

भारत इलेक्ट्रॉनिक्स लिमिटेड

(भारत सरकार का उद्यम, रक्षा मंत्रालय)

पंजीकृत कार्यालय

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24 April 2012

Dear Sir

We enclose today's press release.

Yours faithfully



C R Prakash
Company Secretary

Empowering the Nation's Defence Forces



Performance Highlights 2011-12

24th April, 2012

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FINANCIAL HIGHLIGHTS

Parameter	2010-11	2011-12 (Provisional)
Turnover (Rs.Cr)	5529.69	5,710
Profit Before Tax (Rs.Cr)	1,161.15	975
Export (US \$ Million)	41.53	38.45
Turnover Per Employee (Rs.Lakh)	49.5	52.9
Order Book Value (Rs.Cr)	23,600 (as on 1.4.2011)	25,748 (as on 1.4.2012)

HIGHLIGHTS DURING 2011-12

- BEL paid dividend of 216% for 2010-11. BEL has paid 100% interim dividend to its shareholders for 2011-12. This is the 8th consecutive year of interim dividend payment. The interim dividend cheque of Rs.60.68 crores was handed over to the Defence Minister, Mr A K Antony, on March 5, 2012.
- Turnover from indigenously developed products is 81 per cent.
- Supplies to the defence contributed to 73 per cent of turnover as against 80 per cent in 2010-11.
- User trials of Weapon Locating Radar (WLR) were successfully completed.
- On Board Acceptance Test successfully completed for Combat Management System.
- 6 lakhs of Tablet PC were developed and supplied in record time to the Ministry of Rural Development. This is used for conducting Socio Economic Caste Census to identify Below Poverty Line (BPL) families.
- The Prime Minister of Mauritius inaugurated the Coastal Surveillance Radar System in Mauritius during April 2011.
- Major progress in Socio Economic Caste Census (SECC) and National Population Register (NPR).
- Customer Co-ordination Cell was inaugurated at Bangalore. This facility will serve as single point window for complaint registration on wide range of BEL products and maintain status of complaints online.
- E-procurement was implemented during the year.

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SUPPLIES MADE AGAINST MAJOR ORDERS

Some of the significant supplies made against major orders during the year include supply of Akash Weapon System, Central Acquisition Radar, Digital Radio Trunking System, Coastal Surveillance System, Mobile Ground Based Elint, Sonar Systems, Shipborne EW Systems, Passive Night Vision Devices, Strategic Communication Network, Navy Net, T90 Stabilizer Items, Instant Fire Detection Suppression System, Communication Radio Sets – Combat Net Radio, Radio Relay F Low Band, UHF Hand-held Radio, HF Radio Set, V/UHF Transceiver; Tablet PC, Socio Economic Caste Census and National Population Register.

These have been supplied to a wide range of customers from the Army, Navy, Air Force, Defence PSUs, Paramilitary, Ministry of Home Affairs, Ministry of Rural Development and others.

Among the many projects executed during the year, the following merit special attention:

Akash Weapon System: It is a medium-range, surface-to-air missile system, which provides air defence against a variety of multiple air threats. It employs command guidance, real-time multi-sensor data processing and threat evaluation and relies on phased array radar to guide the missile, till intercept.

Central Acquisition Radar (Rohini): It is a 3-D surveillance radar in S band. It has an integrated IFF (Identify Friend or Foe) with co-mounted antenna and has been developed jointly with LRDE for the Indian Air Force.

Digital Radio Trunking System (DRTS): It is a TETRA based 4 channel Radio, operating in the UHF band of 380 to 400Mhz, supporting secure voice, data and message communication to Commanders of Army on the move. Each channel can be trunked into 4 slots, thereby totally 16 slots can be supported. This is interfaced with AREN Gateway and AREN bandwidth manager for interoperability with existing AREN network.

Socio Economic Caste Census: A consortium of Central Public Sector Undertakings (CPSUs) led by BEL and including Electronics Corporation of India Limited and ITI Limited, has been awarded the work of conducting the Socio Economic Caste Census by the Ministry of Rural Development, using the Tablet PC manufactured by BEL. The Census will cover the entire population of approximately 122 crore people. The sale value realized this year is Rs.364 crores.

National Population Register: As part of the National Population Register Project of the Registrar General of India, Ministry of Home Affairs, Government of India, bilingual data entry of the demographic details of each individual across 9 coastal States, 4 coastal Union Territories, Manipur and Nagaland is being undertaken. The population covered will be around 57.62 crores. BEL has completed data digitization of 21 crore records and 50 lakh biometric enrolments for this project. The sale value realized is about Rs.242 crores including supply of biometric hardware.

NEW PRODUCTS

Some of the new products / systems introduced during the year include Coastal Surveillance System, Digital Radio Trunking System, Integrated Anti Submarine Warfare Complex, Tablet PC, Advanced Torpedo Defence System, Upgraded Indigenous Forward Observer Simulator, Electro Optic Fire Control System, Integrated Radio Line Modem for Akash, Remotely Operated Vehicle, Thermal Imaging Camera for Flycatcher Radar and Passive Night Vision Devices.

A closer look at some of the new products:

Coastal Surveillance System (CSS): It is a major system supplied to the Indian Coast Guard. It is a chain of static sensors (Radar, Electro-optics and Meteorological) located along the Indian coast for monitoring the movement of ships, vessels and small boats and which transmit the radar and electro-optic images to the Control Center through a hierarchical reporting system.

Tablet PC: BEL designed and manufactured a Tablet PC for the Ministry of Rural Development (MoRD) for use in enumeration for the Socio Economic & Caste Census. The Tablet PC was designed and developed in a record time of four months. It is a hand-held, low cost computing device. It has a 7" TFT LCD with touch screen, Internet connectivity through Ethernet, USB, MiniSD Card Slot, Headphone Jack and 2 GB Memory card. The next model with enhanced features is under development.

Integrated Anti Submarine Warfare Complex (IAC MOD 'C'): It is a ship-based Fire Control System for control of launch of rockets and torpedoes to engage surface and sub-surface targets. The system interfaces with surface hull-mounted and towed array sonar systems and other shipborne systems like COTS radar, ship data network, ship house-hold data and computes the target's motion parameters and controls the launch of rockets and torpedoes suitably. The system has two consoles for interfacing with ASW Sonar systems and External System Interfaces (ESI) and two Fire Distribution Units (FDU) for rocket launching and one Fire Distribution Unit for torpedo launching.

Advanced Torpedo Defence System (ATDS): It is a ship-based system capable of passive detection of surface and submarine targets and torpedoes and active deception of torpedoes through decoys. The system consists of Sonar sub-system with towed transducer array and on-board electronics for target detection and a fire control sub-system with decoy launchers for expendable decoys. The decoys operate in two modes: active broadband jamming and soft kill approach of decoying the torpedo through simulation of ship signals.

Upgraded Indigenous Forward Observer Simulator (UIFOS): It is used by the Artillery to train their Forward Observers for indirect firing, using the guns of range capabilities from 17 to 40 Km. This is a computer-based system with

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projection displays for presentation of various images. This is interfaced with models of Integrated Observation Equipment and Laser Designator and Range Finder.

Electro Optic Fire Control System (EOFCS): It is used in Naval Offshore Patrol Vehicle (NOPV) and is meant for surveillance, tracking and engagement of sea / air targets. The system is interfaced with the existing gun of NOPV for engagement of targets.

Integrated Radio Line Modem (IRLM): It is a frequency hopping Radio modem, operating in UHF band and integrated with Line modem, as standby for providing redundant data communication at 9.6 Kbps. This system is used for providing highly reliable data communication between elements of the weapon system, viz. 3D-Central Acquisition Radar to Squadron Control Centre, Flight Control Centre to Akash Air Force Launchers of Akash Missile System.

Remotely Operated Vehicle (ROV): This is used for detection of Improvised Explosive Device and diffusion by remote control. The product is engineered based on DRDO technology. This features multiple cameras on-board with pan, tilt and zoom, Six axis Manipulator Arm with versatile geometry, changeable 3 finger and parallel jaw grippers, touch screen and joystick control and stair climbing capability.

Thermal Imaging Camera for Flycatcher Radar: This provides thermal image of targets, which supplements the radar picture of the Flycatcher. It is co-mounted with the antenna for simultaneous viewing of thermal image along with the radar image. The Thermal Imager is a cooled, 3rd Gen camera, operating in 3-5 micrometre band and has been completely developed in-house at BEL.

EXPORT PERFORMANCE

- The range of products exported include Coastal Surveillance Radar System, Radar Finger Printing System, HF communication sets, Radar Warning Receiver, Fitted-up Shelters, Electronic Voting Machines, X-Ray tube parts (like Stators, Casing, electro-mechanical parts) and electronic assemblies.
- The countries to which BEL exported include direct exports to Italy, Israel, Russia, Mauritius, Sri Lanka, Myanmar and Namibia and against offsets to USA.
- BEL has an export order book of US \$ 59.17 million as on April 1, 2012. This includes an Offset order book of US \$ 27.5 million.
- BEL has bagged the Institutional Award for Best Performance in Exports from MoD for 2009-10.
- BEL also received the Award for Outstanding Achievements in Export of Electronic Products from ELCINA-EFY for 2010-11 and the Award for Excellence in Exports (Gold) from Karnataka for 2009-10 and 2010-11.

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MAJOR ORDERS ACQUIRED

During the year 2011-12, the company acquired many orders. Significant among the high value orders acquired are:

- Akash System for the Army – Rs.3,125 crores
- Coastal Surveillance System – Rs.602 crores
- Socio Economic & Caste Census - Rs.542 crores
- Shipborne ESM System (Sanket 'S') - Rs.400 crores
- Shipborne Integrated Electronic Warfare System (Ellora Mk II) - Rs.287 crores
- Tablet PC - Rs.273 crores
- Low Level Light Weight Radar (Aslesha) - Rs.222 crores
- Low Intensity Conflict Electronic Warfare System - Rs.188 crores
- Hand Held Thermal Imager - Rs.132 crores
- Central Acquisition Radar-Revathi - Rs.116 crores
- Airborne Electronic Warfare System (Eagle Eye) - Rs.85 crores
- Thermal Imager Camera for Flycatcher Radar - Rs.79 crores
- Submarine Satcom Terminals for ICNS - Rs.62 crores

NEW INITIATIVES

Business Initiatives

- For the last few years, the Indian Defence Forces are in the process of modernizing their infrastructure and their areas of operations. BEL has been proactively participating in their modernization activities. Development & Engineering teams have been set up to work in the areas of Tactical Communication System, Battlefield Management System, Command Information Decision Support System, Future Infantry Soldier System and High Data Rate Multi-band Software Defined Radio.
- The JVC proposal with M/s Thales in the area of civilian and select defence Radars is under consideration.
- BEL is assessing the opportunities which are likely to be generated as a result of the new telecom policy initiatives. The new telecom policy encourages indigenous design and production of telecom equipment and provides several incentives for the same. BEL is also evaluating approaches to this upcoming business currently wherein some verticals of technologies could be used for defence as well as non-defence products. BEL has signed an MoU with C-DoT for Gpon technology.
- BEL has gained expertise and knowledge in Missile Systems through execution of the Akash Missile System. This expertise will be exploited to address the business opportunities in Missile Systems such as Long Range Surface to Air Missile (LRSAM), Medium Range Surface to Air Missile (MRSAM), Short Range Surface to Air Missile (SRSAM) and variants, for all the three Services of Indian Defence. BEL is the lead integrator for LRSAM for the Indian Navy.

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- BEL is focusing on the opportunities in the areas of offset obligations of vendors in the various RFPs of MoD. BEL has identified contract manufacturing (both Build to Print and Build to Specs) as one of the new areas to address the emerging opportunities with OEMs. BEL is closely working with various major foreign Aerospace and Defence companies to secure business under the mandatory Offset Clause in the RFPs for Indian Defence Procurement. Further, efforts are being made to establish long-term supply chain relationships with global players. BEL has successfully completed supply of First Off Sample for flight panel for Boeing, USA.
- BEL is exploring the Railway business in signal and safety related projects like fog signalling, MSS terminal for train tracking, fail-safe multiplexer, multi-section digital axle counter and level crossing detector. R&D projects have been initiated in this regard.
- BEL is pursuing the Nuclear Power Control & Instrumentation business.
- BEL won the tender for establishing state-of-the-art Traffic Management System for Hyderabad and Cyberabad cities in Andhra Pradesh. The system comprises of 221 signals incorporating camera-based vehicle actuation through virtual loop for traffic control. The entire system will be controlled through a centralised Traffic Command Centre.
- BEL has taken up contract manufacturing of Vacuum Interrupters for Siemens.

R&D Initiatives

- R&D Divisions across all the SBUs and Units of BEL supported by the Central-D&E and two Central Research Laboratories located at Bangalore and Ghaziabad have continued to contribute significantly to the generation of new business through the development of state-of-the-art products with cutting edge technologies.
- R&D Divisions of BEL continued to actively interact with the National Labs, namely, DRDO, ISRO, CSIR, C-DAC, C-DOT and leading academic institutions like IITs, NITs and IISc for the development of specialized indigenous technologies.
- New Products developed by BEL's Central Research Laboratory include Software Defined Radio for airborne application, Ruggedised Handheld Computer for wrist-wearable computing platform, Radio Relays for high data rate application, IP Encryptor for high grade security solutions, IP-based gateways exchange for wired & wireless networks and advanced version of Tablet PC.
- BEL's Central Research Laboratory has also developed Signal processing module for Ground Penetrating Radars; Linearised power amplifier for

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Software Defined Radio; Militarized Wimax base station & CPE; high speed, high security for bulk & IP networks; high speed framework for Tera bit routing; and secure storage solution for tactical networks.

- BEL invested more than 7% of its turnover in R&D during 2011-12.
- Knowledge Management Portal has been created as part of SAP system and has been implemented across the company.
- Around 55 technical papers were published by scientists and R&D engineers of BEL in various national and international journals / seminars / conferences.
- R&D Engineers are motivated by suitably awarding the individuals / team for excellence in in-house R&D efforts, technology development and innovative ideas.
- BEL has filed for 12 Patents in the areas of ASICs, Avionics, Radar Signal Processing, Adaptive Beamforming, Target Recognition and RF Circuits Phase Shifters.
- BEL received the SCOPE Meritorious Award for R&D, Technology Development & Innovation for 2010-11; the SODET award for Technology Innovation – Gold Category and Broadcast Engineering Society Award for Disaster Warning System.

Manufacturing Initiatives

- The **Supercomponents facility is being upgraded** for manufacturing of all Microwave Modules - TR Modules, Homodyne Receivers, Superheterodyne Receivers, Channelised Receivers.
- Infrastructure facility has been created in Bangalore Complex for the manufacture of **10 Million Smartcards**.
- **New R&D Building has been set up at Chennai Unit.**
- **New infrastructure facilities have been set up in Bangalore** to augment production capacity. They include 2,000 sqm space for the Digital Mobile Radio Relay project; 12,000 sqm space for Naval Systems (Integration Building with facilities for testing & integration of Fire Control Systems; Coastal Surveillance System Control Room and Central maintenance facility; and Radar Integration Test facility); 5,000 sqm space for Electronic Warfare & Avionics; 3,500 sqm for Network Centric Systems; 4,500 sqm for the new Management Building and 3,000 sqm for the Central Research Laboratory.
- **A new Pick & Place Machine** has been added in the SMT line of the Automatic Manufacturing Facility at Panchkula Unit which will augment the

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capacity of the line from the current 17,000 components per hour to 35,000 components per hour and help in taking up prototype jobs in addition to production.

- In Hyderabad Unit, **Clean Room Facility of Class 10000** for precision assemblies and two **Anechoic Chambers** have been set up.
- An **SMT line** consisting of Stencil Printer, Pick & Place Machine and Reflow Oven with a capacity of 8,450 operations per hour has been set up at Kotdwara Unit.

Quality Initiatives

- BEL Units at Ghaziabad, Panchkula, Kotdwara and Chennai have received 'Commendation for Strong Commitment to Excel' and BEL's Bangalore Unit as a single entity received 'Commendation Certificate for Significant Achievement' of CII-EXIM Bank Award for Business Excellence 2011.
- All the seven Six Sigma case studies presented by BEL at the National Convention organised by QCFI-Hyderabad bagged 'Par Excellence Award,' the highest ever achieved by any Company in Six Sigma.
- BEL executives won two prizes - one in Manufacturing Category and one in LEAN & DFSS Category in the Six Sigma case study competitions organized by the Indian Statistical Institute, Bangalore.

HR Initiatives

- The company-wide per capita training man days for 2011-12 was 3.52.
- Structured Executive Development Programmes were organised at premier institutes to meet the training needs of executives at various levels.
- A 3-months' residential Marketing programme followed by a one-month project was organised for 21 executives.
- To equip senior executives with leadership competencies, programmes on 360-degree Feedback and Leadership were conducted.
- 'Leading the Change' programmes were organised to align the thinking and attitude of senior executives with that of a global organisation.
- 419 executives attended the Emotional Intelligence programme, aimed at helping individuals manage emotions and improve their awareness of self and others.
- Training programmes on quality, safety and technical subjects were organised for non-executives at the Units.

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- 117 executives attended the Outbound Learning programme, which reinforced the advantages of teamwork.
- Competency Awareness Workshops were conducted to familiarise executives with the BEL Behavioural Competency Model.
- Advanced Management Programme was organised for General Managers with an international component.
- Strategy Building and Competitive Intelligence programme was organised for 57 senior executives.
- Structured Quality programmes were introduced during the year.
- Three one-day Development Oriented Performance Review and Feedback workshops were conducted in 2011-12.
- Various technology programmes were organised to enhance the knowledge of engineers.
- BEL received the 'Organization with Innovative Practices, 2012' HR Leadership Award from the Institute of Public Enterprises.

Environmental initiatives

- BEL has been maintaining a clean and green environment at all its nine Units, which are all ISO 14001 certified. Clean surroundings, green environment, clean technology, stringent pollution control measures, waste water treatment, zero effluent discharge, rainwater harvesting, energy conservation, water conservation, systematic management and disposal of hazardous and other forms of wastes and several other endeavours have become a part of the well-established Environmental Management System. Bangalore Complex and Ghaziabad Unit are certified for OHSAS 18001: 2007.
- Generation of wind energy through two Wind Energy Power Plants at Davanagere (2.5MW) and Hassan (3 MW) resulted in 104.6 lakh units of energy wheeled during 2011-12, resulting in a reduction of Rs.74 lakhs in the energy bill and an equivalent reduction of 9,728.66 tons of CO₂ emission.
- It is proposed to set up another Wind Energy Power Plant with a capacity of 10 MW during 2012-13, with an expected generation of 80 lakh units of energy per annum.
- BEL is establishing grid interactive Solar Power of 30 Kilo Watt at the New Management Building near the Bangalore factory. The Solar Power System was developed by BEL.
- Disposal of scrapped and hazardous material is done through e-auction.

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- Transport services at Bangalore Complex have been outsourced to BMTC.
- Municipal solid waste is sent for scientific disposal.
- For new buildings, the Green Building Concept is introduced at the design stage itself with natural light harvesting; wind-powered roof extractors for internal cooling; PUF-insulated roofing sheets to reduce the heat load; orientation of buildings to avoid heat loss due to direct sunlight; variable refrigerant volume system to optimize air conditioning; Integrated Building Management System (IBMS); Lighting Management System with energy-efficient lighting; and solar power on rooftop.
- The centrifugal chiller used for air conditioning at the Bangalore factory has been replaced with an energy efficient screw chiller.
- There are 280 streetlights inside the Bangalore factory, which use 150W and 250W lamps. 76 of the 250W streetlights have been replaced with 70W LED streetlights over the past two years, leading to a drastic reduction in the energy consumed for factory streetlighting.
- BEL has received the following awards for its Environmental Initiatives: Certificate of Merit for Excellent Energy Conservation from the Union Ministry of Power for 2010-11; Certificate of Merit for Energy Conservation from KREDL, Government of Karnataka, for 2009-10.

AWARDS

- BEL received the Dun & Bradstreet-Rolta Corporate Award under the 'Electrical and Electronic Equipment' category for the year 2010.
- Mr I V Sarma, Director (R&D), received the Association of Old Crows (AOC)'s award for the 'Best Contributor in Electronic Warfare (EW) from Indian PSUs.'
- Two of our employees have received the prestigious Prime Minister's Shram Ratna and Shram Devi awards for 2008 and 2009, respectively.
- BEL achieved Dun & Bradstreet Rating 1, the highest level of creditworthiness as on July 20, 2011.
- BEL received the Gold prize in the Defence sector category of the DNA-Dainik Bhaskar India Pride Awards (2011) for Excellence in PSUs.
- BEL received the Raksha Mantri's awards for 2009-10 in the categories of Best Performance in Exports, Best Performing Division, Import Substitution and Design Effort & Innovation.

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- BEL was conferred the PSE Excellence Award 2011 for R&D, Technology, Development & Innovation by the Department of Public Enterprises (DPE), Government of India, and Indian Chamber of Commerce in the Navratna category.
- SCOPE (Standing Conference of Public Enterprises) Meritorious Award in the categories of Corporate Governance for the year 2009-10.
- BEL won the Best Employer of Persons with Disabilities National Award for 2011.
- One of our employees received the 'Best Woman Employee Award' from the Forum of Women in Public Sector for 2011-12.

CORPORATE SOCIAL RESPONSIBILITY

BEL's Corporate Social Responsibility (CSR) Policy has laid down the following broad areas for providing benefit to the stakeholders: Health Care, Education, Rural Development, Environment Protection and Conservation of Resources. Some of BEL's CSR initiatives during 2011-12 were:

- Providing Solar Street Lights and Home Lighting Systems to cater towards area lighting and internal lighting requirements of Vidya Vanam, a school for Tribal Children in Coimbatore.
- Construction of Class Rooms and provision of furniture for Government High School, Aralumallige Gate, Doddaballapur, and Government High School, Bijjavara, Devanahalli, Bangalore Rural.
- Providing infrastructure support including water tank, furniture, writing boards, book shelves, water coolers for Government School, Kotdwara.
- Equipment for the orthopedically challenged like X-Ray Machine, Trauma Ambulance, Operation Theatre, Portable Ventilator and equipment for Rehabilitation to the Saket Institute of Orthopedically Challenged, Panchkula.
- Equipment for TB Clinic and Medical Centre at the Ramakrishna Mission Hospital, New Delhi.
- Computer Lab equipment and furniture for Mechanical, Civil and Communication Labs at the Government Polytechnic College, Machilipatnam.
- Infrastructure support to Shankara Cancer Hospital and Research Centre which includes providing Blood Bank deep freezer, voltage stabilizer, Plasma storage cabinet, tesconic tube seater, tube stripper, RH view box, lab for bacteriological incubation at the Sri Shankara Cancer Foundation, Bangalore.

OUTLOOK FOR THE FUTURE

This year the company will work for many strategically important projects in the areas of Weapon Systems, Electronic Warfare Systems, Shipborne systems, Coastal Surveillance System, Network Centric Systems, Night Vision Devices, Satcom and Communications. The company has set a turnover target of Rs.6,300 crores for 2012-13.

Apart from strengthening its in-house R&D, the Company is also laying greater emphasis on working closely with DRDO labs, other research institutions and academic institutions for development of new products and systems. Some of the prominent R&D programmes in the pipeline are the Tactical Communication System (TCS), Battle Field Management System and Future Infantry Soldier As System (FINSAS).