Koteshwar Units during flood

टीएचडीसी इंडिया लिमिटेड
(भारत सरकार एवं उत्तर प्रदेश सरकार का संयुक्त उपक्रम)

आर. एस. टी. साई
अध्यक्ष एवं प्रबन्ध निदेशक
R.S.T. Sai
Chairman & Managing Director

THDC INDIA LIMITED
(A Joint Venture of Govt. of India & Govt. of U.P.)

D.O No. 410/CMD/THDCIL
Dated: 31-03-11

Respected Shri Ji Ji,

It is really a great moment, when history has been created in the Hydro Sector by synchronization of two units of Koteshwar HEP (4x100 MW) in March this year. After flooding of Koteshwar Power House on 21st Sep-10, one could not dream to commission even one unit during the current financial year. The impossible was made possible due to round the clock working and dedicated efforts made by BHEL team under your able guidance and leadership.

On behalf of THDC India Limited, I express my gratitude to you and heartily congratulate the entire team of BHEL, especially PSNR group, who converted a dream into reality and added yet another feather to the crown of the nation.

Kind regards

(R.S.T. Sai)

Shri B.P. Rao,
Chairman & Managing Director
Bharat Heavy Electricals Limited.,
"BHEL House", Siri Fort,
New Delhi-110049

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Koteshwar Units after Capacity Addition

Note : Company results for 2010-11 are provisional, subject to Audit

Issued by

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Website: www.bhel.com
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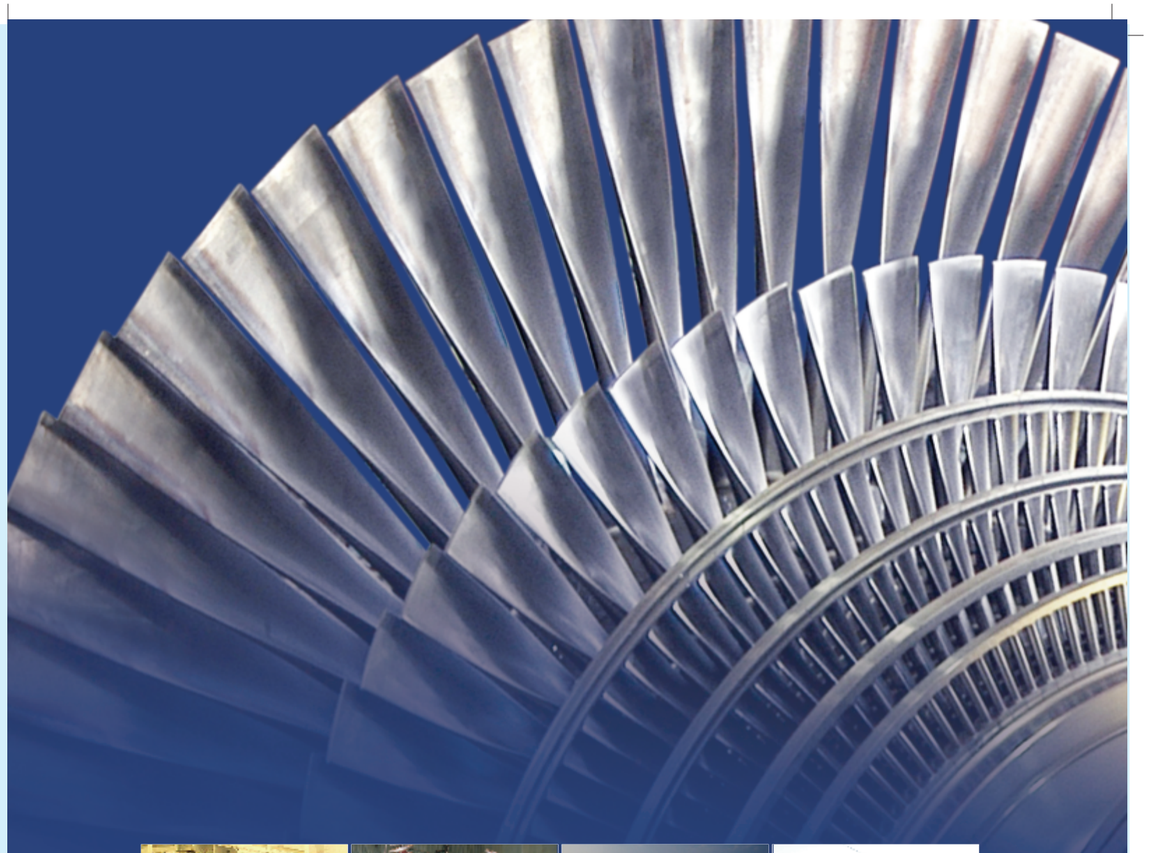
Touching Every Indian Home



Steering Change... Sustaining Growth...

4th April, 2011

Press Conference Address by

Shri B. Prasada Rao

Chairman & Managing Director, BHEL

to share the Company's Performance Highlights during 2010-11

Supercritical Thermal business to spur growth; Manufacturing Capacity to deliver 20,000 MW per annum on track

BHEL completed another successful year, which saw private as well public sector utilities and other customers reposing confidence in the company's capabilities.

Highlights 2010-11

Supercritical Technology

- Record orders of 7 nos. Boilers and 9 nos. Turbine-Generators with supercritical parameters from public as well as private sector utilities
- New rating of 700 MW supercritical thermal set introduced with first order from KPCL- matching competition
- First-ever orders from a JV with a State Utility for 800 MW supercritical thermal sets from Raichur Power Corporation Limited
- Advanced Ultra Supercritical (Adv-USC) technology being developed in association with Indira Gandhi Centre for Atomic Research (IGCAR) and NTPC, as part of the National Mission for Development of Clean Coal (Carbon) Technologies – preparing for future growth. With this initiative, India joins select band of countries working on the development of this technology

Nuclear Business

- Order of first 700 MW Nuclear TG (2 sets) for KAPP 3,4 from NPCIL in consortium with Alstom – new rating introduced

Customer Confidence

- Repeat order for 10 sets of 270 MW each from the Indiabulls Group
- WBPDCL reposes confidence in BHEL by placing order for Stage-II (2x500 MW) of the Sagardighi Project - Stage-I was earlier sourced from Chinese
- Breakthrough order from PGCIL for the world's first ± 800 kV 6,000 MW Ultra High Voltage Multi-Terminal DC Transmission Link between North-East and Agra, in consortium with ABB, Sweden
- Four orders in a row for captive power plant equipment from Maruti Suzuki India Limited

Global Forays

- Export orders from 24 countries across five continents
- EEPC's Top Export Award for Project Exports for the twentieth year in succession

New Initiatives

- Highest-ever capital investment in a year - ₹ 1,771Crore
- Augmentation of manufacturing capacity from 15,000 MW p.a. to 20,000 MW p.a. on track for completion by March 2012 - 82 machines out of 251 machines commissioned so far
- Partnerships forged with GE India Industrial Private Limited (GEIIPL) for providing cost-effective membrane-based water treatment systems for power plants and industrial sector – business for future
- Joint Working Arrangement with Abengoa, Spain for Concentrated Solar thermal Power Plant (CSP) – business for future
- Joint Venture formed with Govt. of Kerala and Kasaragod unit of KEL acquired – for leveraging business in transportation and wind segments

Technology Edge

- Ranked as the number one company in terms of filing patents in India by Economic Times Intelligence Group
- R&D expenditure at ₹ 1,005 Crore - 21% higher than previous year
- CII-Thompson Reuters Innovation Award 2010 for innovation & entrepreneurship
- 31% growth in BHEL's IPR capital taking the total to 1,438 patents/copyrights
- Established BHEL R&D Gateway at IIT Madras Research Park Chennai – promoting research in Ultra Supercritical power cycles and high temperature materials
- BHEL becomes first company in India to develop and manufacture 1200 kV Transformers. The company has also indigenously developed and manufactured 765 kV, 500 MVA transformer. 530 kN Disc insulators for 1200 kV UHVAC transmission lines also developed for the first time in the country

First indigenously built 1200 kV, 180 MVA Transformer in India, manufactured by BHEL

Commissioning/Equipment Performance

- BHEL synchronized/commissioned 9442 MW of power plant equipment comprising domestic utility, captive/ industrial and in overseas market
- BHEL sets contributed 72% of the power generated in the country in FY 2010-11
- For the first time, a thermal set (80 MW) equipped with Air cooled Condenser configuration for Shiram EPC was commissioned by BHEL- saving precious water resource

Green Power Initiatives

- 210 sq. mts. of space grade solar panels and 28 space quality batteries have been supplied to ISRO for their space program, so far. During the year, ISRO launched Carto2B and GSAT4 satellites equipped with BHEL's 24AH Ni-Cd batteries and solar panels respectively
- Highest-ever orders totaling to 8 MWp for eco-friendly Grid-Interactive Solar Photovoltaic (SPV) Power Plants were received from the Union Territory of Lakshadweep and Indiabulls

Accolades

- Prestigious SCOPE Award for Excellence and Outstanding Contribution to Public Sector Management (2008-09) presented by the H'ble Prime Minister, Dr. Manmohan Singh
- BHEL employees won six Prime Minister's Shram Awards including one Shram Bhushan and three Vishwakarma Rashtriya Puraskars
- For the fifth year running, only PSU in Forbes Asia 'Fabulous 50' list of the best of Asia-Pacific's publicly-traded companies with revenues or market capitalisation of at least US$ 5 Billion
- NDTV Profit Business Leadership Award 2010 for organizational excellence in the Engineering sector

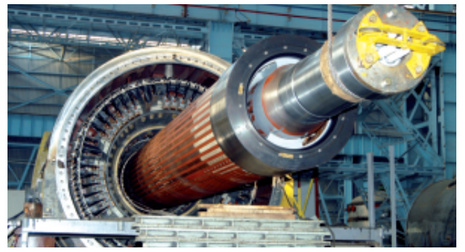
India's first indigenously built 9FA (250 MW ISO) Gas Turbine set manufactured by BHEL

Detailed Achievements 2010-11

ORDERS INFLOW

BHEL secured record orders worth ₹ 60,507 Crore, during the year, despite various challenges confronting the power sector in recent times, At the end of the year, total orders in hand for execution in 2011-12 and beyond, stand at about ₹ 1,64,130 Crore

- In the Power Sector business segment, BHEL secured orders worth ₹ 46,393 Crore corresponding to 15,071 MW in physical terms. Major highlights of the year include orders for 9 nos. Turbine Generator sets and 7 nos. Steam Generator sets for Units of 660/ 700/ 800 MW rating with Supercritical parameters; repeat order from Indiabulls for 10 sets of 270 MW (Nasik Ph. II & Amravati Ph. II) and first order for 700 MW nuclear TG sets (2x700 MW KAPP 3&4)



First indigenously manufactured 600 MW TG set in the country under assembly

Significant orders received in the Power sector include:

Supercritical Thermal Sets

- Main plant equipment package for 2x800 MW Yeramarus and 1x800 MW Edlapur supercritical power projects from Raichur Power Company Ltd – a JV Company of BHEL and the State Utility
- First order for 700 MW supercritical set from KPCL for Bellary 3 (1x700 MW)
- 2x660 MW Turbine Generators from NTPC against bulk tender
- 3x660 MW supercritical thermal sets from Bajaj Hindusthan Ltd.
- ESP package orders for Nigrie (2x660 MW) from Jaiprakash Power Ventures Ltd. and for Bara (3x660 MW) of Prayagraj Power Generation Company Ltd. (Jaypee Group)

Sub-critical Thermal Sets

- Repeat orders from Indiabulls for 10 sets of 270 MW (5x270 MW Nasik Ph-II & 5x270 MW Amravati Ph-II)
- 6 sets of 600 MW from Dainik Bhaskar Power Ltd., Visa Power Ltd., APGenco and Korba West Power Co. Ltd.
- 2 sets of 500 MW for Sagardighi from West Bengal Power Development Corp. Ltd.
- 2 sets of 250 MW for Barauni from Bihar State Electricity Board

Gas Turbines

- 750 MW Combined Cycle Power Project of Pragati Power Corporation Ltd. at Bamnauli
- Gas Turbine-Generator orders for Monarchak (100 MW) from North Eastern Electric Power Corporation (NEEPCO) and Rokhia (21 MW) from Tripura State Electricity Corporation Ltd.

Nuclear Business

- First order for 700 MW Nuclear TG package from

NPCIL for KAPP (2x700 MW)

R&M and Services:

- Complete overhauling of 1000 MWe LMZ make Nuclear Steam Turbine from NPCIL Kudankulam
- R&M of Kopili Hydro plant of NEEPCO, the only order finalised in the country for R&M of hydro plants
- In its Industry Sector business segment also, BHEL secured orders worth ₹ 11,405 Crore for a wide range of products and systems for application in Captive Power, Transportation, Transmission, Oil & Gas, Renewable Energy and other industrial sectors

SPV Power Plant, Karnataka

Significant orders received in the Industry Sector include

- Breakthrough order for the world's first ± 800 kV 6,000 MW Ultra High Voltage Multi-Terminal DC Transmission Link, in consortium with ABB, Sweden
- 3x150 MW Boiler Turbine Generator package with single cylinder reheat machines from India Power Corp. Ltd. Haldia
- 2x30 MW STG & 2x220 TPH Utility Boilers on EPC basis from ONGC Petro Additives Ltd. (OPAL), a JV of ONGC & GAIL
- State-of-the-art propulsion equipment for 6000 HP Electric Locomotives and 1400 HP AC EMUs from Indian Railways amidst stiff competition from international suppliers
- 198 sets of Electrics for conventional AC EMU/DEMU and 588 Traction motors from Railway Board and Indian Railways manufacturing units
- 11 nos. 700 HP Diesel Electric Shunting Locomotives from JSW Steel Ltd.
- Highest-value single order for HT Motors finalized in the country so far, for 20 nos. 6 MW 4P SCIMs for special coolant pump application of 700 MW sets at NPCIL's RAPP & KAPP
- 124 motors for IOC's Paradeep refinery including 110 flame proof motors
- Three Turbo Blower Packages with Steam Turbine Drive from Bhilai Steel Plant
- Compressors from NFL Bhatinda, Nangal, Panipat, GNFC Bharuch and BPCL Mumbai and CO2 Compressor revamp from NFL Vijaipur
- Highest-value order for supply of Well Heads & X-Mas tree valves from ONGC Bassein & Satellite Assets
- Integrated Platform Management System for an Air Defence Ship (Indigenous Aircraft Carrier) being manufactured in India for the first time. The order was received against stiff competition from global giants
- 36 Transformers totaling to 4078 MVA from Indiabulls
- Order against international competition for 6 nos. of India's largest rating state-of-the-art Dry Type Transformers from Bluestar, for Reliance Power's Sasan project
- 220 kV substation and associated transmission lines from DPL
- 4 nos. 63 MVAr Shunt Reactors at various substations from KPTCL
- In International Business, the outlook remains cautious and the recovery after the global meltdown has not been able to create a positive environment for infrastructure investments. In the oil and gas sector, most companies have announced cutbacks in capital spending, as well as project deferments and cancellation. Recent developments in the Arab world have also adversely affected business prospects in BHEL's traditional markets. In spite of such challenges, BHEL was able to sustain its exports momentum with a physical export order inflow of ₹ 3,738 Crore from 24 countries spread over five continents. The year marked significant forays in new markets and new product areas.

Electric Locomotive (25 kV AC, Type WAG 7)

Significant orders received in International business include

- **Single largest export order for Gas Turbine-based Power Project** – Further strengthening its foothold in Yemen, BHEL secured a prestigious order for the 4x168 MW Gas Turbine based Marib-II Power Project. This is the largest ever order for an overseas gas turbine based power project
- **Yemen - Entry into new market** – Earlier, BHEL successfully made its maiden entry in Yemen by securing orders for the supply of motors
- **First ever order for motors from Kenya** – For the first time, BHEL secured an order for supply of motors to Mombasa Cement Ltd., Kenya
- **Maiden order for solar cells from Hong Kong & Turkey** – Entry into new market – For the first time, BHEL secured orders for supply of solar cells to Hong Kong & Turkey
- **Order for Control Equipment from USA** – BHEL secured order for supply of Bus Extender Modules from Metso Automation, USA
- **Continued focus on After Sales Services led to orders for Spares & Services** from UAE, Bangladesh, Bhutan, France, Indonesia, Kazakhstan, Sri Lanka, Libya, Malta, Malaysia, New Zealand, Nepal, Oman, Saudi Arabia, Thailand and Yemen.

STRATEGIC BUSINESS INITIATIVES

CMD, BHEL & Mr. John Flannery, President and CEO, GE-India, exchanging Agreement documents for Water Treatment Equipment and Systems

Aimed at maximising business through mutually beneficial strategic partnerships, BHEL entered into the following tie-ups during the year

- BHEL has entered into a manufacturing cooperation agreement with GE India Industrial Private Limited (GEIIPL) to address the requirement of state-of-the-art water treatment plants for power plants, industry and municipal corporations
- BHEL has signed an agreement with M/s. Abengoa, Spain, the leader in solar and other energy-related projects, to develop state-of-the-art Concentrated Solar Power projects in India. The agreement will enable both the organizations to leverage their capabilities in offering EPC solutions for Concentrated Solar thermal Power (CSP) projects in India, as well as give them the opportunity to explore cooperation in energy projects in other parts of the world

CMD, BHEL and CEO, Abengoa Solar exchanging agreement to develop Concentrated Solar Power Projects in India

- BHEL has formed a JV with the Govt. of Kerala and a majority-owned JV company named BHEL Electricals Machines Limited has been registered in Kerala which has taken over the Kasaragod unit of KEL. In addition to the present range of Alternators, other complementary products like LT motors, Wind Electric Generators' Alternators and traction equipment for Indian Railways, are proposed to be taken up for manufacture by the JV
- A collaboration agreement was entered into with Nuovo Pignone (part of GE Oil & Gas), Italy, for the manufacture of centrifugal compressors. This will further enhance BHEL's capability to address the market requirement of higher size compressors for refinery, fertilizer, petrochemical, pipeline and other applications

PROJECT COMMISSIONING

- BHEL synchronized / commissioned 9,442 MW of power plant equipment during the year inclusive of 8,108 MW Utility, 987 MW Captive/Industrial sets in the country and 347 MW in overseas markets. This included 11 nos. of 500 MW and 1 no. of 525 MW
- A major milestone of the year was the commissioning of four power plants in overseas markets. While power projects were commissioned in Bangladesh, Libya, Oman and Nepal; Hydro generator, Substations & Transformers were commissioned in Tajikistan, Ethiopia and Myanmar respectively
- Hindustan Zinc Ltd., Dariba Unit-2 (80 MW) reached full load within 6 hours and 6 minutes of its synchronization
- The installed capacity of BHEL supplied Utility sets went up to 98,064 MW which is 62% of the country's total installed capacity

1x490 MW Power Project commissioned at Dadri

Major power projects synchronized/ commissioned included:

- 2x500 MW for Mejia
- 1x525 MW for Maithon
- 1x500 MW for Kakatiya
- 1x500 MW for Jhajjar
- 1x500 MW for Korba
- 1x500 MW for Farakka
- 1x500 MW for Khaperkheda
- 1x500 MW for Simhadri
- 1x500 MW for Kothagudem
- 1x490 MW for Dadri
- 1x250 MW for Chhabra
- 1x250 MW for Raichur
- 1x250 MW for Santaldih
- 1x210 MW for Rayalaseema
- 2x125 MW for Surat Lignite
- 2x125 MW for Barsingsar
- 2x250 MW GTG for Pragati
- 21 MW GTG for Baramura
- 2x100 MW Hydro sets for Koteshwar
- 2x96 MW Hydro sets for Allain Duhangan
- 2x50 MW Hydro sets for Kuttiyadi
- 3x40 MW Hydro sets for Sewa
- 1x157 MW GTG in Libya
- 1x126 MW GTG in Bangladesh
- 2x26 MW GTG in Oman
- 1x120 MW for Tata Jojobera
- 2x110 MW GTG for Vadinar Power Supply Co.
- 2x80 MW for HZL Dariba
- 1x80 MW for Shri Ram EPC
- 1x30 MW GTG for IOCL
- 3x33 MW STG for BORL
- 1x43 MW STG for Arasmeta
- 1x43 MW STG for Century Pulp & Paper
- 1x37 MW STG for IOCL
- 1x33 MW STG for Shyam DRI Power
- 1x28 MW STG for Krishnaveni Sugar
- 1x25 MW STG for ACC Wadi
- 1x25 MW STG for ACC Chanda
- 1x25 MW STG for Visa Steel
- 1x18.5 MW STG for Nalco Damanjodi

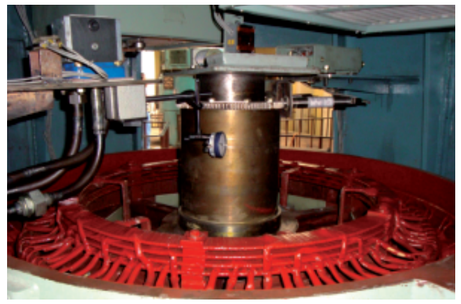
2xFrame 9E GTG order under execution at PDO Amal site in Oman

EQUIPMENT PERFORMANCE

- During the year, BHEL-built power generating sets generated an all-time high 501 Billion Units of electricity which was 72% of the total power generation in the country.
- Plant Load Factor (PLF) of BHEL built thermal sets was 1.4% higher than the national average.
- BHEL built thermal sets achieved an impressive Operating Availability (OA) of 86%. The same was 88.3% for BHEL make 200-500 MW thermal sets, which form the backbone of the country's thermal generating capacity

CUSTOMER FOCUS

- BHEL reinforced its commitment to providing prompt and efficient customer service aimed at facilitating uninterrupted power supply and keeping power plants in good running condition. During the year, BHEL overhauled 120 utility/captive sets.
- BHEL responded to customer's call and completed the rehabilitation work of the flood-ravaged Koteshwar HEP of THDC in a record time of just five months. The plant was not only rehabilitated but capacity addition of 2x100 MW was also achieved.
- Responding to the customer's call, BHEL took up on war footing and completed the refurbishment and re-commissioning of Oil Rig Kamadhenu of ONGC Rajahmundry in a record time of 98 days against a normal schedule of 6 months.



Brushless Exciter developed at BHEL's R&D Centre installed at Devighat HEP, Nepal

TECHNOLOGY DEVELOPMENT

- BHEL's products and systems are technology intensive and R&D/technology development is of strategic importance to the company. During the year, BHEL invested ₹ 1,005 Crore on R&D efforts – 21% higher than the previous year.
- A turnover of ₹ 7,758 Crore was achieved through products and systems developed in-house, an increase of 15 % over the previous year.
- BHEL also filed 303 patents and copyrights, enhancing the company's intellectual capital to 1,438 patents and copyrights filed, which are in productive use in the company's business. The year saw a massive growth in grant of patents and copyrights. A total of 91 patents and copyrights were granted during the year. Currently, 532 patents & copy rights are in force.
- BHEL won the coveted CII-Thompson Reuters Innovation Award 2010 in the 'Hi-tech Corporate' category. The award recognizes BHEL's innovation and entrepreneurship in India based on number of patents and efficiency and impact of innovation as measured by patent citations. Instituted by CII and Thompson Reuters, the world's leading source of intelligent information for businesses and professionals, the Indian Innovation Awards have been designed to recognize innovation and entrepreneurship in India and are awarded to organizations that represent the new spirit of innovation in India.
- Significantly, BHEL was ranked as the Number One company in terms of filing patents and the second highest investor in R&D in India by The Economic Times Intelligence Group (ETIG)

Some of the significant developments during the year include:

- As part of its endeavour to offer the most contemporary products & technologies to customers, BHEL has become the first company in India to indigenously develop and manufacture 1200 kV transformers. BHEL has successfully manufactured 1200 kV, 180 MVA test transformer to be used as a testing transformer in the UHV Lab. BHEL has also developed and manufactured 1200 kV Capacitor Voltage Transformer (CVT) for the 1200 kV test transmission line at Bina, which is a stepping stone for the company in the field of UHVAC Transmission systems. 530 kN Disc insulators for 1200 kV UHVAC transmission lines have also been developed for the first time in the country. Besides, the company has indigenously developed and manufactured 765 kV, 500 MVA transformer which will be put for field trial at Power Grid Sub-station, Wardha
- Aimed at enhancing efficiency as well as revenues for hydro utilities, BHEL has developed a hydro power plant equipment maintenance management system (MMS) - a maintenance software that provides vital support in ensuring continuous power generation while minimising overhead costs due to downtime, repairs and replacements. MMS ensures achievement of long-term objectives of the plant through effective and efficient maintenance scheduling and other retrieval functions. Major utilities have already made the inclusion of MMS package mandatory in all their tender documents. The system is being supplied to NHPC for installation at Sewa HEP.
- For the benefit of its customers by way of developing effective control systems for its products, a compact and cost-effective digital online monitoring and control system (OLMCS) for power transformers has been developed and tested. The unit can measure and monitor winding temperatures, electrical parameters, moisture and gas-in-oil, and provides alarm signals along with supervision of the operating condition and estimation of remnant life and controlling overload of the transformer. The system helps save energy and maintains voltage profile and has been type-tested as per international standards
- Continually striving to improve the economies of solar PV systems, BHEL has designed and developed high efficiency passivated interface (PI) hetero junction solar cells on full size (125 mm pseudo-square), mono crystalline silicon wafers. With process step optimisation, an efficiency as high as 16.9% have been achieved. This is among the first few best efficiencies reported so far internationally for these type of cells. Following this development, steps will be taken towards batch production of cells and modules and subjecting the modules to qualification tests
- Reinforcing its commitment to optimum utilization of natural resources as well as its concern for the environment, BHEL has developed a dynamic classifier system. The system improves classification efficiency of the pulveriser and provides better particle size control enabling availability of uniform coal size to the burners leading to improvement of combustion efficiency of the boiler and reduction in the NOx emission from the boiler. The new dynamic classifier system has been commissioned at Dr. Narla Tata Rao Thermal Power Plant, Vijayawada
- Consistently offering tailor-made designs to suit customer needs, BHEL has developed a more reliable 500 kW, 300 rpm brushless exciter has been developed to cater to a range of hydro generators from for 16 MW to 60 MW rating. This opens up vistas to cater to a wider range of hydro generators and is also suitable for retrofit jobs in BHEL-make hydro generators. Field trials at Devighat Hydro Power Station in Nepal have commenced and BHEL plans to develop brushless exciters for hydro generators up to 250 MW as the next step
- Consistently offering tailor-made products & designs to suit customer needs, BHEL has developed & installed a 2.5 MVAr STATCOM for controlling quality of power and to reduce voltage flicker during operations of the electric arc furnace (EAF) at the Bhilai Steel Plant. Voltage flicker and harmonic currents induced by EAF operations affect the performance of sensitive electronic equipment connected to the distribution bus of the plant and other consumers linked to subject distribution systems. BHEL's STATCOM, configured for EAF, increases steel productivity, reduces electrode consumption and reduces peak demand
- Aimed at establishing dedicated infrastructure for developing high and ultra high voltage gas insulated transmission equipment, BHEL is establishing an Ultra High Voltage (UHV) Laboratory for gas insulated substation (GIS) equipment at its Corporate R&D division, Hyderabad. The facility will also promote development and training of BHEL personnel in design, evaluation processes and allied technologies specific to gas insulated transmission equipment. It will comprise two distinct functional components – a high voltage di-electric test facility, and a dust-free design and assembly area

- In line with its developmental work in futuristic areas, BHEL is establishing a Centre for Nano Technology (CNT) at its Corporate R&D division at Hyderabad. The facility will explore the application of nano materials in products and systems relevant to BHEL. Material development for applications like power plant components, nano structured wear-resistant coatings, electrical insulating materials, solar cells, carbon nano tube applications, nano fluidics, fuel cells and sensors, will be studied at this facility. The CNT is being established to carry out cutting-edge R&D and make BHEL future ready in the areas of ultra supercritical power and renewable energy
- BHEL continued its tradition of contributing to the country's space program - 210 sq. mts. of space grade solar panels and 28 space quality batteries have been supplied to ISRO for their space program, so far. During the year, ISRO launched Carto2B and GSAT4 satellites which are equipped with BHEL's 24AH Ni-Cd batteries and solar panels respectively.

Boiler-drum shop at BHEL Tiruchirappalli

CAPACITY AUGMENTATION & ASSET MODERNISATION

- Highest ever capital investment in a year – the company made an investment of ₹ 1,771 Crore during 2010-11 towards augmentation of manufacturing capacity and modernization of facilities in manufacturing units and at power project sites
- Focused attention was given on rebuilding and retrofitting of existing facilities to enhance their life, accuracy and productivity through an additional investment of ₹ 58 Crore
- BHEL had earlier enhanced its manufacturing capacity to 15,000 MW of power equipment per annum. The company's augmentation programme to 20,000 MW per annum by March, 2012 to meet the power requirement of the Twelfth Plan and beyond, is on track

HUMAN RESOURCE

- In line with changing market requirements, the knowledge and skills of BHEL employees are continuously upgraded. Developmental programmes for over 15 mandays per employee were conducted during the year. In addition, 1,389 customer personnel were trained at various manufacturing units.
- Manpower is being ramped up in a commensurate and timely manner and 3658 persons have been recruited in 2010-11. With this, 15,606 nos. executives, supervisors and workmen have been recruited during the four year period 2007-11
- An integrated Human Resource Management System was implemented during the year which aims at reaching out to internal stakeholders on real time basis and redefining the role of the HR function as a strategic partner in business, through process standardization, optimization and seamless enterprise integration. The employee-centric web-based Employee Self Service (ESS) facility has now been extended to all Executives and Supervisors for easy and instant access to employee data as well as corporate information.
- Industrial Relations continued to remain cordial contributing to production and productivity. Thrust on participative culture continued during the year through the apex level bipartite forum, 'Joint Committee'.
- BHEL was awarded the 'Talent Innovation Award' at the Asia Pacific HRM Congress held in Bangalore

CORPORATE SOCIAL RESPONSIBILITY

- As part of its Corporate Social Responsibility (CSR), during the year, BHEL undertook socio-economic and community development programmes in villages and communities located in the vicinity of its manufacturing plants and project sites spread across the country. Focus is on health, environment enrichment, hygiene, education, community development, self empowerment, water conservation, providing potable water, conducting health camps for diagnostic, medicine distribution for common ailments, etc.
- As a contribution towards helping in meeting the nation's requirement of skilled manpower, BHEL has adopted various ITIs under the Government of India's PPP scheme. These include ITIs at Latur, Khandwa, Khakinar, Peramvular and Haridwar.

Medical camp being organised by BHEL as part of CSR initiatives

- The Kabiguru Industrial Training Centre, set up by BHEL in partnership with DVC and Coal India at Bolpur, West Bengal, has commenced operations and Fitter trade course commenced with 42 students including 2 girls. Further, trades of Welder, Plumber, Cutting & Tailoring and Beautician (mainly for girls), are slated to begin from the August-2011 session.
- Reaching out to the distressed victims in the flood-ravaged areas of Ladakh, Andhra Pradesh and Karnataka, BHEL has made a humble contribution to help alleviate their hardship.
- As part of the United Nations' Global Compact Programme on CSR, the company continued to play a lead role in promoting the set of core values enshrined in its ten principles on human rights, labour standards, environment and anti-corruption.
- BHEL was awarded the 'India Shining Star CSR Award' for outstanding work in the CSR sphere in the Capital Goods sector' at the 'CSR thought leadership conclave' organized by Wockhardt Foundation.
- As part of social commitment, 6,819 Act Apprentices were trained in the company. In addition, 8,878 students/ trainees from various professional institutions underwent vocational training.

QUALITY

- Continuing its winning streak in the CII Exim Award Scheme for business excellence as per the globally recognized model of European Foundation for Quality Management, four out of five BHEL units that participated in the CII-EXIM Business Excellence award scheme got recognition certificates from CII. BHEL's Heavy Power Equipment Plant at Hyderabad won the 'Commendation for Significant Achievements in TQM'. The company's Boiler Auxiliaries Plant at Ranipet, Electronics Division at Bangalore and the High pressure Boiler Plant at Trichy received 'Commendation for Strong Commitment to TQM'.
- 33 Quality Circle case studies were presented by 7 BHEL manufacturing units at the International Quality Circle Conference (ICQCC – 2010) held in Hyderabad. BHEL units won 21 Gold and 11 Silver Medals for their case studies.

GREEN INITIATIVES

- BHEL continues to actively contribute to the national effort for developing and promoting renewable energy based products especially in the context of Jawaharlal Nehru National Solar Mission. Significantly, the area of megawatt size grid connected SPV power plants, four orders for SPV power generation plants totaling to 8 MWp were received by BHEL during the year. These included orders from the Union Territory of Lakshadweep for Augmentation, Renovation and Operation & Maintenance of SPV plants at various Islands (aggregate 2.15 MWp) and 6 MWp orders from Indiabulls for projects at Bareilly & Nagpur
- The National Solar Mission aims to achieve 20,000 MW through grid-connected solar power plants by March, 2022. With the aim of providing EPC solutions in the concentrated solar thermal area, BHEL has signed an agreement with Abengoa, Spain, the European leader in solar and other energy-related projects.
- BHEL continued with the completion of several Environment Improvement Projects (EIPs) as its commitment towards environment conservation. Major EIPs included plantation of 29 lakh trees in and around manufacturing units / project sites, 110 rainwater harvesting projects and energy & resources conservation projects. These projects are aimed at enriching the environment, conservation of precious resources like energy, water, fuel oil, coolant, lubricant, besides installation of proper systems for storage/handling of chemical waste and using state-of-the-art technologies.
- BHEL's first Sustainability Report 2009-10 on the Environment, based on Global Reporting Initiative (GRI) guidelines with third party assurance award was brought out during the year. The report reflects the company's transparent thrust/ approach towards Sustainable Future/ Growth.

CMD, BHEL receiving the SCOPE Award for Excellence & Outstanding Contribution to Public Sector Management from the Prime Minister of India, Dr. Manmohan Singh

ACCOLADES

Continuing its tradition of bagging prestigious national/ international awards, the organisation and its employees won several awards during the year. Notable among these included;

- BHEL was honoured with the prestigious SCOPE Award for Excellence and Outstanding Contribution to Public Sector Management (2008-09) in the Large Scale PSE

Category. The Award was presented by the Hon'ble Prime Minister, Dr. Manmohan Singh to CMD, BHEL.

- BHEL has won the IEI Industry Excellence Award 2010 for Overall Business Excellence and Industry Practices from the Institution of Engineers (India).
- NDTV Profit Business Leadership Award 2010 recognizing organizational excellence in the industry vertical of 'Engineering'.
- Maximum number of 7 ICWAI National Awards for Excellence in Cost Management, among public and private sector companies for 2009. BHEL was awarded the recognition for the fifth successive year, having won the awards earlier for 2005, 2006, 2007 and 2008.
- For the fifth consecutive year, BHEL's performance was recognized by the prestigious publication Forbes Asia, which featured BHEL in its sixth annual Fabulous 50 list of the best of Asia-Pacific's publicly-traded companies with revenues or market capitalization of at least US$ 5 Billion, having highest long-term profitability and sales & earnings growth. Notably, BHEL is the only Indian PSU to figure on the elite list, since the list was conceived.
- Six Prime Minister's Shram Awards including one Shram Bhushan and three Vishwakarma Rashtriya Puraskars.
- 1 National Safety Award to BHEL's Trichy unit for outstanding achievements in terms of longest accident free period and lowest accident frequency rate at their works.
- EEPC's Top Export Award for Project Exports for the twentieth year in succession.
- Business Bhaskar India Pride Growth Leader of the Year Award for consistently recording high growth and a huge order book going forward.
- Enertia Award 2010 for manufacturing excellence and scale up in power generation equipment and auxiliaries.
- India Power Award for Equipment Manufacturing and for electrifying Lakshadweep Islands with Solar Power from Council of Power Utilities
- Golden Peacock Award for Occupational Health & Safety 2010 from the Institute of Directors for significant achievements in the field of Occupational Health & Safety.
- Safety Innovation Award 2010 from the Institution of Engineers (India).
- Mr. B. Prasada Rao, CMD, BHEL was awarded the Distinguished Fellow Award 2010 from the Institute of Directors. The award is given annually to Corporate Leaders and top Government officials for their outstanding contribution in the field of Corporate Governance and Corporate Social Responsibility.
- BHEL employees, Dr. Kulvir Singh and Dr L.N. Satapathy, both from BHEL's Corporate R&D division, brought laurels to BHEL in individual categories. While Dr. Singh was selected as the Metallurgist of the Year 2010 by the Union Ministry of Steel and Indian Institute of Metals, in recognition of his significant contribution in materials

H'ble Union Minister for HI&PE Shri Praful Patel & H'ble Minister of State for HI&PE Shri A. Sai Prathap interact with CMD, BHEL and other Board Members

development for steam and gas turbines as well as for remnant life assessment (RLA) studies; Dr. Satapathy was awarded the Prof. Sasadhar Ray Memorial Award 2010 for Industrial Excellence by the Indian Ceramic Society in recognition of his valuable contribution the field of ceramics/whiteware ceramics.

LOOK AHEAD

- Emerging market economies including India have clearly been the engine of the global recovery in recent times. However, the sharp increase in oil prices as a result of the turmoil in the Middle East and North Africa is adding uncertainty to the pace of global recovery. In the domestic context, both Central Statistical Organization and RBI estimate the GDP growth to be 8.6 per cent for 2010-11.
- BHEL is actively pursuing several opportunities for sustaining future growth. These include:
- Transportation business where BHEL is participating in the tenders for setting up factory for Electric Loco components at Dankuni, West Bengal and Diesel Loco factory at Marhowra, Bihar respectively. The company has already received breakthrough orders for State-of-the-art propulsion equipment (IGBT based) for 6000 HP Electric Locomotives and 1400 HP AC EMUs . BHEL is already executing an order for 200 numbers of 5,000 HP 25 kV AC Mainline Electric Locomotives (Type WAG -7) for Indian Railways.
- Nuclear business where in addition to supplying steam generators for new rating 700 MWe Nuclear sets BHEL has entered into a tripartite JV with NPCIL & Alstom for conventional island of Nuclear Projects for 700 MWe & above.
- Solar business where the company's has entered into a Joint Working Arrangement for Concentrated Solar thermal Power Plant (CSP) and the Strategic Alliance with BEL for formation of JV for setting up manufacturing facility (240 MW) for silicon wafers, solar cells & modules.
- Transmission business where BHEL has entered into a Strategic Alliance with Toshiba, Japan to establish a JVC to address T&D business in India and other mutually agreed countries. The JVC will cover equipments and projects in EHVAC & UHVAC range including 765 kV transformers and reactors & GIS, in addition to other products and systems.
- Water business where BHEL has entered into a manufacturing associate agreement with GE India Industrial Private Limited (GEIIPL), for Water Treatment Equipment. The company will be able to provide more cost-effective membrane-based water treatment systems for power plants and industrial sector for all type of input water like sea water, brackish water and waste water.
- Infrastructure financing company which will enable BHEL to finance power projects by providing funding support to attract potential customers & optimize returns on cash reserves.
- The company continues its focus on growth strategies viz. Capacity Enhancement, Accelerated Project Execution, Product Cost Competitiveness & Quality, Diversification, Engineering & Technology and People Development to sustain its leadership in the power sector and capture growth avenues in emerging areas.
- BHEL continues to invest in manufacturing capacity enhancement from 15,000 MW to 20,000 MW by March 2012, in order to deliver customers' requirements in a sustainable way.
- In the company's quest to make its supply chain agile and accelerate project execution initiatives like vendor base expansion, outsourcing, advanced manufacturing action, rate contracts, deployment of additional tools and plants, global sourcing and away centre fabrication, etc., will remain focus areas.
- Capability building initiatives like Lean Manufacturing (LM), Design-to-Cost (DTC) and Purchase-Supply-Management (PSM) in identified product areas across the company would enable the company remain cost competitive.
- BHEL will continue to excel in innovation-led business strategy to ensure that the company is at the forefront of industry developments and continually improves products and services.
- The company is on track to meet the Strategic Plan 2012 target of US$ 10 Billion by 2011-12.
- BHEL has commenced its '7th Corporate Plan' exercise to formulate the company's 'Strategic Plan 2012-17' to address market challenges and enable the company enter next level of growth.

The above performance is a result of the high level of commitment & outstanding performance of a team of 46,748 dedicated employees and the confidence reposed by BHEL's stakeholders including Government of India. I thank my fellow Directors on the Board, all my colleagues, stakeholders, the Department of Heavy Industry and our friends from the media for enabling BHEL to set new performance benchmarks.

Agenda for Growth & Leadership

- Capacity Enhancement
- Accelerated Project Execution
- Product Cost Competitiveness & Quality
- Diversification
- Engineering & Technology
- People Development

BHEL's Milestones

- Over 1,15,000 MW worth equipment supplied worldwide
- Footprint in over 70 countries across 6 continents
- BHEL-built equipment light up 3 out of 4 homes in India
- Manufacturing capacity enhancement to 20,000 MW p.a. by March, 2012
- On track to meet Strategic Plan 2012 target of US$ 10 billion by 2011-12