



**Dr. Nalin Shinghal**  
Chairman & Managing Director

## Letter to Shareholders

Dear Shareholders,

It is an honour and a privilege to present the 58<sup>th</sup> Annual Report of the company to our valued shareholders. I am happy to share that your company is back in black after two years of loss.

The past year has been challenging, with the first quarter severely impacted by the devastating second wave of COVID-19 affecting operations of manufacturing/EPC industry across the country. Global supply chain disruptions due to COVID-19 restrictions, as well as geopolitical developments in the fourth quarter leading to drastic increase in input costs, particularly steel, CRGO, CRNGO, amongst others, added to these challenges. However, sustained demand during the year from both private and government sectors as well as improved industrial production activity has helped economic recovery with India's GDP growing by 8.7% during FY 2021-22—the highest amongst the major economies of the world.

Despite these challenging circumstances, sustained efforts made by the company over the past two years towards reorientation of the company's operational ideology, from 'Revenue Centric' to 'Project Centric', business diversification, and prudent financial management, have started bearing fruit, resulting in the highest erection tonnage at project sites in the past five years, highest ever project closures, lowest number of outstanding punch points, highest ever order booking in nuclear power and defence businesses, signing of highest ever number of long term spares supply and service agreements, as well as reduction in other expenses to decadal lows.

### Key performance highlights

- Your company achieved revenue from operations of ₹21,211 Crore in FY 2021-22, an increase of 23% as against ₹17,308 Crore in the previous year

- The company made a profit after tax (PAT) of ₹410 Crore in FY 2021-22 against a loss of ₹2,717 Crore in the previous year
- The trade receivables are at their lowest in the last 10 years, at ₹6,229 Crore against ₹7,213 Crore, in the previous year. The cash & bank balance (net of short term borrowings) has also improved to ₹2,409 Crore from ₹1,868 Crore in the previous year
- Your company secured orders worth ₹23,693 Crore amidst intense competition and subdued market conditions
- The company continues to retain its leadership position in nuclear power segment and emission control business. BHEL received the largest ever orders in nuclear segment under fleet mode, valued at over ₹12,000 Crore.
- The company received the first order for two upgraded SRGMs (main gun on Indian warships) for which BHEL is the sole supplier in the country
- Your company has booked the maiden order for flexible operation of thermal power plant, a requirement in future years for grid stabilization considering the increasing share of renewables in the energy mix. This order is under advanced stage of execution. The company also received the maiden order for propulsion electrics of 'Vande Bharat Express' (Trainsets), marking BHEL's entry into semi-high speed rail segment.
- With over 150 MW floating solar power plants commissioned till date including the country's largest floating solar power plant at Ramagundam, BHEL has become the largest EPC player in floating solar segment in the country with design and engineering capabilities to address a range of complex site requirements including lakes, ponds, canals and reservoirs, amongst others. Such solutions provide the twin benefit of clean electricity generation as well as conserving water by reducing evaporation.
- During the year, your company achieved a capacity addition/ synchronization of 3,305 MW in utility power projects segment

As a responsible corporate citizen, your company extended vital support to not just its employees and their families but also to various stakeholders and society at large during the devastating second wave of COVID-19 pandemic. The company supplied over 80,000 cylinders of medical grade oxygen supporting

almost entire Uttarakhand, western UP, parts of NCR and the city of Bhopal, which helped in saving many lives. Vaccination drives were carried out across manufacturing units/ divisions/ project sites and oxygen generating plants based on CSIR-IIP technology were developed and supplied to hospitals, amongst many other initiatives. Your company also launched a 'COVID Assistance Scheme' for providing aid & support to the dependents of employees who unfortunately succumbed to COVID-19.

### Going forward

The recent geopolitical events and supply chain disruptions have brought into sharp focus the need for self-reliance as well as need to swiftly set up an ecosystem for indigenous design, development and manufacturing of a wide range of equipment/ systems to meet national requirements. The AatmaNirbhar Bharat initiative of Government of India, with focus on Making in India for India as well as Making in India for the World, is providing huge opportunities to Indian manufacturing industry, especially in critical sectors like Energy, Defence, Aerospace, Transportation, etc.

The rise in crude oil prices, as well as the recent energy crisis across Europe has further highlighted the importance of energy security for the nation, and underlined the need for India to rely on utilizing its vast coal reserves for reducing dependence on hydrocarbon imports. Technologies for cleaner use of coal are therefore likely to gain traction in the coming years. To attain the country's net zero targets, nuclear power is expected to come to the forefront in the near future. Additionally, hydro and emission control equipment segments will continue to offer business, albeit in an intensely competitive market. Demand for transmission related products and systems is expected to continue growing—irrespective of the source of power generation. Modernization program of Indian Railways and Defence sectors will further provide new growth opportunities in the future.

In this emerging situation, cost competitiveness with timely and high quality delivery/ execution will be the key to survival in the short and medium term, while the company's engineering and technological prowess will be the key differentiators for long term sustainable growth.

The company's Strategic Plan 2022-27 therefore focuses, in the short term, on turning the company around through initiatives and enablers for timely, cost effective and quality project execution as well as creating an order book pipeline by enhancing its

market share in traditional business, while intensifying diversification initiatives to create a foothold in new businesses and, in the long term, building capabilities as well as markets for areas such as defence, aerospace, urban mobility including rail transportation, as well as for futuristic businesses based on emerging technologies such as carbon capture, hydrogen value chain, additive manufacturing, IIoT based solutions, etc.

Clearly, India with its huge coal reserves and paucity of oil & gas reserves, will have no option but to continue to utilize coal to fuel its economic growth. At the same time, the country is acutely conscious of its role and contribution required as a responsible citizen of planet earth and has made major commitments in this direction in COP 26. In this situation, technologies for cleaner use of coal need to take center stage.

The Advanced Ultra Supercritical (AUSC) technology successfully developed by the company in collaboration with NTPC and IGCAR provides best-in-class efficiency in coal-based power generation and has the potential to reduce CO<sub>2</sub> emissions by 20% as compared to subcritical technology-based power plants. This gains significance considering over 145 GW of installed capacity in the country is based on subcritical technology of which over 45 GW is more than 20 years old. Coal gasification is another technology in focus on account of the potential to convert syngas derived from coal into a variety of chemicals which are currently imported, as well as to power IGCC power plants. Your company's most significant technology development effort in recent times resulted in the successful demonstration of indigenously developed 0.25 TPD coal to methanol plant—first of its kind using high ash Indian coal, at Hyderabad in the last year. A dedicated team is now working to upscale and commercialise this technology in a time bound manner which will enable your company to capitalize on the upcoming opportunities under the Government of India's National Coal Gasification Mission to achieve 100MT coal gasification by 2030. Your company is in discussions with leading coal and lignite suppliers of the country for setting up such plants in the country.

Carbon capture is another emerging area which is expected to gain traction with continued use of coal based technologies. The company is positioning itself appropriately for the future, to address this opportunity.

BHEL continues to be a leader in the emission control business, with orders booked for 66 FGDs and 11 SCRs. Concerted efforts have been made to improve the project execution timelines as well as economics. These

efforts include engineering optimization, indigenisation of critical FGD equipment, and deployment of Integrated Project Management System and Site Data Digitization which had already been implemented for major power projects over the past year.

BHEL has been a pioneer in the Indian nuclear power sector and is the only company to be part of all the three stages of India's nuclear program. As the sole indigenous supplier of Nuclear Turbines and Generators, BHEL has supplied 14 TG sets to PHWR technology-based nuclear power plants, with the balance 4 being imported from Russia & Canada many decades ago. With nuclear power gaining importance in the coming years, the company is striving to strengthen and expand its position in design, development and manufacture of nuclear equipment meeting a range of national requirements.

Indian Railways (IR) have initiated one of the most important modernization programs in its history with a large scale shift from conventional trains to trainsets as well as procurement of high HP locos and modernization of signaling systems. BHEL has been an important supplier to IR with a substantial share of the locomotives and EMUs carrying a range of BHEL equipment. The company has received its first order for supply of underslung propulsion equipment for Vande Bharat Trains and is making focused efforts to maintain its leadership position, in rail transportation field, with technology and manufacturing tie-ups with major international and national players in this area

In the defence sector, your company has been supplying a wide range of specialized equipment and systems for various applications for the past five decades. Your company has taken up indigenization initiatives for upgraded SRGM—main gun on Indian warships, heat exchangers for fighter aircrafts and helicopters, permanent magnet motor technology-based products, and propulsion systems for strategic vessels and warships, amongst others. It has recently signed an MoU with a leading international OEM for manufacturing state-of-the-art Electric Propulsion System for Indian Navy ships, which are more efficient and offer several tactical advantages. With the recent geopolitical developments creating a number of challenges for the defence forces in procurement and operation of various equipment, your company has come to the fore for indigenous development and supply of various spares/ components.

To address the opportunities in upcoming areas such as EV chargers and hydrogen value chain, dedicated

business groups are making concerted efforts with all stakeholders such as government agencies, customers, and research institutes, etc., for building partnerships & ecosystem in these relatively nascent areas.

Your company is also looking to indigenize various equipment imported by the company as well as engineering imports of the country. During the year, several equipment used in FGD systems have been successfully indigenized. Developmental orders have been received in the Oil & Gas segment, displaying the company's strong resolve towards contributing to AatmaNirbhar Bharat initiative of the Government of India.

BHEL has pioneered the Quality movement in the country and a number of initiatives have been taken in the past two years to regain this position under the overarching Quality First initiative. These include enhancing Quality System maturity as per "Quality 360" model, best practices sharing through Quality Conversation "Qonverse", amongst others. Continuous and sustained focus on quality is reflected in HEEP Haridwar and HEP Bhopal receiving coveted Platinum recognition, while HPBP Trichy and HPEP Hyderabad receiving Gold Plus recognition under "CII EXIM Bank award for Business Excellence 2021".

Human resources are the most important contributor to the success of any organization and your company continues its efforts towards improving employee skills, engagement and productivity as well as making the workforce agile in the ever changing business environment. Various initiatives underway include focus on manpower development for upgrading skills and capabilities of its executives, supervisors and workers, assessment & development centers for leadership development, deployment of e-Modules for online training, etc.

I am happy to say that the company is working in a focused and targeted manner to overcome challenges due to liquidity issues resulting from adverse payment terms and competitive pricing in old projects under execution through improved project execution, tight financial control, focus on quality and development of manpower resources and at the same time, working towards its vision of becoming a Global Engineering Enterprise by capitalizing on emerging opportunities in traditional as well as new business areas.

### Acknowledgement

The success of these efforts is possible only through constant support and encouragement of various stakeholders. I would like to express sincere thanks and gratitude to our valued customers, as well as business partners for reposing their confidence, our employees for their engagement, passion and perseverance, members of the Board for their guidance, and you, our esteemed shareholders for support and trust in the company. I would like to thank various Ministries of Government of India, particularly the Ministry of Heavy Industries, for their valuable guidance and support in all our endeavours.

I am confident that multiple initiatives currently under implementation will help us build a strong base for long-term sustained and profitable growth of your company.

With best wishes,



**(Dr. Nalin Shinghal)**  
Chairman & Managing Director

New Delhi  
September 4, 2022



# Leadership at BHEL

Board of Directors as on 25.08.2022

## Functional Directors



**Dr. Nalin Shinghal**

Chairman & Managing Director



**Shri Subodh Gupta**

Director (Finance)



**Ms. Renuka Gera**

Director  
(Industrial Systems & Products)



**Shri Upinder Singh Matharu**

Director (Power)  
Addl. Charge-Human Resources  
(w.e.f. 22.04.2022)



**Shri Jai Prakash Srivastava**

Director  
(Engineering, Research & Development)

## Government Directors/ Part-time Official Directors



**Shri Shashank Priya**

Special Secretary  
& Financial Adviser  
Ministry of Commerce  
& Industry



**Shri Vijay Mittal**

Joint Secretary  
Ministry of Heavy  
Industries

## Independent Directors



**Shri Raj Kamal Bindal**  
Independent Director



**Shri Manish Kapoor**  
Independent Director



**Dr. Raj K Agarwal**  
Independent Director



**Dr. K Sivaprasad**  
Independent Director



**Dr. Lekhasri Samantsinghar**  
Independent Director

# Leadership at BHEL

Management Team  
as on 25.08.2022





					
<b>P Sudhir Babu</b> GM I/c (PE&SD), Hyderabad	<b>T S Murali</b> GM I/c (CQ&BE), Addl. charge CTM, New Delhi	<b>Rajeev Singh</b> GM I/c (BAP), Ranipet	<b>Pankaj Jain</b> GM I/c (PCSG), Noida	<b>Meena Kesri</b> GM I/c (TBG), Noida	<b>Pushpendra Kumar Saxena</b> GM I/c (PS-HQ & PS-PMG), New Delhi
					
<b>Amit Kerketta</b> GM & Head (CAPEX & SS&P), New Delhi, Addl. Charge – FSIP, Jagdishpur	<b>B Balasubramanian</b> GM & Head (NBG), Noida	<b>T S Varadarajan</b> GM & Head (HPEP), Hyderabad, Addl. Charge- HPVP, Vizag	<b>K Ravishankar</b> GM & Head (Corp R&D), Hyderabad	<b>M Thiruneelakandan</b> GM & Head (Corp Finance), New Delhi	<b>Sanjeev Kumar Kak</b> GM & Head (ROD), New Delhi
					
<b>Narendra Kumar</b> GM & Head (CPPP & PMG), Addl. Charge-DABG, New Delhi	<b>Sushil Kumar Baveja</b> GM & Head (HEP), Bhopal	<b>Vinay Nigam</b> GM & Head (TP), Jhansi	<b>Arumoy Mukherjee</b> GM & Head (PS-WR), Nagpur	<b>Praveen Kishore</b> GM & Head (PS-ER), Kolkata	<b>K S Murthy</b> GM & Head (COM), New Delhi
					
<b>B V N Kishore</b> GM & Head (PS-TS), Noida	<b>M Isadore</b> GM & Head (Corp HR), New Delhi	<b>Bani Varma</b> GM & Head (EDN), Bengaluru & TBSG, New Delhi	<b>Surojit Mandal</b> GM (PS-NR), Noida & Project Director HPCL, Vizag	<b>Jitendra Das</b> GM (MII), Noida & CFP, Rudrapur	<b>Sandeep Kataria</b> GM (Corp. Internal Audit), New Delhi
					
<b>Rajeev Kalra</b> Company Secretary					



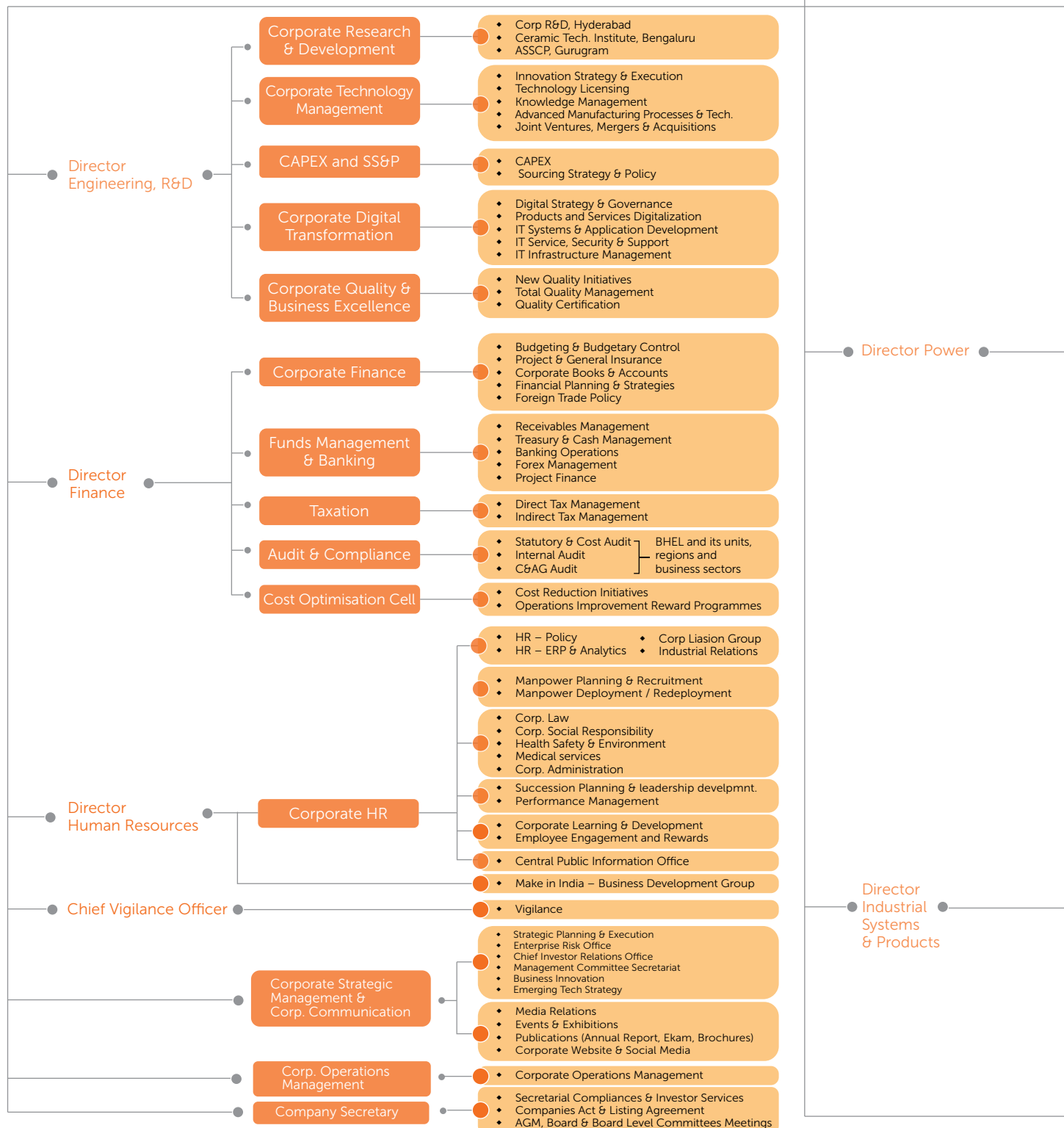
# LEADERSHIP AT BHEL

CORPORATE ORGANISATIONAL STRUCTURE (As on 25.08.2022)

## BOARD OF DIRECTORS

### CHAIRMAN & MANAGING DIRECTOR

### COMMITTEE OF FUNCTIONAL DIRECTORS



## MANAGEMENT COMMITTEE

- ♦ PS – Marketing (Thermal & Gas)
- ♦ Coal to Chemicals
- ♦ NTPC Business Group
- ♦ Nuclear Business Group
- ♦ Hydro Business Group
- ♦ Project Management Group
- ♦ Technical Services
- ♦ Project Closure Synergy Group
- ♦ Project Engineering Management
- ♦ Spares & Services Business Group
- ♦ Heavy Equipment Repair Plant ,Varanasi
- ♦ Industrial Systems Group, Bengaluru
- ♦ PS Northern Region, Noida
- ♦ PS Southern Region, Chennai
- ♦ PS Eastern Region, Kolkata
- ♦ PS Western Region, Nagpur
- ♦ PS – HQ, MSX, HR

- ♦ Captive Power & Process Plants
- ♦ IS – Project Management Group
- ♦ Regional Operations Division (Transmission & Electrical products)
- ♦ Transportation Business & Systems Group
- ♦ Defence & Aerospace Business Group

- ♦ Transmission Business Group
- ♦ Project Engg & Systems Division

- ♦ Energy Storage Solutions Group
- ♦ Mechanical Products
- ♦ New Business Areas

- ♦ International Operations

Bhopal

- ♦ Heavy Electrical Plant

Haridwar

- ♦ Heavy Electrical Equipment Plant
- ♦ Central Foundry Forge Plant

Hyderabad

- ♦ Heavy Power Equipment Plant

Tiruchirapalli

- ♦ High Pressure Boiler Plant, Tiruchy
- ♦ Seamless Steel Tube Plant, Tiruchy
- ♦ Industrial Valves Plant, Goindwal
- ♦ Power Plant Piping Unit, Thirumayam & Piping Centre, Chennai

Ranipet

- ♦ Boiler Auxiliaries Plant

Bengaluru

- ♦ Electronics Division, Bengaluru
- ♦ Electronics Systems Division, Bengaluru
- ♦ Electrical Machine Repair Plant, Mumbai
- ♦ Solar Business Division, Bengaluru <sup>2</sup>

Jhansi

- ♦ Transformer Plant

Jagdishpur

- ♦ Fabrication, Stamping & Insulator Plant <sup>3</sup>

Rudrapur

- ♦ Component Fabrication Plant <sup>1</sup>

Visakhapatnam

- ♦ Heavy Plates and Vessels Plant

- 1 : Report to Director (Human Resources)
- 2 : Report to Director (Industrial Systems & Products)
- 3 : Report to Director (Engineering, R&D)

# YEAR AT A GLANCE 2021-22



01

Total outstanding  
order book  
**₹1,02,500 Crore**



02

Focus on **developing non-coal business**-  
highest ever orders in  
Nuclear



03

**194 GW+ power  
generating  
capacity** installed  
in India and abroad  
till date



04

**Leadership in  
Core Business-**  
**Single largest  
market share** in  
emission control  
equipment business  
in the country



05

**New Horizons**-installed  
**0.25 TPD** demonstration  
plant for methanol  
generation using high  
ash Indian Coal with  
indigenously designed  
gasifier technology



06

BHEL has been  
registered as seller in  
GeM portal and has  
helped secure orders  
worth **₹123 Crore**  
from online channel



# YEAR AT A GLANCE 2021-22



07

Secured largest ever Nuclear order for **supply of 6x700 MW TG** island package on EPC basis from NPCIL under fleet mode



08

New Business Model- **Eight LTSSA** proposals finalized for spares procurement in a span of two years



09

26.8 Million Units of power generated through more than **29 MWp in-house renewable energy systems**



10

Over **₹230 Crore invested** in company's assets for modernisation and upgradation of facilities, debottlenecking of production process



11

Approx. **₹700 Crore** invested in R&D and innovation; **516** patents and copyrights filed; **5,208** Total Intellectual Capital

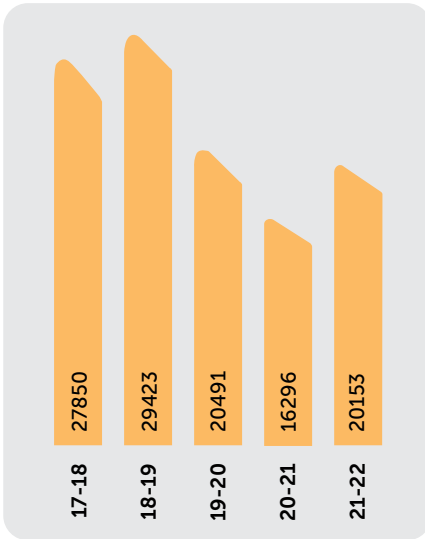
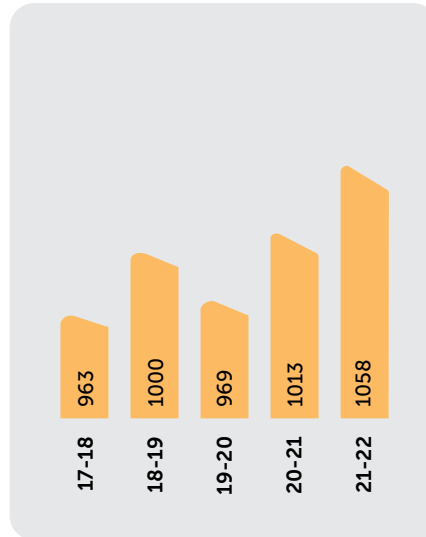
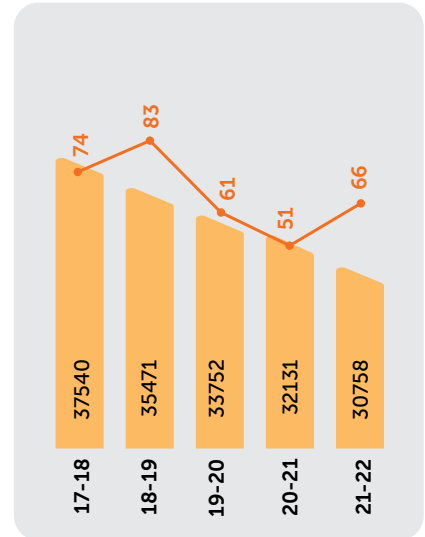


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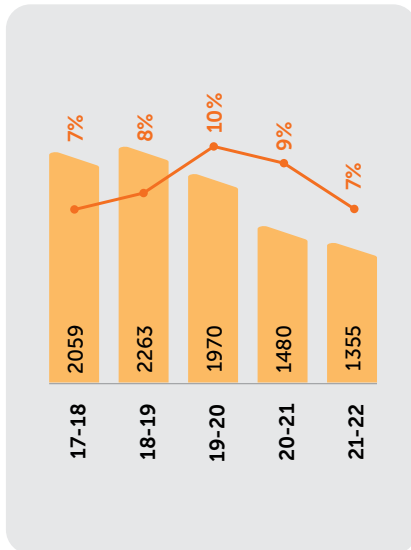
Human capital base: **30,758; 9000+** engineers

# YEAR AT A GLANCE

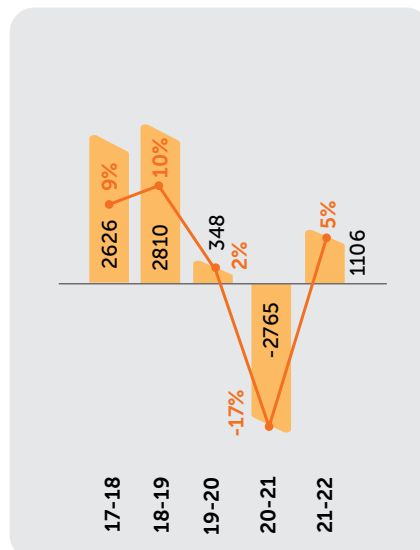
(Figures are in ₹ Crore unless otherwise stated)

**REVENUE**

**OTHER OPERATIONAL INCOME**

**MANPOWER (NOS) AND REVENUE PER EMPLOYEE (₹ Lakh)**


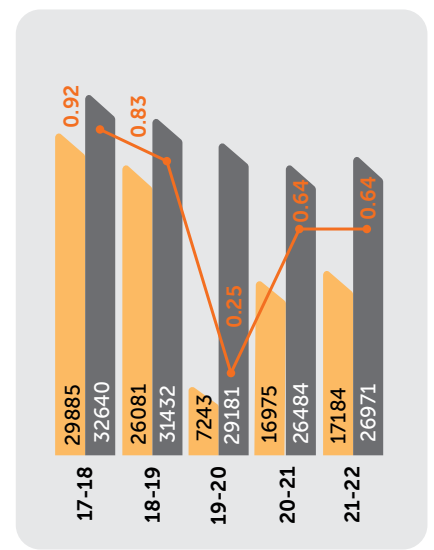
TOTAL (Nos) REVENUE PER EMPLOYEE (₹ Lakh)

**OTHER EXPENSES TO REVENUE %**


OTHER EXPENSES % OF REVENUE

**EBIDTA**


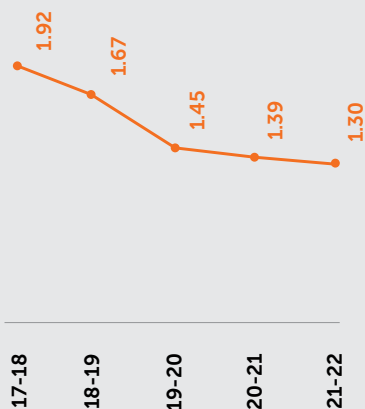
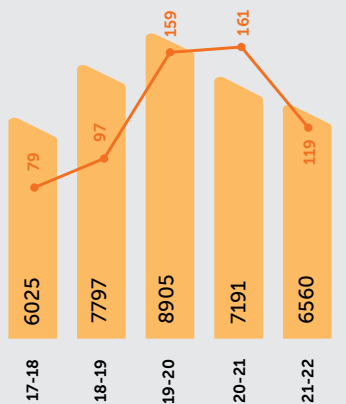
EBIDTA EBITDA AS % OF REVENUE

**MARKET CAPITALISATION TO NET WORTH**


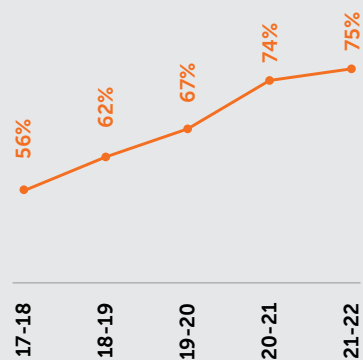
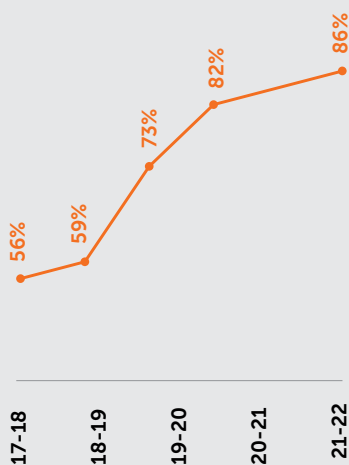
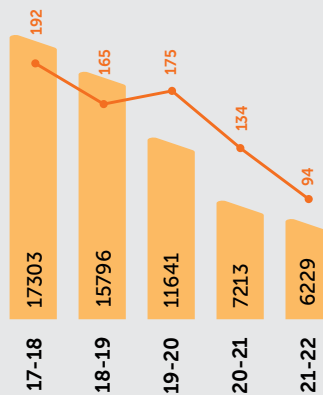
MARKET CAPITALISATION NET WORTH MARKET CAPITALISATION TO NET WORTH

# YEAR AT A GLANCE

CURRENT RATIO

INVENTORY POSITION ₹ CRORE  
AND NO. OF DAYS

INVENTORY INVENTORY IN NO. OF DAYS

% LIQUIDATION OUT OF TOTAL POTENTIAL  
(Opening net Trade receivable + Current year Net billing)LIQUIDATION OUT OF CURRENT  
YEAR NET BILLING %TRADE RECEIVABLES (₹ CRORE)  
AND NO. OF DAYSTRADE RECEIVABLE TRADE RECEIVABLE  
(IN NO. OF DAYS)