

# PICTORIAL REPORT

# 15<sup>th</sup> (Annual) National Convention **POWERTECH**

INDIA 2013

0 1 3 elhTy-Tt FI&c

सत्यमेव जयते



**Theme :**  
**Fuels & Technology for  
India's Energy Security**



Organisers Official Magazine Knowledge Partner



Platinum



Conference Partners

Silver



Associate



[www.indiapowershow.com](http://www.indiapowershow.com)

# Convention Programme



## 15<sup>th</sup> (Annual) National Convention **POWERTECH** INDIA 2013

### Day - I : Thursday, 7th November, 2013 Fuels & Technology Day

(09:00am to 10:00am) Registration & Tea

#### (10:00am to 11:00am) Inaugural Session

- Welcome Address: **Shri A. S. Bakshi**  
Former Chairman, Central Electricity Authority  
& Chairman, India-Tech Governing Council
- About the Event: **Shri Indra Mohan**  
President, India -Tech Foundation
- Special Address: **Shri V. K. Pandit**  
(Former Secretary - Power)  
Convener, POWERTECH India 2013
- Keynote Address: **Shri Ashok Lavasa**  
Addl. Secretary - Power, Govt. of India
- Inaugural Address: **Shri S. K. Srivastava**  
Secretary - Coal, Govt. of India
- Vote of Thanks: **Shri Ashish Gupta**,  
Secretary General,  
India-Tech Foundation

### Day-I : Thursday, 7th November 2013 Fuels & Technology Day (contd.)

(11:15 am - 1:30 pm)

#### Keynote Session - I: Fuel Options- Availability and Road Map 2030:

Session Chair **Shri S. K. Srivastava**  
Secretary – Coal, Govt. of India

Theme Address by the Session Chairman

Co-Chair **Shri Major Singh**, Member – Planning, CEA

An overview of Oil & Natural Gas Sector including Coal Gasification,  
Coal Bed Methane, Shale Oil & Gas, Gas Hydrates

- **Shri R. K. Sinha**, CTO, Directorate General of Hydrocarbons  
Ministry of Petroleum & Natural Gas

#### ROUND-TABLE MEET

##### Enhancement of Coal Production & CSR Responsibility

- **Shri D. C. Jha**, Director-Technical, Bharat Coking Coal Ltd.
- **Shri Gopal Singh**, CMD, Central Coalfields Ltd.
- **Shri Om Prakash**, Director - Tech., Western Coalfield Ltd.
- **Shri B. Surender Mohan**, CMD, Neyveli Lignite Corpn. Ltd.

- **Shri Gurdeep Singh**, Mg. Director, Gujarat State Electricity Co. Ltd.
- **Shri Vijay Singh\***, Director - Ops., MAHAGENCO
- **Shri S. Rajagopal**, Director - Power, Neyveli Lignite Corpn. Ltd.
- **Shri T. Avudaihangam**, Executive Director - Thermal, NLC Ltd.  
(1.30 pm – 2.30 pm) Networking Lunch Break  
(2.30 pm - 5:00pm)

#### Keynote Session II - Road Map 2030 for Power Sector & Challenges“

Session Chair **Shri A. S. Bakshi**, Former Chairman, CEA

Theme Address by the Session Chairman

Co-Chair **Shri A. K. Gupta**, Head,  
Excellence Enhancement Centre

Thermal Power: Developers' Viewpoint:

- **Shri B. Surender Mohan**, CMD, Neyveli Lignite Corpn. Ltd.
- **Shri Gurdeep Singh**, Mg. Director, Gujarat State Electricity Co. Ltd.
- **Shri Vijay Singh\***, Director - Ops., MAHAGENCO

Thermal Power: Vendors' Viewpoint:

- **Shri K. Nandakumar**, CMD, Chemtrols Engg. Group
- Overview of Power Project ordering in India
- **Shri D. K. Gupta**, Vice President-Marketing, Tecpro Systems Ltd.

### Day-II : Friday, 8th November 2013

#### T&D, Hydro and Renewable Day

(10:00 am - 1:00 pm) Keynote Session - III:

#### Transmission & Distribution: Road Map 2030 & Challenges

Session Chair: **Ravindra K. Verma**,  
Chief Engineer, Central Electricity Authority

Theme Address: by the Session Chairperson:

Initiatives of Govt. of India: R-APRDP, RGGVY, Distribution Reforms and Financial Health of State Power Utilities

National Grid – Status, Road Map 2030 & Challenges

- **Shri P. Pantaiyya**, General Manager, POSOCO Ltd.

Status, Road Map 2030 & Challenges - a Vendor's Viewpoint

- **Shri Ramesh Chandak**, MD & CEO, KEC International

Smart Grid

- **Shri Reji Kumar Pillai**, President & CEO, India Smart Grid Forum

Integration of Renewable with National Grid

- **Shri P. Pantaiyya**, General Manager, POSOCO Ltd.

(1.00 pm – 2.00 pm) Networking Lunch Break

#### (2:00 pm - 5:00 pm)

#### Keynote Session - IV: Hydro Power & Renewable: - Road Map 2030 & Challenges

Session Chair **Shri Ravindra Kumar Verma**, Chief Engineer, Central Electricity Authority

Session Co-chair **Shri S. Gomathi Nayagam**, Executive Director, C-WET

Theme Address by the Session Chairman

Hydro Power: Road Map 2030 & Challenges

- **Shri Dharendra K. Ray**, Executive Director - Projects, NHPC Limited

Solar: Road Map 2030 & Challenges

- India's First PV-Diesel Hybrid Solar Power Plant

- **Mr. Sharad Saxena**, Managing Director, Chemtrols Solar

- **Dr. Arul Shanmugasundram**, EVP (Projects) & CTO, Tata Power Solar

- **J. P. Gupta**, Vice President Engineering, Warea Group of Companies Wind: Road Map 2030 & Challenges

**Shri S. Gomathi Nayagam**, Executive Director, C-WET

Biomass & Waste to Energy

- **Shri Aashay Singhal** – Asst. Manager – Boilers, ISGEC Heavy Engg. Ltd.

- **Shri Niranjan. R. Shastry**, Sr. Vice President, ISGEC Heavy Engg. Ltd.



The Inaugural session of 15th (Annual) National Convention - POWERTECH India 2013 International Conference

L to R: **Shri Indra Mohan**, President, India-Tech Foundation, **Shri V. K. Pandit**, (Former Secretary - Power),

**Shri S. K. Srivastava**, Secretary - Coal, **Shri Ashok Lavasa**, Additional Secretary - Power,

**Shri A. S. Bakshi**, Former Chairman, CEA, India-Tech Governing Council, **Shri Ashish Gupta**, Secretary General, India-Tech Foundation

## 15<sup>th</sup> (Annual) National Convention **POWERTECH** INDIA 2013

### A REPORT

POWERTECH India 2013: 15th (Annual) National Convention marked its grand opening at Intercontinental: The Lalit, near Sahar International Airport, Mumbai on 7th November 2013. The two day Conference held between 7 and 8 November 2013 was a power pact event which marked the presence of leading technocrats & experts of the industry sharing the best of their practices & presentations for the Fuel alternative & latest Technologies in Indian Power Sector. This convention was supported by key industry players from both public & private sector and leading industry associations. It was slated to be the premium annual event in the world of Power, Energies and emerging technologies.

The total plan outlay for the power sector during the year 2013-14 is estimated at Rs 10,073 crore along with a planned capacity addition of around 18000MW. In order, to achieve the annual economic growth of 9% during the 12th Five Year Plan period the country's energy supply needs to grow at 6.5% annually. To achieve this growth there needs a rapid implementation of policy measures and framework for fuel conservation for energy security. Therefore, the 15th POWERTECH India 2013, has 'Tech-Innovation in Power Sector' as the theme with a special focus on "Fuels & Technologies for Energy Security"

In the opening ceremony **Shri S. K. Srivastava**, Secretary - Coal lighted the traditional lamp and inaugurated POWERTECH India 2013. A bouquet of flowers was presented to him and other dignitaries on the Dias as gesture of welcome. The welcome speech was given by **Shri A. S. Bakshi**, Former Chairman, Central Electricity Authority & Chairman, India-Tech Governing Council who said, "Fuels & Technology for India's Energy Security is an appropriate theme set for the 15th National Convention - POWERTECH India 2013 as we have been able to overcome technological challenges but still a lot has to be done in terms of securing the fuel sources and



A. S. Bakshi

technological upgradation for power sector. With the initiatives of the Ministry of Power, during the 11th five year plan the production has increased at CAGR of 5.5%, however, the major concern is still millions of people in the country have no access to electricity. For this we need to harness alternative sources of fuels thereby achieving energy security. The 12th five year plan has set a target of about 78,000 MW of energy generation in which 70% would be from thermal due to the fact that hydro projects are facing large number of problems besides nuclear plant is also having their own set of problems. To achieve annual economic growth rate of 9% for the 12th plan period the country's energy sector needs to grow at about 12% annually. For this streamlined policy measures and conservation of fuel options has to be worked upon."



Indra Mohan

Introducing about the event **Shri Indra Mohan**, President, India-Tech said, "On behalf of India-Tech secretariat we welcome **Shri S. K. Srivastava**, Secretary - Coal and **Shri Ashok Lavasa**, Addl. Secretary - Power along with other dignitaries on the Dias and audience at the 15th Annual National Convention - POWERTECH India 2013. Today, India is acknowledged as one of the fastest growing developing countries in the world. Power plays an important role and therefore speedier development of power is of utmost importance for our country. The two major challenges that need to be surmounted are Government policies and Land Acquisition. Recent proposal of power ministry to permit large power projects for receiving more consideration from environment and foreign ministries, will surely provide a fillip for an accelerated development of power sector. Over 60% of the power projects in India are coal based due to obvious fact that India has world's 5th largest reserves of coal. However, the present coal production is unable to keep the pace with the speedy growth of Indian Power sector in the 12th and 13th Five year plans. We once again thank everyone and acknowledge the hardwork put in by India-Tech team to help organize this convention. It will be our endeavor to bring forth recommendations based on the proceedings and forward the same to Ministries of Coal and Power Govt. of India."

After a warm welcome and a brief about the event, **Shri V. K. Pandit**, (Former Secretary - Power) gave a special address, informing that although, India has capacity to transfer power from one region to another there are peculiar problems related to Indian Power Sector. Problems like land acquisition, Issues of



Keynote Session – I: Fuel Options- Availability and Road Map 2030:  
& A Round-Table Meet : Enhancement of Coal Production & CSR Responsibility:

A view of the audience



V. K. Pandit

Right of Way, Problems of Rehabilitation and Relief, Compensatory Forestation, Compensation for Land Acquisition, Distribution of Power are some of these peculiar problems which act as major hurdles in the growth of power sector. The entry of corporate sector has somewhat complicated the projects in very high potential of hydro electric areas. Many projects are piled up due to lack of infrastructure development, better law and order and acute fuel shortages. Almost 70% of the power projects depend on coal. Import of coal is a major concern. The time period of coal mining needs to be shortened. Similarly thermal power projects need to be completed in 3-4 years time frame from planning to conceptualization and commissioning.

The Keynote speaker, **Shri Ashok Lavasa**, Addl. Secretary - Power said, "Energy security should be the key concern for any developing economy which aspires to be a strong power in the world. Fuels and Technologies are the key components in energy security. The momentum of capacity addition has to be sustained by an equivalent momentum in the availability of fuel sources by which electricity is produced. For this, a great deal of efforts are being made by government of India. Recently, with the very active support of the Coal Secretary, we were able to surmount a major uncertainty in the availability of coal. For gas sector the difficulty arises in terms of total availability, while comparing it with the installed capacity and under process plants in the pipeline. As we aspire with our goals, the hydro resources come across with huge difficulties like ecology and accessibility of hydel potential areas. Government of India has come up with debt restructuring packages for Discoms as well as taking up the liabilities. Bonds are being issued for four states in India and more states are likely to implement the scheme. Also, we are facing various difficulties in the health of distribution sector."



Ashok Lavasa

**Shri S. K. Srivastava**, Secretary – Coal during his inaugural speech said, "Coal sector is facing lot of issues and challenges. The criticality in the energy sector has basically arisen because of shortage of fuel source i.e COAL. There are number of power units which are stranded either due to fuel shortage or not working at their optimal Plant Load Factor. Heavy investment in banking sector is locked up in those sectors. It will be very essential and imperative to appreciate the background of issues arising and move ahead in a cohesive manner. Although India has 5th largest coal reserves, we need to take into account the population density, which is again a challenge in fulfilling the needs. Just having the coal reserves is not sufficient, we need to extract the coal and for extracting it we need to have surface rights. It is irrelevant whether we proceed with open cast or underground coal mining. A great deal of efforts are being made by the Coal and Environment ministries to ease out the clearances. Coal India has set up a technological committee submitting their reports soon. Lot of monitoring is done on all measures and we hope to bank the projects that will help achieve our targets."



S. K. Srivastava

**Shri Ashish Gupta**, Secretary General, India-Tech Foundation proposed the vote of thanks who said, "Our sincere thanks to the **Shri S. K. Srivastava**, Secretary –



Ashish Gupta

Coal and **Shri Ashok Lavasa**, Addl. Secretary – Power as well as the respected speakers on the Dias who took out time from their busy schedule. We also like to thank the Government of India Ministries of Power, Coal and Heavy Industries and the knowledge partner – CEA (Central Electricity Authority). We wish to thank the eminent speakers addressing the seminar in subsequent sessions, sponsors, associate sponsors, press media, delegates, governing council of ITF and expert committee along with India-Tech team working tirelessly for making this event a success." The vote of thanks was followed with a loud round of applause.

**Keynote Session - I: Fuel Options - Availability and Road Map 2030** followed with A Round-Table Meet: Enhancement of Coal Production & CSR Responsibility which was chaired **Shri S. K. Srivastava**, Secretary – Coal, Govt. of India who said, "There are two critical components in Coal sector i.e Coal Gasification and Coal Bed Methane (CBM). So far coal gasification has to tackle deposits which are inaccessible or viable to through conventional methods. Consultation with relevant ministry to come out with a policy for coal gasification and outline has to be framed. CBM comes under Petroleum & Natural Gas (PNG), so we had a meeting with PNG ministry with a suggestion that CBM areas within CIL governance should be allowed to exploit by CIL instead of competitive bidding, saving the cost incurred."

**Shri A. S. Bakshi**, Former Chairman, Central Electricity Authority who co-chaired this session said that Hydro power is facing serious issues leading to insufficient capacity addition, Gas based projects are stuck working at plant load factor less than 33% (decrease production in KG6 blocks), and importing LNG is very expensive for Indian Power Sector. For Lignite based power plants, technological upgradation for higher size unit is again a hurdle.



R. K. Sinha

**Shri R. K. Sinha**, CTO, Directorate General of Hydrocarbons, Ministry of Petroleum & Natural Gas gave a presentation on 'An overview of Oil & Natural Gas Sector including Coal Gasification, Coal Bed Methane, Shale Oil & Gas, Gas Hydrates' who said, "India has CBM bearing Area of 26,000 Sq. Km. in which the opened area comes upto to 17,200 Sq. Km with 33 blocks. The Total CBM Resources stands at 2608 BCM (92.0 TCF) with around 400 CBM Wells being drilled. Presently, the gas production is projected at around 0.39 MMSCMD (4 MMSCMD in 2016-17). In CBM resources, the challenges related are Land Acquisition, Overlapping Issue with Coal Mining Blocks and Gas Monetization. In Shale GAS sector R & D Pilot Project by ONGC in Damodar area has shown presence of Shale Gas. Shale Gas/Oil Policy- Policy for National Oil Companies is announced and Action has being taken for other acreages and Identification/ & Resource Assessment of prospective areas for Phase-I."

The next presentation was on 'Enhancement of Coal Production & CSR Responsibility' by **Shri B. Surender Mohan**, CMD, Neyveli Lignite Corpn. Ltd. who said, "India is the world's fifth largest energy consumer, accounting for 4.1% of the global energy consumption. India's energy supply comes from various sources



Keynote Session – III: Transmission & Distribution: Road Map 2030 & Challenges

A view of the audience



in rapt attention



Keynote Session – II: “Road Map 2030 for Power Sector & Challenges”



B. Surender Mohan

like coal, hydro, oil, gas, nuclear and various forms of non conventional energy. Coal is the dominant fuel resource for power generation in India. Coal & lignite, accounts for 70 % of the generated electricity. Government should emphasize on higher productivity, better maintenance Management of mining equipments to improve the availability and utilization of existing resources.”



Gopal Singh

During the Round Table Meet **Shri Gopal Singh**, CMD, Central Coalfields Limited insisted that India needs energy security because energy is the crucial element for industrialization, agriculture and day-to-day operations. He further informed that in order to meet the requirements of energy security, by 2030 the share of coal has to be 50% and gas should be 20%. To multiply our electricity by 6% the coal based electricity should grow at a double the pace with the contribution of other sectors like gas, hydro, transmission and distribution maintaining their present share. Oil is forecasted as a limited life fuel with the present extraction scenario of just 25-26 years, Gas again has limited life and renewable is very expensive. Although, availability of the electricity is important for the economy to grow, more important is availability of sufficient electricity at an affordable cost. Due to the limitation on various fuel resources like oil, gas, nuclear the country will have to rely on coal. Fortunately, we have sufficient reserves of coal in the country which needs to be tapped and worked upon for energy generation.

While summing up the session **Shri A. S. Bakshi**, Former Chairman, Central Electricity Authority said, "Integrated Energy Policy (IEP) says that around 2030 the total capacity requirement for the country would stand at around 800000 MW out of which 4, 33, 000 MW would be coal based, 70-80,000MW gas based, 1, 50,000MW by untapped hydro power potential and rest 40-50000MW would come from nuclear resources. Our requirement of coal assuming 5 million tonne per MW says we need more than 2 billion tones of coal every year. We would require 350 MMSCMD of gas by 2030."

**Keynote Session - II:** “Road Map 2030 for Power Sector & Challenges” was co-chaired by **Shri S.D. Taksande**, Chief Engineer, CEA who informed that Indian Power sector is facing various constraints such as Land, Technology and Skilled labour. While setting the road map for 2030 when India plans for fossil fuel as the main crux the most important power generation mode will be Thermal Power Plant. In this case, the major challenges would be fuel shortages and environmental clearances.

The first presentation was by **Shri B. Surender Mohan**, CMD, Neyveli Lignite Corpn. Ltd. who said, "In view of the global concern on environmental degradation, the power sector started laying emphasis on clean coal technology and enhancement in efficiency levels. This has led to the introduction of supercritical and ultra super critical technologies in the Indian Power Sector. Of late Unit capacities of 660 MW and 800 MW are being installed in the country adopting “Super Critical technology”. The fossil fuel is projected as the predominant player in the energy mix and this position may continue till the power

generation through renewable energy occupies a vital place. Imported coal based thermal power stations, particularly at coastal locations, would be encouraged based on their economic viability.”



M. L. Patel

The next speaker was **Shri M. L. Patel**, Chief Engineer, Gujarat State Electricity Co. Ltd. who informed that for setting a Thermal power plant the concerns from developer's viewpoints are as follows: Land availability– free from forest/ CRZ etc. and its acquisition thereof, Project Cost – project cost shall be optimum, Delay in project completion thereby increases project cost by way of interest burden, Change in taxes and duties during project execution stage and Long term power purchase agreement with competitive bidding process- results in threat of sustainability and viability of the plant in case of unforeseen circumstances and lastly change in regulatory and pollution control norms.



K. Nandakumar

The final speaker for the day was **Shri K. Nandakumar**, CMD, Chemtrols Engg. Group who presented on 'India's Energy Security Sustainability Role Of Coal Based Thermal Sector' who said, "By 2050 Two Thirds of the then India Population will be in Urban Cities and the Estimated Energy Demand will rise over 700000 MW. Some of the sustainability determinants of the Thermal Power Sector are Functional Systems, Environment Safeguards, Safety & Health, Information Security, Energy Management and Grid Protection & Control. Whilst in Transmission & Distribution system some factors that can prove as sustainability Enhancers would be High Voltage Transmission System, Smart Grid Technologies Implementation, Grid Protection Security/Frequency Cuts, Voltage Cuts, System Resarts, Cyber Security Adoption, Load Bifurcation & Load Balancing and Distribution Management System : IT Adoption/ Ancillary Service Concept : Adoption."

**Day-II**



Ravindra Kumar Verma

**Keynote Session - II:** Transmission & Distribution: Road Map 2030 & Challenges a highly informative session was chaired by **Shri Ravindra Kumar Verma**, Chief Engineer, CEA who while giving the theme address on 'Initiatives of Govt. of India: R-APRDP, RGGVY, Distribution Reforms and Financial Health of State Power Utilities' who said, "The T & D losses comes at around 23.6% while the AT & T losses are brought down by PFC to 27% percent. Situation in T & D sector is not very comfortable, we have issues related to access of electricity wherein large section of population have still not seen transformation in life. The strategy for capacity addition in coming five year plans should be in the form of high priority on setting up hydro and nuclear power stations, gas based compared to coal availability and then the conventional sources. Grid balancing is extremely important for efficient flow of electricity at the supplier and the consumers end."

**Shri P. Pantaiyya**, G. M., WRLDC, PGCIL presented on 'National Grid – Status, Road Map 2030 & Challenges' & 'Integration of Renewable with National Grid'



in rapt attention



Keynote Session – IV: Hydro Power & Renewable: Road Map 2030 & Challenges



**P. Pantaiyya**

Speaking on the first topic he said that the scenario in operational planning is as such that there is acute shortage in Southern Region due to less capacity addition, Large Capacity additions has to be done in Chhattisgarh and Odisha, Vibrant electricity market in place is required. Access to cheaper sources anywhere in the grid is needed and lastly planned upgrades in transmission network to be commissioned in robust manner.

Presenting on '*Challenges & Integration of Renewable with National Grid*', Shri Pantaiyya said, "Some of the major issues related to renewable integration are Penetration limit for stable operation, Criteria for transmission planning, Harmonization of Grid Code, Forecasting accuracy, Adequacy planning with renewable portfolio, Scheduling and settlement mechanism and Ancillary market for handling renewable. The mitigating measures that can be implemented would be Flexible generation, Ancillary Services for supply-balancing, Demand Side management, Demand Response and Storage for load balancing and Forecasting of Renewable generation & Forecasting of Demand."



**Ramesh Chandak**

The next presentation was on '*Status, Road Map 2030 & Challenges - a Vendor's Viewpoint*' by **Shri Ramesh Chandak**, MD & CEO, KEC International who informed that India is the fifth largest consumer of electricity in the world and the demand for power is growing at rate of 8% in last 10 years. The demand is expected to growth further at 3.25x in FY2027. Transmission lines are lifeline of power sector. In order to meet the increased power demand and sustain the incremental capacity additions, investment in the transmission sector needs to be increased. Power shortages have adversely affected the country's economy. In 2012-13, power shortages in India accounted for a GDP loss of USD 68 billion (0.4% GDP). Some challenges in Power Transmission are Right of Way (ROW), Forest clearances, Technology, Skilled Manpower, Poor project bankability, long bid cycle and Limited participation by the private sector.



**Reji Kumar Pillai**

The last speaker was **Shri Reji Kumar Pillai**, President & CEO, India Smart Grid Forum spoke on '*Smart Grid*' who said, "The on-going Restructured - Accelerated Power Development and Reforms Program (R-APDRP) is one of the largest IT initiatives by electric utilities anywhere in the world - in one integrated project, all state owned Distribution Utilities in India are building IT Infrastructure, IT Applications and Automation Systems. India Smart Grid Forum (ISGF) is a public-private partnership initiative of the Ministry of Power (MoP), Government of India for accelerated development and deployment of smart grid technologies in the Indian power sector. The Prime objective of ISGF is to accelerate development of Smart Grid technologies in the Indian Power Sector. The smart Grid vision of India is to transform the Indian power sector into a secure, adaptive, sustainable and digitally enabled ecosystem that provides reliable and quality energy for all with active participation of stakeholders."

**Keynote Session -IV: Hydro Power & Renewable: Road Map 2030 & Challenges** was once again chaired by **Shri Ravindra Kumar Verma**, Chief Engineer, CEA. During his opening remarks he said, "Large Scale Grid integration of Renewable Energy Sources (RES) is required for meeting load demand and security of the grid. Some Challenges in grid integration of RES are Frequency Stability, Voltage Stability, Grid Protection, Quality of supply and Forecasting of Wind and Solar Generation. A Renewable Energy Management Centre (REMC) with adequate infrastructure facilities has to be developed. Each state should assess its balancing capacity and enter into RE purchase accordingly - to be scaled at national level - Threshold of RE absorption. Focus should be given on Pumped storage schemes."

The session was co-chaired by **Shri S. Gomathi Nayagam**, Executive Director, C-WET who presented on '*Wind: Road Map 2030 & Challenges*' and said, "For successful wind energy capacity generation, India has to development Wind Turbine Grid (WTG) with a better control system and grid stability. A control system is required because the primary energy source is non linear and unpredictable, the increase in wind speed develops an



**S. Gomathi Nayagam**

enormous power in rotor hence it needs to be optimized, to transfer the electrical power to the grid at an imposed level, for wide range of wind velocities and finally to achieve desired function and Safe Operation. While in Grid Stability, the Grid side power quality factors that affect the operation of WTs are Voltage (variations, unbalance, transient), Frequency Variations, Harmonics, Black out (grid drop) that has to be monitored and the power quality aspects associated with WTs operation, that affect the grid power quality are Reactive power Consumption, Generation of current harmonics and Injection of Fluctuating power.



**Dhirendra K. Ray**

The first presentation was on '*Hydro Power: Road Map 2030 & Challenges*' by **Shri Dhirendra K. Ray**, Executive Director - Projects, NHPC Ltd. who said, "India has huge power demand looming before itself. The per capita availability of electricity is about 917 Units, which is less than one third of world average. The hydro electric potential, above 25 MW capacity, in India is 1, 45, 320 MW. In addition, 56 pumped storage schemes with a total installed capacity of 94,000 MW. In view of bulk hydro potential of the country around 67% is yet to be tapped. As such Hydro sector would remain one of the major thrust areas in energy sector for the of the country energy security. The operating environment is challenging and a lot of initiatives need to be taken up to effectively & efficiently implement the action plans and maintaining high technical & financial standards for speedy development of Hydro sector."



**Sharad Saxena**

While speaking on '*Solar: Road Map 2030 & Challenges*' **Shri Sharad Saxena**, Managing Director, Chemtrols Solar introduced about A PV-Diesel Hybrid system developed by Chemtrols Solar which synchronizes up to 70% of DG set capacity with PV power plant. In the event of a grid failure the Chemtrols Solar Power Plant has the capability of synchronizing with the 1.25MVA DG set to provide up to 65% to 70% of the energy required. The Salient Features of PV-Diesel Hybrid system is that the total plant capacity is installed on the existing sloping roofs of the factory, saving the land for other uses, Unique Sprinkler mechanism to clean the modules and Lightweight Aluminium rails used to 'carpet' the PV modules on the sloping roof, strong enough to withstand high speed wind."



**Dr. Arul Shanmugasundram**

The next speaker was **Dr. Arul Shanmugasundram**, Executive VP (Projects) & CTO, Tata Power Solar who said, "Solar power is getting competitive with grid power with the help of cost escalation and accelerated depreciation. Solar technology cost has been dropping significantly making it eligible to generate power at an affordable price across the globe."

**Shri J. P. Gupta**, Vice President, Waaree Group informed that Waaree Energies Ltd. is one of India's most diversified & fastest growing solar powers Solution Company having its 250 MW PV module manufacturing plant in Surat, India. The R&D facilities are developed for improving efficiencies and product & process innovations. Waaree has been empanelled as a channel partner for Central & State Renewable Agencies like MNRE, ANERT to avail special subsidies & implementation of off grid projects.



**J. P. Gupta**

The In-house manufacturing of PV modules ensures budget solutions, with top end quality. We offer customized modular design to meet all topography & engineering requirements of each project.



**Aashay Singhal**

The last speaker for POWERTECH India 2013 was **Shri. Aashay Singhal**, Assistant Manager - Boilers, ISGEC Heavy Engg. Ltd. spoke on '*Bio Mass & Waste to Energy: Road Map 2030 & Challenges*' who said, "Opportunity fuels like Paddy Straw, Coconut Frond, Empty Fruit Bunch, Chicken Litter, Wheat Straw, Cane Trash and others are available at very less cost but the challenge is the technology part i.e Combustion of Fuels and Fuel Handling system. Therefore, ISGEC offers Reciprocating Grate technology which gives High turbulence in fuel for better combustion. It offers better fuel spreading & uniform Air Distribution throughout the grate. There is no need to shred the fuel which gives hassle free fuel handling option. The technology has optimum grate area loading of stoker ensuring efficient combustion and lower gas velocity limits particle carryover that ensures minimum un-burnt carbon loss."

# Some Power Quotes



The two basic acts that govern the coal sector are Coal Mines Nationalization Act for overall coal sector development and Mines & Minerals Development Regulation Act for the captive coal sector. Ministry of Coal is very conscious of the fact that the production of coal in the country has to increase and therefore a stiff target are been set for Coal India Limited and coal sector which will have to grow at annual CAGR of 8.05% during the 12th Five year plan. One of the biggest constraints for Coal India Limited is the possession of Land acquisition. In spite of offering payments for land, employments and everything to the local inhabitants, it has become a social issue which needs to be addressed in a cohesive manner.

**Shri S. K. Srivastava**, Secretary – Coal

The Revenue cycle starting from production of Fuel source to the Distribution of Electricity and Recovery of those charges needs to be completed if the electricity sector has to be self sustainable and attain progress. All the links in the chain has to become viable so that the sector become self sustainable. States have undertaken a tariff revision in which emphasize is not on increasing the tariff but the idea is to align the tariff structure with cost sector. The important aspect is that the existing gap between the average cost of service and the average revenue realized must be closed positively, so that the Distribution Companies invests more in the Distribution infrastructure.

**Shri Ashok Lavasa**, Additional Secretary – Power



With the 12th plan period requiring an estimated investment of around \$225 billion, India strongly contends to be an ideal destination for various foreign and national investors bagging huge profit in near future. Availability of fuel has to be discussed and a road map to increase the Fuel alternatives and technologies needs to be set. Today, the fuel option on which Indian Power Sector is heavily depended is coal therefore our thermal capacity has to pace with rising demand. In the Distribution sector, discoms financial condition is very poor. They prefer load shedding instead of buying power and therefore the demand for coal based electricity is not keeping pace.

**Shri A. S. Bakshi**, Former Chairman, CEA & Chairman, India-Tech Governing Council

Pithead coal can depend on participative approach with state PSU's like NTPC and JV's between CIL and private sector players. Solar and Renewable energy projects have to be emphasized upon for energy security. An empowered committee at the highest level has to be drawn upon with representative from all these Ministries, especially from Ministries of Environment and Forest clearance coming together to take a stand for upliftment of power sector within a particular time frame. We have all the legislation in place, central regulators are now allowed to fix the tariff; transmission sector has been declared as an Independent activity from generation inviting more investments.

**Shri V. K. Pandit**, (Former Secretary - Power)



Natural gas contributes around 11% of India's energy mix and is expected to reach to 20% by 2030. Exploration work related to Gas Hydrate is under process through National Gas Hydrate Program (NGHP) coordinated by DGH & MoPNG with companies like ONGC, GAIL, OIL, NIO, NIOT and NGRI being the members. Under this programme sand bodies will be targeted within the Gas hydrate Stability Zone, Deeper consolidated sediments and occurrence of free gas below the gas hydrates. The programme further aims at Pilot production test on the best available location derived through prior efforts.

**Shri R. K. Sinha**, CTO, DGH Ministry of Petroleum & Natural Gas

One of the major problems in power sector is physical possession of Land acquisition which cannot be taken by force. There is a need to build confidence and mutual trust between the stake holders and villagers and convince them that these industry are set to help them grow economically and not to destroy them. Once implemented things will work for them and they will get employment and prosper. For rapid upliftment of power sector we should be able operate our business in economically, legally, socially and environmentally sustainable manner i.e Transparent, Ethical and philanthropically are the ways which can be initiated.

**Shri Gopal Singh**, CMD, Central Coalfields Limited



We are living in a volatile environment and things are uncertain but the main constraint to take care is social security, environment security and economic security. On one hand we are talking about electricity as a fundamental commodity in which a major aspect of government has to come as it has to be made available to people at an affordable cost but on the other hand by Electricity Act 2003 it has been made a commercially marketable commodity which grows complexities hand-in-hand along with the challenges.

**Shri S.D. Taksande**, Chief Engineer, CEA

Development of Clean Coal Technologies (CCTs) is of paramount important for exploration of deep seated deposits, upgradation of Coals/Lignite, minimise CO2 emission etc. while fulfilling the energy demand of the nation. For the sustained growth of the mining sector, the need of the hour is to improve productivity with the available resources.

Power sector consumes about 40% of the total gas in the country which accounts for 10% of the total power generation capacity. New power generation capacity could come up based on indigenous gas findings, which can emerge as a major source of power generation if prices are reasonable. A national gas grid covering various parts of the country could facilitate development of such capacities.

**Shri B. Surender Mohan**, CMD, Neyveli Lignite Corpn. Ltd.



There is a need to improve the efficiency of the power system for capacity addition. Buy time schemes should be used for making appropriate technology decisions. Implementation of supercritical-combustion-based generation plants has to be done for meeting capacity addition in the short-to-medium term. Developers need to opt for a combination of multiple package and EPC contract routes to achieve better control on costs and quality of deliverables. A pricing policy has to be set in which Present Merit Order Dispatch system follows a variable cost of generation irrespective of type of fuel, source of fuel etc.

**Shri M. L. Patel**, Chief Engineer, Gujarat State Electricity Co. Ltd.

The vendor's challenges in India are developing new & innovative technologies to meet sustainability theme of Energy Security. Vendors have to continuously enhance skill levels of Human Resources. They have to strategize operational efficiency to weather downside of demand variations and continuously innovate processes & products to remain competitive. While some methods to develop sustainability in capacity generation would be Super Critical Technology, Flexibility in Fuel Usage, Particulate Emission Reduction, Afforestation and Coal & Water Consumption Efficiency.

**Shri K. Nandakumar**, CMD, Chemtrols Engg. Group



# Some Power Quotes



The issues in Renewable energy are related to wind generation and solar generation therefore it is throwing a challenge for the grid operators to keep pace with the rising demand. Grid balancing is extremely important for efficient flow of electricity at the supplier and the consumers end. So Government of India is very seriously addressing the issue for which a committee has been set up wherein ways and means are found out to address the challenge. Large Scale Grid integration of Renewable Energy Sources (RES) is required for meeting load demand and security of the grid. The per capita consumption of energy has increased to 917Kwh in 2012-13 which is again a concern for the rising energy demand.

**Shri Ravindra Kumar Verma**, Chief Engineer, CEA

Reinforcements in the network are required for reliable operation of NEWS Grid to be expedited. Oscillations should be monitored through PMU data. Economy interchanges at a later stage after review should be done and parallel WR-SR links has to be expedited. While facing the challenges and integration of renewable with national grid, a Renewable Energy Management Centers (REMC) with Low Gestation period has to be worked upon for renewable project. Transmission System works need to be started much before generation projects in a time bound manner.

**Shri P. Pantaiyya**, G.M., WRLDC, PGCIL



Transmission lines in India are put in a preemptive manner and the use of technology is minimum because the tenders are purely driven by price bids and not by technology. It is high time that the use of modern technology is made compulsory as it improves the quality of transmission lines and tenders should be based on the use of technology. More thrust should be given on 765kV and HVDC Transmission System in the 12th / 13th Plan. There is a need for the development of 1200kV transmission system.

**Shri Ramesh Chandak**, MD & CEO, KEC International

High rate of growth in power sector is needed to support economic growth and employment generation. The estimated demand by 2032 is 900 GW – almost quadrupling the existing capacity. Smart grid technologies will increase visibility and control of power flows in real time. There should be Tariff mechanisms, new energy products, energy options and programs to encourage participation of customers in the energy markets that make them “prosumers” – producers and consumers. Create an effective information exchange platform that can be shared by all market participants, including prosumers, in real time leading to the development of new and enhanced energy markets.

**Shri Reji Kumar Pillai**, President & CEO, India Smart Grid Forum



A National Wind Mission is required which has Wind farm cooperatives with farmers as owners rural corporate, Societal Will and awareness of long term sustainability and energy security, Sustained Political Will for wind onshore /offshore and Sustained Policy directives for extended period for self-sustained green energy development. Power Electronics systems work in conjunction with renewable energy generation technologies to convert harvested energy into useable electrical power. For a better control system solution has to be created with a Master controller and integrate the sub system module such that it can be used for any wind turbine.

**Shri S. Gomathi Nayagam**, Executive Director, C-WET

In hydro power sector, the operating environment is challenging and a lot of initiatives need to be taken up to effectively & efficiently implement the action plans and maintaining high technical & financial standards for speedy development of Hydro sector. Pace of hydro power development is very slow as most of the yet to be developed hydro power potential sites are situated in remote and inaccessible locations, having the most inclement weather conditions full of challenges on all fronts – logistics, climatic, technological leading to long gestation period of 5-10 years.

**Shri Dhirendra K. Ray**, Executive Director – Projects, NHPC Ltd.



A PV-Diesel Hybrid system developed by Chemtrols Solar synchronizes up to 70% of DG set capacity with PV power plant. A Grid-Connected Solar Photovoltaic Power plant synchronizes with the grid; or with the DG set when the grid is not available during daytime. During the day, free energy generated from the solar plant takes precedence over the energy from the grid, thus reducing energy consumption from grid. When the grid is not available during daytime, the solar plant can synchronize with the DG Set and can provide up to 70% of the DG set capacity from Solar, thus reducing consumption of diesel considerably

**Shri Sharad Saxena**, Managing Director, Chemtrols Solar

Energy storage has to evolve significantly for 2030 at a much better cost structure with renewables playing a significant role in power generation. Base role modulation and distribution of renewable across multiple geographies and energy storage are the three important aspects for the increase of share of renewable in the power generation capacity addition.

**Dr. Arul Shanmugasundram**, Managing Director, Chemtrols Solar



Waaree, offers a large range of Industrial Products and Process control instruments. These products are available to customers through wide chain of Retail Outlets and Online sales. Waaree Energy believes in high power yield wherein our systems are designed by extensive computer simulations and testing to yield maximum power generation. We offer complete solution from Conceptualizing to Commissioning and the Best after sales service. The company also produces Poly Crystalline as well as mono-crystalline modules.

**Shri J.P. Gupta**, Vice President, Waaree Group

Conventional boilers are not suitable for biomass generation therefore special boiler systems with prolonged life and commercially viable has to be designed. As compared to conventional boilers the specially designed boilers furnace height should be 20- 30 per cent higher for better efficiency. Therefore, ISGEC has designed the Travelling Grate Boiler in which the efficient combustion of fuel and furnace heights elements are taken care off. The Travelling grate boiler have Single furnace with two pass design and are easy to operate Boiler with less maintenance. The steam operated soot blowers in convective horizontal pass in the boilers provide reliable, effective on load cleaning system without nuisance.

**Shri. Aashay Singhal**, Asst. Manager – Boilers, ISGEC Heavy Engg. Ltd.

