biggest grid in the world, said the Minister.

The Minister also disclosed the plans over establishing three power plants at Vindhyachal (1,000 MW), Khargone (1,300 MW) and Gaurwara (1,500 MW). State run power major NTPC Ltd is expected to establish these power plant.



4th International Exhibition and Conference - GRIDTECH 2013 to be held on April 3-5, 2013 at ITPO Pragati Maidan, New Delhi, India

POWERGRID with the support of Ministry of Power and in association with CBI&P and IEEMA is bringing its 4th International Exhibition and Conference GRIDTECH 2013 from 3-5 April 2013 at ITPO, Pragati Maidan, New Delhi on New Technology in Transmission, Distribution, Smart Grid/City, Load Dispatch & Communication.

Concurrently, 2 nos, two day parallel conferences on the new technology in the above fields are to be held

Conference : 1 (3-4 April 2013)	Emerging Technologies in Transmission & Distribution, Smart Grid/City and Renewable integration & communication	Hall No. 12, ITPO, Pragati Maidan New Delhi
Conference : 2 (3-4 April 2013)	International Colloquium on UHV in association with CIGRE	Hall No. 7 D, ITPO, Pragati Maidan New Delhi

Conference : 2 International Colloquium on UHV in association with CIGRE (International Council on Large Electric Systems) on 3-4 April 2013, at Pragati Maidan

The International colloquium on UHV in association with CIGRE is being organized by CBIP/ CIGRE India on 3-4 April 2013 in conjunction with the GRIDTECH Exhibition 2013.

The TOPICS of the colloquium are

System/UHVAC Substation and Line

- 1200 kV Substation layout and design consideration
- 1200 kV Transmission line design
- Insulation coordination for UHVAC system

Equipment Development

- Design and manufacturing issues, factory tests of
 - o UHVAC Transformers
 - o UHVAC Surge Arresters
 - o UHVAC Instrument Transformers
 - o UHVAC Switchgear
 - o Insulators, hardware, clamps and connectors

Installation and Commissioning

- UHVAC Installation and field testing experience
- Maintenance and operational issues

Operational Experience

- UHVAC Transmission line operation
- UHVAC Substation operation

Topics related to subject of CIGRE Study Committees

- A2 : Transformers
- A3 : High Voltage Equipment
- B2 : Overheadlines
- B3 : Substation
- C4 : System Technical Performance
- D1 : Materials and Emerging Test Techniques

The exhibition and the two (2) day concurrent summit will be an excellent global networking opportunity for exhibitors, visitors and delegates. It will provide an opportunity for all companies to showcase their Transmission, Distribution, Smart Grid/City, Load Despatch and Communication expertise and know-how and to identify business opportunities in the electricity market in India and abroad. Recognising the importance in development of smart grid and city for sustainable development, space provision has been kept for showcasing real life working of Smart Grid/City covering various functionalities by the exhibitors.

Please take advantage of this opportunity by active participation.

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