

Our Credentials

SEBI Registered RA: INH000015783

www.trinetraassetmanagers.com

HBL

BOM: 517271 | NSE: HBLENGINE



No	Particular	No
1	<u>Investment Rationale</u>	3
2	<u>Business Overview</u>	4
3	<u>Industry Overview</u>	5
4	<u>Product Portfolio</u>	10
5	<u>Revenue Analysis</u>	13
6	<u>Value Chain</u>	18
7	<u>Growth Drivers</u>	23
8	<u>Return Matrix</u>	24
9	<u>Fund flow</u>	30
10	<u>Table of Debt</u>	31
11	<u>Table of Equity</u>	31
12	<u>Shareholding Pattern</u>	32
13	<u>Acquisition Table</u>	33
14	<u>Competitive Advantage</u>	33
15	<u>Management</u>	34
16	<u>Risk</u>	35
17	<u>Industry master-Sheet</u>	36
18	<u>Annexure</u>	40
19	<u>Valuation Method's</u>	42

Diversified Growth Engine with Strong Order Visibility
Initiating Coverage with **BUY** | Target Price: **₹890**

HBL Engineering is emerging as a high-conviction investment opportunity, uniquely positioned at the crossroads of India's railway modernization, defence indigenization, and infrastructure push. One of the company's most powerful value drivers is its role as the approved supplier for Kavach 4.0 India's indigenous Automatic Train Protection (ATP) system. With railway safety becoming a national priority, Kavach is poised to see widespread rollout across India's rail network. **The core market opportunity spans 36,000 km of railway tracks, translating to a ₹18,000 crore market at an estimated ₹50 lakh per km.** But that's just the beginning. When factoring in applications across locomotives, signalling, and station systems, **the total addressable market swells to ₹25,000–28,000 crore.** Even with a **25% market share, HBL could unlock ₹7,000 crore in revenues from this segment alone offering strong, visible growth over the next several years.**

What makes this opportunity even more compelling is **HBL's plan to take Kavach global.** Once deployment across the **first 10,000 km in India** is achieved, the company aims to enter developed markets like the **US and Europe**, where **ATP systems cost nearly ₹5 crore/km about 10x India's pricing.** This opens the door for massive revenue expansion by leveraging HBL's cost advantage and proven technology. Additionally, emerging markets in **Africa** are showing demand for affordable, effective railway safety systems, which could serve as a natural extension of HBL's global strategy.

Beyond Kavach, the company is steadily gaining ground in other high-growth areas. **Its defence batteries, marine battery systems, and electronic fuses are scaling up,** supported by strong R&D and **client wins.** The industrial battery business is also aligned with key infrastructure trends 5G tower deployment, data centres, and EV charging networks all of which require reliable power backup solutions. HBL's railway electronics portfolio, covering safety and communication systems, further strengthens its positioning as a full-stack railway tech partner. On the export front, its defence-grade product quality, proprietary designs, and competitive pricing are helping it gain traction with international customers turning exports into a key long-term growth lever.

Financially, HBL is entering a robust phase. The business enjoys strong cash flows, limited capex requirements, improving return ratios, and efficient working capital management. These fundamentals give it the ability to scale without stress. With a scalable, high-margin product portfolio and presence across sectors with long-term visibility defence, energy storage, railways, and e-mobility the company is well-positioned to ride multiple secular trends.

At the current market price, the stock trades at around 20x P/E on FY28E earnings, which leaves room for meaningful upside. We initiate coverage with a BUY rating and a target price of ₹890, based on a 30x FY28E P/E multiple. This premium is justified by the company's unique positioning, technological edge, and multi-decade growth potential.

In essence, HBL is far more than just a battery or railway equipment manufacturer it's evolving into a strategic electronics and defence-tech platform. With tailwinds from infrastructure upgrades, defence spending, export demand, and global railway modernization, HBL offers a rare mix of downside protection and outsized long-term upside making it a compelling bet for investors looking to ride India's next wave of transformation.

HBL Engineering Ltd (formerly HBL Power Systems Ltd) is a Hyderabad-based engineering company **founded in 1977 by Dr. A.J. Prasad**, initially focusing on developing indigenous battery technology for the Indian Air Force. Over the years, the company expanded its product portfolio to include batteries for defence applications and industrial uses, becoming a leading niche battery supplier in India. A significant milestone occurred **in 2000 when HBL Limited merged with SAB NIFE Power Systems Ltd and Pinaki Technologies Ltd, leading to the formation of HBL NIFE Power Systems Ltd**. This merger aimed to complement the existing product range and establish a manufacturing facility for switch mode rectifiers in Andhra Pradesh. **In 2006, the company was renamed HBL Power Systems Ltd**, reflecting its broader product portfolio. Most recently, in **November 2024, the company rebranded as HBL Engineering Ltd to signal its diversification beyond batteries**.

HBL operates through three primary segments: **Industrial Batteries, Defence & Aviation Batteries, and Electronics**. The **Industrial Batteries segment** includes lead-acid batteries, nickel cadmium batteries, and pure lead thin plate batteries, serving sectors such as telecom, uninterruptible power supply, and railways. The **Defence & Aviation Batteries segment** offers nickel cadmium sintered plate batteries, silver batteries, thermal batteries, and submarine batteries. The **Electronics segment** is organized into two divisions: Railway Electronics and Electric Mobility. A flagship product is the Train Collision Avoidance System (TCAS), branded “**Kavach**” by Indian Railways, addressing railway safety issues. The Electric Mobility division focuses on batteries and electronics for electric vehicles.

Key Milestones Year	Achievements
2015	- Developed PLT batteries for telecom, DG sets, and Arjun MBT; received export orders from France. - Introduced Ni-Cd batteries for metro and BLDC motors for e-rickshaws.
2016	- Supplied batteries to Reliance data centres, Siemens (Germany), and Indian Metro. - Initiated TCAS trials and submarine battery approvals; began defence exports.
2017	- Shipped first TCAS-certified backup system to Siemens; received Scorpene submarine battery approval. - Became India’s largest aircraft battery manufacturer.
2018	- Commissioned first indigenous Train Management System (TMS); began defence fuse development. - Supplied batteries for BAE Hawk Mk132 and developed e-vehicle battery prototypes.
2019	- Successfully tested TCAS for 160 KMPH and expanded TMS across 28 stations. - Bid for submarine batteries and continued artillery fuse supply
2020	- Won first 350 km TCAS order; received large data centre and thermal battery contracts. - Developed battery systems for defence, EVs, and transit applications.
2021	- Absorbed lithium-ion tech from NSTL; crossed 100 MW PLT battery deployment. - Supplied submarine, torpedo, and thermal batteries; began e-bus retrofit kit development.
2022	- Order book rose from Rs500cr to Rs800cr a shift toward specialized segments - Began Rs1.1bn capex for lithium-ion cell and EDT plant in Mahbubnagar. - TCAS (KAVACH) rollout accelerated; HBL among 3 approved vendors for Rs15000cr opportunity (30,000 km).
2023	- HBL is the only producer in India and the second in the world, based on in-house development of technology - for Pure Lead Tin batteries - One of two suppliers in India which have been supplying batteries for Torpedo Propulsion to the Indian Navy
2024	KAVACH Execution Started
2025	Begin deliveries of Kavach System (Version 4.0) against total accumulated order book of Rs3,763cr

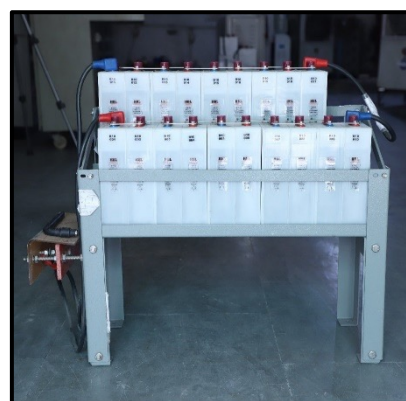
HBL Engineering Ltd



Industrial & Specialized Batteries

Nickel Cadmium (NiCd) Batteries:- Nickel-cadmium batteries serve niche applications in aerospace, defense, and industrial backup power (e.g. aircraft starting, emergency power). The global NiCd battery market was about USD 1.08 billion in 2024, forecast to reach USD 1.71 billion by 2037 (3.6% CAGR). Key applications include aircraft power, telecom backup, and industrial UPS. Major NiCd manufacturers are few: Alcad (UK) leads, followed by HBL Engineering (India) as the world's second-largest NiCd maker. Other players include SAFT (France),

MEI Telecom (USA), Furukawa (Japan) and Ever Exceed. In India, NiCd usage is largely in defense and telecom. HBL's legacy expertise (having built IAF combat-jet batteries) and scale make it a dominant NiCd supplier domestically. However, environmental concerns (cadmium toxicity) and competition from Li-ion/NiMH pose long-term challenges. Future growth will hinge on continued defense demand and any new industrial programs requiring rugged batteries.



Valve Regulated Lead-Acid (VRLA) Batteries:- VRLA batteries (sealed lead-acid) power telecom towers, UPS/data centres, railways, and oil/gas systems. The global VRLA battery market was about USD 20.8 billion in 2024 and is projected to grow at 2.8% CAGR through 2034. Asia-Pacific dominates due to telecom expansion. In India, lead-acid batteries (mostly VRLA) are larger: USD 5.49 billion in 2023 and expected to reach USD 9.59 billion by 2030 (8.3% CAGR). Key applications are diesel/solar hybrid power backup, telecom base-stations, and emergency lighting. The industry is moderately consolidated: major domestic players include Exide Industries, Amara Raja (ARL), Luminous, and HBL; international competitors include East Penn (U.S.), GS Yuasa (Japan), EnerSys (U.S.), Fengfan (China), etc. HBL's VRLA strategy focuses on high-end telecom and railway segments, leveraging its engineering brand and service support. It competes on battery life and quality in telecom (GT, tubular) and on tubular GEL for industrial UPS. Key technology trends include thicker plates for deep cycle and advanced electrolytes. Battery recycling and grid-frequency regulations (e.g. railway backup norms) also shape demand.



Plante (Pure Lead) Batteries:- “Plante” or pure-lead tubular batteries (with >99.9% lead plates) are used for long-life telecom backup and critical UPS, especially in extreme climates. HBL is the only Indian company licensed in Telcordia’s Pure-Lead (Plante) technology. This gives HBL an edge in telecom and data-center UPS, where pure-lead batteries can last 15+ years. The pure-lead segment is a small fraction of total lead-acid; global pure-lead tubes are produced by a handful (e.g. C&D Technologies, HBL, Exide, East Penn via licenses). There is no open market data specifically for pure-lead, but growth is steady due to expanding telecom infrastructure and stricter battery-reliability requirements. Domestically, HBL’s Pure-Lead batteries compete with Exide’s tubular series and imported technology. Trends include enhanced grid standards and telecom rollout (5G, tower densification) driving demand for high-end backups. HBL’s product positioning is as a premium, long-life solution for carriers and data centers, complementing its VRLA and NiCd offerings.



Lithium-Ion Batteries:- Lithium-ion (Li-ion) batteries are growing rapidly in industrial applications. Besides EVs, Li-ion packs are used for stationary storage (renewables support, critical backup) and specialized vehicles (forklifts, e-mobility). The global EV/industrial Li-ion battery market was about USD 61.3 billion in 2024 and is forecast to USD 198.9 billion by 2030 (22% CAGR). The Asia-Pacific region (led by China) accounts for 52% share. In India, the Li-ion battery market is nascent but fast-growing: about USD 4.38 billion in 2023 and reaching USD 19.47 billion by 2030 (23.8% CAGR), mainly driven by electric vehicles and renewable storage. HBL is positioning itself in this trend by



developing lithium-ion offerings, both in EV drive batteries and energy storage systems. This implies in-house Li-ion pack and traction motor development. In stationary storage, HBL touts containerized Li-ion energy storage solutions (BESS), though much depends on project scale (solar projects, grid support). Challenges include high competition from specialized battery manufacturers, and ensuring battery quality/reliability. Technology trends (solid-state, silicon anodes, second-life reuse) will create both opportunities (new products) and competition. HBL’s strategy is to leverage its industrial pedigree (design, testing labs) to offer customized Li-ion systems for defense, rail, telecom and grid applications, differentiating on reliability and service.

Defense & Aerospace

Missile and Submarine Batteries:- HBL serves aerospace and naval markets with specialized batteries. Examples include lithium thermal batteries for missile power (e.g. ignition priming), silver-oxide zinc cells for torpedoes, and lead-acid or NiCd banks for submarine propulsion (diesel-electric subs). Globally, the military battery market is relatively small but critical: estimated at USD 1.40 billion in 2023, growing 4.1% annually. The ground segment is largest (~48% of this market) while the marine segment (submarines) is projected to grow fastest, reflecting demand for long-endurance sub batteries. In India, defense R&D and procurement budgets have been rising (USD 80B yearly), with emphasis on indigenization. Major foreign players (SAFT/Total Energies, Parker/Hawker, etc.) supply high-performance NiCd and Li cells. Domestic players include HBL and Solar Industries Group (formerly known for missile batteries), BEL (batteries mainly for aircraft launch), and Ordnance Factory Board units (e.g. CED, GCF). HBL’s Strategic Position: it

explicitly lists missiles, aviation, submarine and UAVs among its key sectors. Its portfolio includes Lithium Reserve batteries for fuse circuits, Lithium Thermal batteries for missile/torpedo boost, and submarine propulsion batteries. HBL is a “specialist supplier of submarine batteries for diesel-electric submarines”. This niche role is highly strategic: with India building new submarines and missile systems (Agni, Brah-Mos, etc.), indigenous battery sources are prized. Compared to global peers, HBL competes by meeting military standards (DEFSTAN/NATO specs) and local defense offsets. Trends/Opportunities: Growth in drone/UAV operations and in-life countermeasures will spur demand for lightweight, high-energy cells. HBL is investing in R&D (e.g. its Tonbo Imaging JV shows its move into defense electronics). Challenges include meeting certification (MBT schedules) and limited scale – but margins are high for proven suppliers.

Marine Ammunition Power Systems:- This broadly covers power sources for naval munitions (e.g. torpedoes, depth charges) and potentially combat systems. HBL’s defense page cites “Silver Oxide Zinc batteries for torpedo propulsion” and batteries for submarine propulsion. Torpedoes and some missiles (e.g. naval cruise missiles) require compact high-energy cells for propulsion start. HBL’s silver-oxide zinc and lithium-thermal types fit these roles. The market for these specialty cells is very niche (sold via defense contracts). Competitors globally include firms like Eagle-Picher (US, Li-thrusters), SAFT, and Chinese arms firms. Domestically, such systems were traditionally sourced from Ordnance Factories or the Arsenal Board. HBL’s advantage is being a private-sector Indian supplier that meets quality standards, which aligns with MOD offsets for foreign OEMs. For example, when DRDO or HAL contracts supply for the next-gen torpedo or submarine project, HBL can bid. The strategic relevance is that as India indigenizes submarine and naval missile programs, HBL can capture the battery sub-contract. Challenges include tight qualification cycles and being a small player relative to conglomerates. The growing Indian Navy fleet (new subs and destroyers) means demand for reliable torpedo and submarine batteries will increase in next 5–10 years.



Electronic Fuses:- Electronic fuses (detonators) use onboard batteries (typically primary Li battery packs) to power sensors and timers on artillery shells, mortars, and grenades. HBL has developed indigenous electronic gun and grenade fuses. It has completed development and testing of e-fuses for guns and ammunition, a market historically dominated by imports (ECIL/BEL supplied 80% of content). Domestic orders (Defense R&D proposals) are opening as the Army and paramilitary approve HBL fuses for use. There is no public market size, but the opportunity is large given India’s multi-billion artillery modernization programs. Key competitors include BEL/ECIL (government labs), and private firms like Solar Industries. Internationally, niche firms like TDW (ThyssenKrupp), Förster, Bryan-Tronics supply fuses. For HBL, e-fuses are a strategic diversification high-technology products with limited competition. It leverages its battery and electronics skills to offer a fully indigenous solution. Future trends: digital, programmable fuses with sensors (for airburst, proximity detonation) will expand battery requirements. Regulatory support comes from “Make in India” defense offset goals, favoring local suppliers.



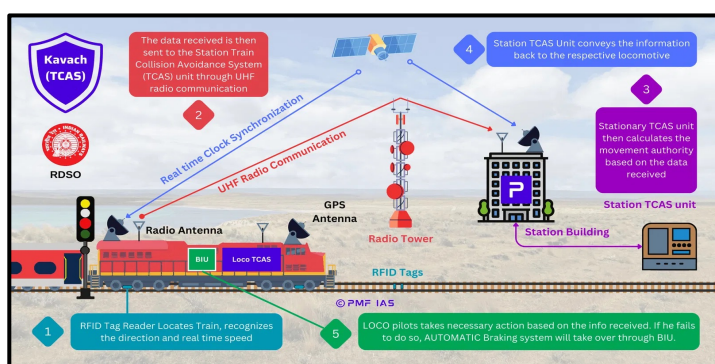
HBL must scale up production (approved by MHA for paramilitary use) and secure Army contracts to commercialize.

Railway Electronics & Signalling

- **Kavach ATP System (Train Collision Avoidance):-** Kavach is India's indigenous Automatic Train Protection (ATP) solution. Developed by RDSO with partners Medha Servo (Hyderabad), Kernex (Pune) and HBL Power Systems, it was adopted nationally in July 2020.

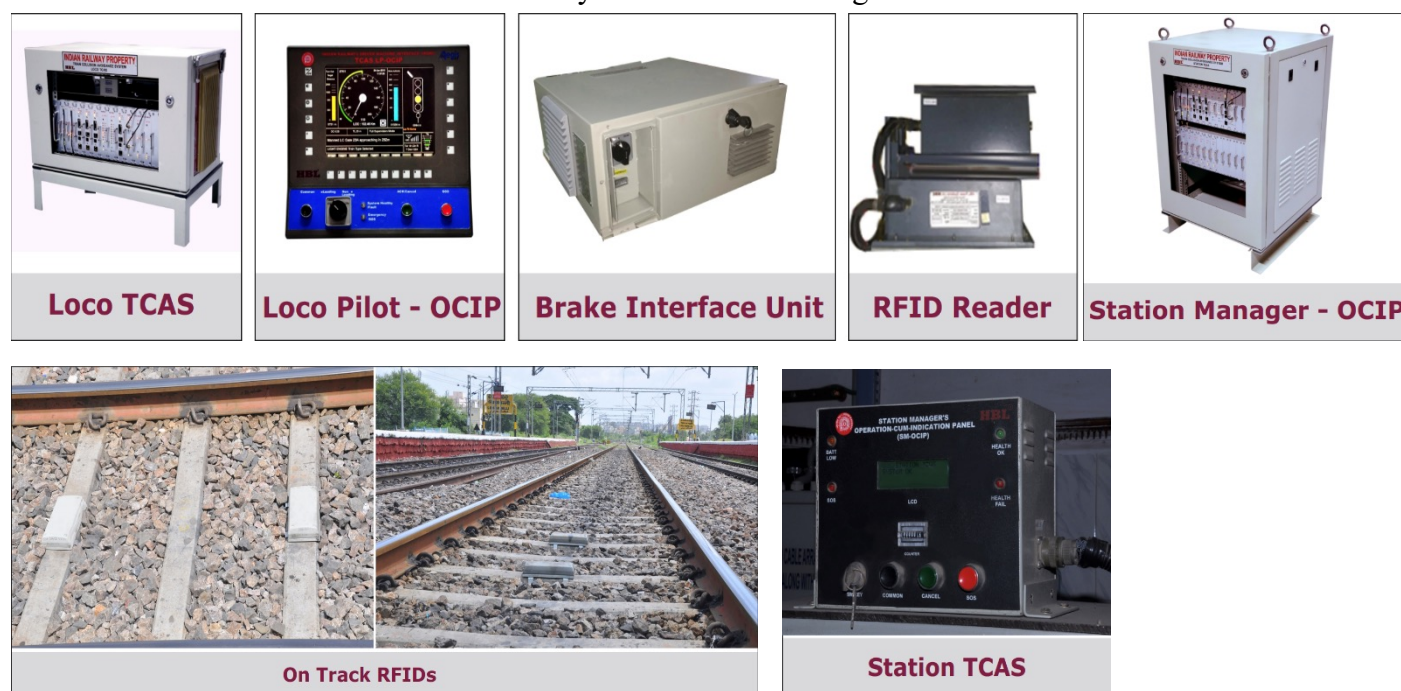
Kavach uses trackside RFID tags and radio links to intervene if trains exceed signals or come too close. Deployment is accelerating under government mandate, with a target of 36,000 route-km coverage by 2027-28. As of late 2024, 1,548 km on SCR/NCR are operational, with work underway on major corridors.

India's consequential train accidents have plunged (from 400/yr down to 81 in 2024-25), reflecting multiple safety upgrades including Kavach.



Kavach's architecture integrates trackside and onboard modules. Fixed track-side units (RFID tags, antennas, base radios, and safety computers) continuously broadcast track data. Onboard, each locomotive has a receiver, Vital CPU (for speed control) and Driver Machine Interface. If a train approaches an occupied block or signal, the system automatically brakes if the driver does not respond.

Application & Market:- Kavach ATP is being implemented zone-by-zone (each railway zone typically needs at least one Train Management System alongside Kavach). The railway signalling/electronics market in India is strongly driven by safety regulations (post-Bilaspur 2017 accident inquiry demanded ATP rollout). Unlike global ATP systems (ETCS, ACSES), Kavach is lower-cost (₹50 lakh per km) and 100% indigenized, fitting "Make in India". By contrast, international players like Alstom/Kapil put solutions (ETCS level 2) on a few lines under costly contracts. Future opportunities include maintenance/AMC contracts for Kavach systems and retrofitting older lines.



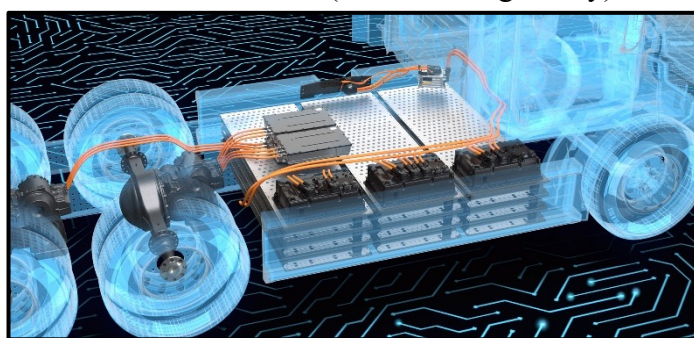
Train Management Systems (TMS):- TMS are centralized control-center solutions that display and manage train movements for entire zones. A TMS typically involves huge display consoles and software integrating signals, tracks, and train locations. In India, the TMS market is relatively small (₹200 crore/year) because only one system is deployed per zone (12+ zones). Each TMS installation costs on the order of ₹40–50 crore. Demand is largely limited now (railways have about a dozen zones). Key vendors globally include Thales, Alstom, and local IT firms. HBL has deployed a TMS and sees limited growth, but it is a strategic add-on product. Any major railway expansion (new zones, high-density corridors) could slightly increase TMS sales. Technologically, modern TMS leverage satellite/GPS for tracking and advanced GUIs. HBL's advantage could be integration of Kavach and TMS (offering a unified safety & control package). However, competition from large IT/system integrators (e.g. C-DAC, Siemens) is intense.



Electric Mobility & Lithium-Ion Batteries

EV Drive Trains:- The global push to electrify transport has led to explosive growth in EV batteries. The overall global EV battery market was about USD 61.3 billion in 2024 and is expected to reach USD 198.9 billion by 2030 (22.2% CAGR). India's EV battery segment is smaller but fast-growing: from USD 4.38 billion in 2023 to USD 19.47 billion by 2030 (23.8% CAGR), spurred by two-wheeler electrification and automobile OEM mandates. In these markets, lithium-ion batteries dominate ($\geq 67\%$ share globally).

For HBL, EV traction is a strategic thrust. It has announced development of electric drive trains and conversion kits for trucks. This implies HBL is building battery pack assembly lines, motor/generator design capabilities, and associated BMS. Domestically, competition in EV components is intensifying (startups and global suppliers entering India's EV market), but there are still niches for example, retrofitting diesel buses/trucks to electric (as HBL plans).

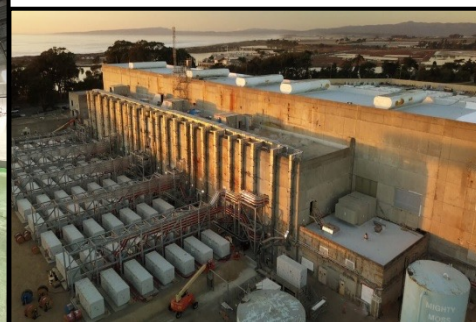
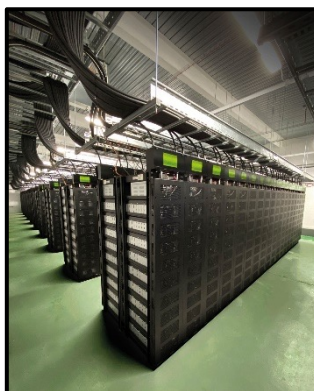


HBL can leverage its defense-grade electronics experience to design robust powertrains for industrial EVs (forklifts, mining vehicles) and commercial vehicles. Challenges include meeting automotive reliability standards and large capital investment. However, government subsidies (FAME scheme, PLI for batteries) and rising EV adoption (target 30% EV penetration by 2030) create long-term opportunities. HBL's product positioning will likely focus on mid-to-heavy EV markets (trucks, buses, 3-wheelers) where their engineering strength and service network can differentiate.

Lithium Storage Systems (Stationary BESS):-

Lithium-ion battery storage for stationary applications (grid/renewable storage, UPS for telecom/data centers) is a major growth area. The global stationary Li-ion BESS market was valued at USD 108.7 billion in 2024 and is projected to grow 18.5% CAGR through 2034. This surge is driven by renewable grid integration and falling battery costs. In India, the BESS market is nascent:

around USD 260.5 million in 2024 with steep growth to USD 2,322.1 million by 2033 (25.8% CAGR), underpinned by solar projects, captive power, and EV charging infrastructure.



Battery Management Systems (BMS):-

A Battery Management System is the electronics/firmware that protects and optimizes battery packs (monitoring cell voltages, temperature, SOC, balancing). The global BMS market is growing rapidly: from USD 7.19 billion in 2023 to USD 31.26 billion by 2030 (25.2% CAGR). India's BMS market is smaller but robust: USD 278 million in 2024, reaching USD 1,224 million by 2033 (17.9% CAGR), driven by EVs and stationary batteries. Major segments include automotive BMS (for EVs/HEVs), energy storage BMS, and consumer electronics BMS.



Battery Recycling:-

Battery recycling is an emerging but critical segment. The global battery recycling market was about USD 35.5 billion in 2024 and is projected to reach USD 78.9 billion by 2032 (10.5% CAGR). Growth is driven by surging EV sales (spent Li-ion batteries) and tightening regulations. For India, recycling is gaining attention under new rules: producers of batteries (lead-acid and Li-ion) are now legally mandated to collect and recycle spent units (extended producer responsibility policies).

Products of HBL :

Batteries			
Application Segment	Battery Technologies Offered	Utility	How They Work
Telecom	SLA, VRLA, Ni-Cd	Backup power for fixed networks, BTS, FTTH, data cables, TV networks; ensures network continuity, maintenance-free operation	SLA/VRLA: Lead dioxide + metallic lead in sulfuric acid; sealed for safety. Ni-Cd: Nickel oxide hydroxide + cadmium, robust and reliable
Aviation	Ni-Cd, SLA, Silver Zinc	Powers aircraft emergency systems; used in commercial/defense aircraft, UAVs; requires reliability, low maintenance	Ni-Cd & SLA: As above. Silver Zinc: Silver oxide + zinc; high energy density and lightweight
Railway	Ni-Cd, Maintenance-free Lead Acid, VRLA, Lithium-Ion	Onboard and trackside safety systems, lighting, signalling; rugged & long life; lithium-ion for compact size & long cycle life	Ni-Cd & SLA/VRLA: As above. Li-ion: Lithium ions move between anode & cathode; fast recharge, high density

Defence (Implied)	Ni-Cd, SLA, Silver Zinc	Used in defence aircraft; specific products	Ni-Cd & SLA: As above. Silver Zinc: Silver oxide + zinc; high energy density and lightweight
Oil & Gas	Valve-regulated Ni-Cd	Backup for process control, UPS, turbine starting, emergency systems in harsh onshore/offshore environments	Ni-Cd: High temp resilience; valve-regulated design reduces maintenance and risk
Power	Ni-Cd, VRLA, Custom battery systems	Backup for switchgear, SCADA, substations, turbine starting; critical for reliability in power generation/distribution	SLA/VRLA, Ni-Cd: As above; engineered for seismic resilience and long life
Data Center	2V VRLA, 12V Pure Lead, Valve-regulated Ni-Cd	Reliable UPS backup for critical systems, fast recharge, seismic qualified	VRLA: Sealed, reliable. Pure Lead: High purity, fast discharge. Ni-Cd: Harsh environment reliability
E-Mobility	Lithium-Ion battery packs	Powers EVs, hybrids, plug-in hybrids; custom-designed packs with controllers and motors	Li-ion: Lithium ions cycle between anode and cathode; high energy density, lightweight
Engine Cranking	Ni-Cd, Pure Lead	Ensures reliable starting of standby generators; high discharge, low temp, long cycle life	Ni-Cd: Fibre/pocket plates offer strength and reliability. Pure Lead: High discharge and recharge efficiency

Electronics and E-Mobility			
Segment	Product	Usefulness	How It Works
Railway	Railway Signalling Integrated Power Supplies (IPS)	Provides reliable power for railway signalling systems.	Powers signalling systems for safe and efficient train operation. Ensures uninterrupted signalling.
	Train Collision Avoidance System (TCAS)	Prevents train collisions, enhancing safety.	Uses sensors and algorithms to detect potential collisions and trigger emergency braking or warnings.
	Train Management System (TMS)	Helps manage and monitor train operations efficiently.	Integrates data from trains to optimize schedules, improve safety, and monitor performance.
	Data Loggers	Records critical operational data for analysis and safety.	Continuously collects operational data for later review and troubleshooting.
	Rectifier/Battery Assemblies for Traction Substations	Provides DC power and backup for electric trains.	Rectifiers convert AC to DC power for the train's operation, and batteries provide backup power.
	Customised Electronics for Obsolete Equipment	Replaces outdated equipment to ensure smooth operation.	Designs and builds bespoke electronics to replace or upgrade old systems in the railway infrastructure.
Electric Mobility	e-Mobility Drive Train	Provides powertrain solutions for electric vehicles (EVs).	Integrates various components (motor, inverter, and battery) to provide propulsion for EVs.
	Permanent Magnet Axial Flux Motors	Powers electric vehicles with energy-efficient motors.	Uses permanent magnets in a compact design to create high torque and energy efficiency for vehicle propulsion.
	Inverters	Converts DC power from EV batteries to AC power for the motor.	Converts stored DC battery power into AC to drive the electric motor in the vehicle.
	EV Chargers	Recharges EV batteries.	Converts AC power from the grid into DC power to recharge EV batteries efficiently.
Power Generation	DC Power Systems	Provides reliable DC power for power generation facilities.	Supplies continuous DC power to various systems, ensuring stability in power plants.
	Rectifiers	Charges large batteries in power generation plants.	Converts AC to DC to charge large-scale storage batteries, ensuring backup power availability.

Power Utilities	DC Power Systems	Supplies reliable DC power for various utility applications.	Ensures a stable DC power supply to critical systems in utilities, even during grid instability.
	Grid Level Energy Storage	Stores energy at the grid level for later use, enhancing grid stability.	Stores excess energy during low demand and discharges during peak demand, ensuring grid stability.
	Power for Switchgear Reclosing in Substations	Ensures reliable operation of critical substation equipment.	Provides power to operate switchgear systems, which help reconnect the grid after a fault.
	Backup Power for Steam Turbines in Generating Plants	Ensures steam turbines keep running in emergencies.	Provides uninterrupted power to steam turbines, maintaining plant operations during outages.
	Battery Monitoring Systems	Ensures battery health and reliability.	Monitors battery voltage, temperature, and charge levels to prevent failure and extend battery life.
	Battery Isolation Switches	Provides safe maintenance and operation of battery systems.	Isolates batteries for safe servicing and prevents overloads or short circuits during maintenance.
Oil & Gas	Uninterruptible Power Supplies (UPS)	Provides backup power for critical operations in the oil and gas industry.	Ensures continuous power to essential operations like extraction, refining, and transportation.
	DC Power Systems	Provides reliable DC power for oil and gas operations.	Ensures DC power is available for operations, especially in remote areas where AC power might be unreliable.
	Battery Monitoring Systems	Monitors the health of battery systems in the oil and gas sector.	Tracks battery charge levels, temperature, and overall performance to ensure reliability.
Renewable Energy	Solar Pump Controllers	Manages solar-powered water pumps.	Controls the operation of water pumps powered by solar energy, ensuring efficient water distribution.
	Grid Tie Inverters	Converts DC power from solar panels into AC power for the grid.	Converts the DC electricity generated by solar panels into AC electricity that can be fed into the grid.

Defence		
Product	Utility	How it Works
Silver Oxide Zinc Batteries (Torpedo)	High energy density, used for torpedo propulsion.	Silver oxide and zinc react in an alkaline electrolyte to produce high energy; non-rechargeable.
Sealed Lead Acid Batteries (Tanks & APCs)	Power for battle tanks and APCs; reliable, leak-proof.	Lead dioxide and spongy lead react with sulphuric acid; sealed design prevents leaks and allows safe use.
Lithium Thermal Batteries (Missiles, Torpedoes)	High power output in missiles and torpedoes; works in extreme conditions.	Solid electrolyte becomes conductive when heated, activating the battery quickly and delivering high power.
Lithium Reserve Batteries (Fuzes)	Reliable, long shelf-life power for fuzes; activated only when needed.	Electrolyte stored separately; battery activates only when needed, preventing self-discharge.
Batteries for Aircraft, Helicopters, UAVs	Power supply for critical systems in aerospace vehicles.	Likely advanced lead-acid, nickel-cadmium, or lithium-ion, designed for light weight and reliability.
Submarine Propulsion Batteries	Provides underwater power for diesel-electric submarines.	Likely lead-acid based with deep discharge capabilities; special design for long underwater endurance.
VRLA Batteries (Military Vehicles)	Reliable engine starting for tanks and APCs; maintenance-free, battlefield qualified.	Sealed lead-acid with absorbent glass mat (AGM); gases recombine internally, preventing maintenance needs.
Silver Zinc Batteries (Missiles, Aircraft)	Lightweight power source for missile and aerospace systems.	Silver oxide cathode and zinc anode produce energy efficiently; valued for lightness and reliability.

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Revenue From Operation	₹1,350	₹1,406	₹1,537	₹1,634	₹1,266	₹1,092	₹912	₹1,236	₹1,369	₹2,233	₹1,967
Y-O-Y Growth Rate		4%	9%	6%	-23%	-14%	-16%	36%	11%	63%	-12%
3-Yr CAGR (%)				7%	-3%	-11%	-18%	-1%	8%	35%	17%
5-Yr CAGR (%)						4%	9%	4%	4%	-11%	-11%
10-Yr CAGR (%)											4%

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Revenue From Operation	₹1,350	₹1,406	₹1,537	₹1,634	₹1,266	₹1,092	₹912	₹1,236	₹1,369	₹2,233	₹1,967
Excise duty		₹107	₹123	₹31							
Adjusted Revenue From Operation	₹1,350	₹1,299	₹1,414	₹1,603	₹1,266	₹1,092	₹912	₹1,236	₹1,369	₹2,233	₹1,967
Revenue Y-O-Y Growth Rate		-4%	9%	13%	-21%	-14%	-16%	36%	11%	63%	-12%
3-Yr CAGR (%)				7%	-3%	-11%	-18%	-1%	8%	35%	17%
5-Yr CAGR (%)						4%	7%	3%	3%	-11%	-11%
10-Yr CAGR (%)											4%

This regulatory shift inflated reported FY16 revenue to ₹1,406 crore (4% YoY growth) but concealed an actual 4% decline (₹1,299 crore after deducting ₹107 crore excise duty). The distortion persisted through FY18, where unadjusted 6% growth (₹1,634 crore) became 13% post-adjustment (₹1,603 crore after removing ₹31 crore excise duty).

Revenue recognition: HBL recognizes revenue when a performance obligation is satisfied by transferring goods or services to the customer, based on the allocated transaction price. Revenue is recognized over time if the customer receives benefits as the service is performed, controls the asset being created, or if the asset has no alternative use and payment is enforceable. Otherwise, revenue is recognized at a point in time on dispatch/delivery for goods and on completion for services.

Revenue breakups:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Geography wise Revenue	₹1,362	₹1,410	₹1,538	₹1,638	₹1,274	₹1,103	₹917	₹1,241	₹1,376	₹2,241	
Export sales	₹171	₹184	₹116	₹168	₹183	₹192	₹168	₹252	₹207	₹286	
Export sales growth	-37%	7%	-37%	45%	9%	5%	-13%	51%	-18%	38%	
Export sales contribution	13%	13%	8%	10%	14%	17%	18%	20%	15%	13%	
Domestic sales	₹1,191	₹1,226	₹1,422	₹1,471	₹1,091	₹911	₹749	₹989	₹1,169	₹1,955	
Domestic sales growth	12%	3%	16%	3%	-26%	-16%	-18%	32%	18%	67%	
Domestic sales contribution	87%	87%	92%	90%	86%	83%	82%	80%	85%	87%	

- FY15 to FY17:** - Export revenue struggled due to weak global demand in oil & gas, aviation, and utilities, along with delayed projects and slow order inflows despite achieving new certifications. Meanwhile, domestic revenue grew steadily, supported by rising telecom demand from the 3G/4G rollout, solar kit sales, and improved channel expansion. Railways and defence sectors also contributed positively.
- FY18 to FY20:** - Exports improved thanks to strong demand in the UPS segment, broader product approvals (including seismic and UL certifications), and better execution, particularly in defence and railway electronics. Conversely, domestic sales were challenged by telecom sector consolidation, pricing pressure, and later, COVID-19-related disruptions that affected manufacturing, supply chains, and demand across telecom, defence, and railways.
- In FY21,** both domestic and export revenues declined sharply as COVID-19 caused continued disruptions, reduced orders, and weakened demand across sectors. By **FY22**, a sharp recovery followed. Export revenue surged due to large defence orders, especially missile batteries, and increased merchant exports. Domestic revenue rebounded strongly with renewed demand in telecom, railways, and defence as operations normalized post-pandemic.
- FY23 and FY24:** - Exports remained volatile. FY23 saw a decline due to reduced export share, volatile metal prices, and lower new orders. However, FY24 marked a recovery on the back of strong defence and railway electronics exports, including missile and submarine batteries and repeat global orders. Domestic revenue surged in FY24, driven by large-scale 5G rollout, TCAS railway deployments, defence electronics, and growing adoption of Pure Lead Thin Plate (PLT) batteries.

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Batteries	₹1,141	₹1,143	₹1,278	₹1,344	₹1,107	₹977	₹807	₹1,099	₹1,019	₹1,423	₹1,397
Defence & Aviation	-	-	-	-	-	-	-	-	₹183	₹180	₹227
Electronics	₹137	₹162	₹163	₹149	₹127	₹92	₹91	₹110	₹135	₹541	₹298
Unallocated	₹83	₹104	₹96	₹145	₹39	₹34	₹19	₹31	₹38	₹98	₹50
Gross segmental revenue	₹1,361	₹1,409	₹1,537	₹1,638	₹1,273	₹1,103	₹917	₹1,240	₹1,375	₹2,242	₹1,972
<i>Less : Inter-segment revenue</i>	₹12	₹4	₹1	₹4	₹12	₹11	₹5	₹5	₹8	₹8	₹5
Segmental revenue	₹1,349	₹1,405	₹1,536	₹1,634	₹1,261	₹1,092	₹912	₹1,235	₹1,367	₹2,234	₹1,967

- **FY15 to FY22:** Primarily driven by its Batteries segment, which consistently contributed over 80% of total sales. The company's core revenue stream came from commoditized battery products across industrial and infrastructure applications.
- **FY23:** Began realigning its business model. While Batteries still contributed 74%, the company introduced Defence & Aviation and Electronics as standalone segments, contributing 13% and 10% respectively. This shift reflected management's intent to reduce reliance on low-margin battery sales and tap into higher-margin, tech-driven areas.
- **FY24:** The transformation accelerated. Battery contribution fell to 63%, while Electronics surged to 24%, driven by strong traction in defence electronics and railway safety systems. Defence & Aviation held steady at 8%, reflecting a growing but stabilizing share in the revenue mix.
- **FY25:** The Batteries segment rebounded slightly to 71%, but Electronics maintained a strong 15% share, and Defence & Aviation rose to 12%. This evolving mix indicates HBL's ongoing transition toward a more diversified and innovation-led engineering solutions company.

Batteries:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Batteries	₹1,141	₹1,143	₹1,278	₹1,344	₹1,107	₹977	₹807	₹1,099	₹1,019	₹1,423	₹1,397
<i>Sales growth</i>		0%	12%	5%	-18%	-12%	-17%	36%	-7%	40%	-2%
<i>sales contribution</i>		81%	83%	82%	87%	89%	88%	89%	74%	63%	71%
<i>Export sales</i>	₹150	₹161	₹97	₹152	₹158	₹177	₹157	₹237	₹137	₹230	
<i>contribution</i>	13%	14%	8%	11%	14%	18%	19%	22%	13%	16%	
<i>Y-O-Y growth</i>		7%	-40%	57%	4%	12%	-11%	51%	-42%	67%	
<i>Domestic sales</i>	₹990	₹982	₹1,182	₹1,192	₹949	₹800	₹650	₹862	₹882	₹1,193	
<i>contribution</i>	87%	86%	92%	89%	86%	82%	81%	78%	87%	84%	
<i>Y-O-Y growth</i>		-1%	20%	1%	-20%	-16%	-19%	33%	2%	35%	

- **FY15 to FY18:** The Batteries segment remained the core revenue driver for HBL Power Systems, contributing consistently over 80% of sales (84% in FY15, 81% in FY16, 83% in FY17, and 82% in FY18). The high dependency on commoditized battery products, particularly for telecom and UPS segments, defined the company's business model. However, growing global competition and margin pressure made management realize the need for diversification. Early seeds of a shift toward engineering and export-led business, especially in Defence and Electronics, began during this phase, although they remained minor contributors.
- **FY19 and FY22:** HBL's battery contribution remained high (rising to 87% in FY19 and peaking at 89% in FY20 and FY22), yet management increasingly prioritized non-battery verticals. Export sales began to gain traction, aided by strong defence and UPS orders. The Defence & Aviation and Electronics divisions started to grow steadily though still not reported as standalone segments, the internal focus on technology-driven products like missile batteries, train collision avoidance systems, and aviation-grade power solutions strengthened. These years laid the operational groundwork for strategic transformation while retaining batteries as the revenue anchor.
- **In FY23:** The Batteries segment's contribution dropped significantly to 74%, reflecting conscious management efforts to reduce dependency on low-margin products. Electronics and Defence & Aviation were carved out and reported as standalone revenue streams, contributing 10% and 13%, respectively. The change was driven by a push into higher-margin businesses such as electronics for rail safety, radar systems, and custom-built defence solutions. By **FY24**, this shift accelerated further: batteries fell to 63% of revenue, while Electronics surged to 24%, making it the second-largest segment.

- In **FY25**: - The Batteries segment regained some share to reach 71%, but this was more a reflection of normalization in Electronics revenue rather than a reversal of the diversification strategy. Electronics accounted for 15%, and Defence & Aviation held 12%. The year signified a balanced phase where HBL's business mix had matured no longer reliant solely on batteries, the company showcased a diversified portfolio aligned with national infrastructure needs and strategic sectors like defence and railways. This evolution highlights HBL's transformation into a robust, innovation-led engineering solutions provider with multi-sector capabilities.

Electronics:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Electronics	₹137	₹162	₹163	₹149	₹127	₹92	₹91	₹110	₹135	₹541	₹298
Sales growth		18%	1%	-9%	-15%	-28%	-1%	21%	23%	301%	-45%
sales contribution	10%	12%	11%	9%	10%	8%	10%	9%	10%	24%	15%
Export sales	₹20	₹21	₹18	₹15	₹21	₹15	₹11	₹15	₹23	₹18	
contribution	15%	13%	11%	10%	16%	16%	12%	14%	17%	3%	
Y-O-Y growth		5%	-14%	-16%	35%	-28%	-29%	41%	50%	-22%	
Domestic sales	₹117	₹141	₹145	₹134	₹106	₹77	₹80	₹95	₹113	₹523	
contribution	85%	87%	89%	90%	84%	84%	88%	86%	83%	97%	
Y-O-Y growth		20%	3%	-8%	-21%	-28%	4%	19%	18%	363%	

- FY15– FY17:** Saw strong domestic momentum driven by demand in power, telecom, and defence. plus a ₹45 Cr channel push. Exports, however, declined due to weak global demand, currency issues, and delayed projects in Europe and Africa.
- FY18 – FY20:** Both domestic and export segments weakened. Domestic sales fell sharply due to slow railway modernization, regulatory bottlenecks in telecom, and competition. Exports remained stagnant amid project cancellations, COVID-led disruptions, and pricing pressure from low-cost Asian competitors.
- FY21 – FY23:** The company rebounded post-COVID. Domestic revenue driven by TCAS deployments, 5G rollout, and defence battery demand. Exports more than doubled, aided by defence and aviation contracts and strong TCAS orders.
- FY24 – FY25:** FY24 was a blockbuster year for domestic sales from large railway electronics orders and new lithium-ion/defence products. But **FY25's** revenue dip wasn't a demand failure but a timing issue: most Kavach orders awarded in FY24 are slated for execution over FY26–28, making FY25 a deliberate bridge to that next growth surge.

Defence & Aviation:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Defence & Aviation									₹183	₹180	₹227
Sales growth										-2%	26%
sales contribution									13%	8%	12%
Export sales									₹48	₹39	
contribution									26%	22%	
Y-O-Y growth										-18%	
Domestic sales									₹135	₹140	
contribution									74%	78%	
Y-O-Y growth										4%	

Defence & Aviation arm, which first appeared as a standalone segment in FY23 dipped slightly in **FY24** not from lack of orders, but due to pilot-scale production and lengthy OEM approvals for silver-zinc torpedo batteries, lithium-ion submarine prototypes, and aerospace exports. FY25 saw a sharp recovery as full-scale submarine battery contracts with DRDO/NSGL kicked in, fresh missile-battery supplies for Agni-5 were delivered, and MHA electronic-fuse orders rolled out. Stalled aerospace exports also finally received their certifications, making FY25 a banner year for HBL's strategic defence initiatives.

Industrial Batteries, Defence & Aviation Batteries, and Electronics

Raw Materials

Raw Materials for Battery

Lead-Acid Batteries

Lead, lead oxides (litharge, red lead)

Plastics (casings, separators)

Sulfuric acid (electrolyte)

Nickel Cadmium Batteries

Nickel and cadmium compounds

Alkaline electrolyte materials

Specialized Batteries

Silver and zinc (for torpedo/defence batteries)

Lithium compounds (for lithium batteries)

Conductive additives (carbon black, PTFE)

Polymer binders (SBR)

Raw Materials for Electronics

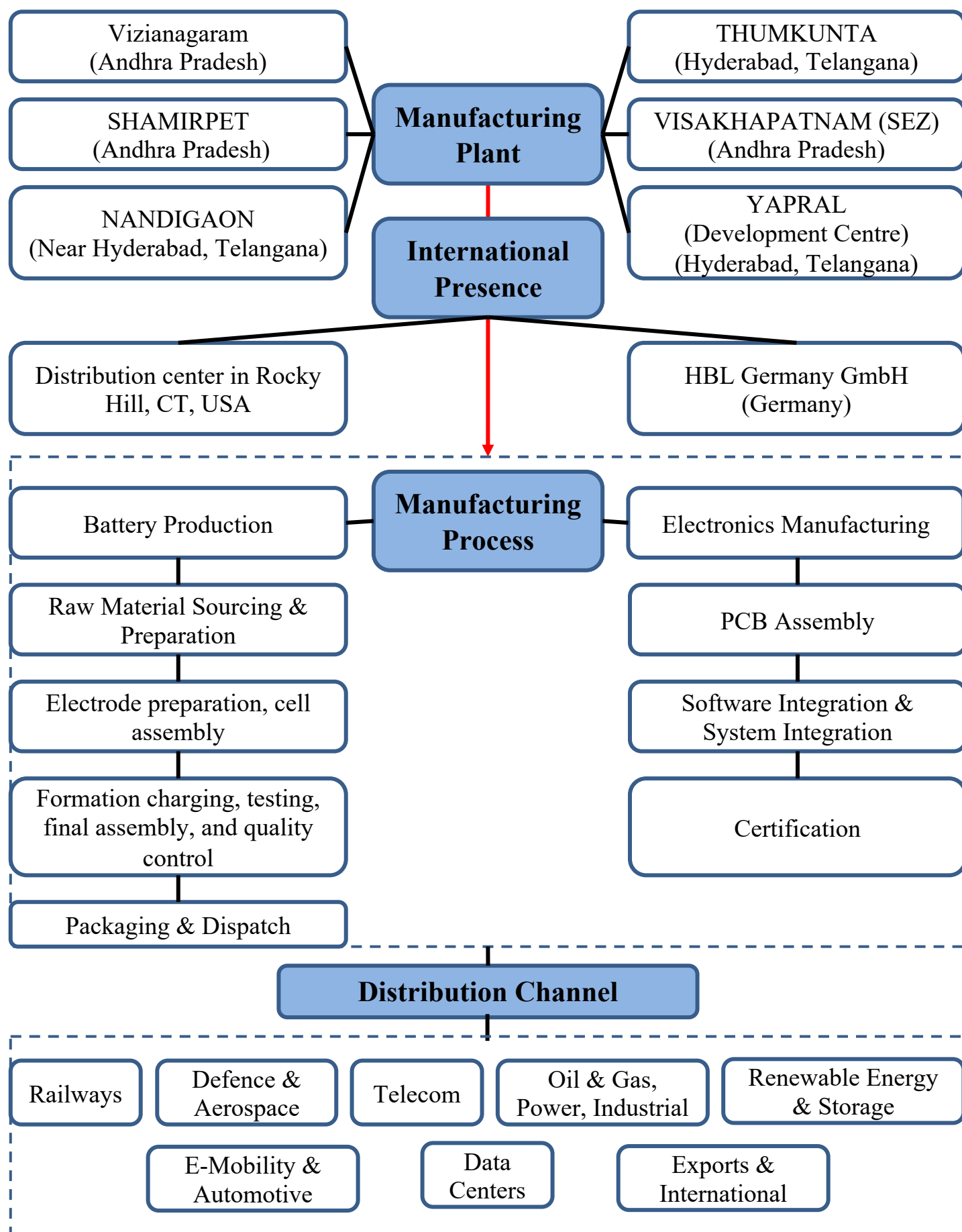
Semiconductors and integrated circuits

PCB materials and electronic components

Components for electric drive train kits and defence electronics

Sources of Materials:

- Lead sourced from domestic (e.g., Hindustan Zinc) and international suppliers (US, Australia, China)
- Plastics and chemicals from Indian chemical manufacturers
- Specialized metals and electronics sourced globally (Japan, Germany, China) when not available locally
- “Make in India” procurement policy wherever feasible



Supply Side:

1) Batteries

Battery Type	Key Raw Materials/Components	Application/Usage Area	Sourcing Approach/Origin
Lead-Acid Batteries	Lead, lead oxides (litharge, red lead), plastics (casings, separators), sulfuric acid	Telecom towers, UPS, railways, industrial backup	Lead from Hindustan Zinc (India), imports (Australia, China, US); plastics and acid from Indian chemical manufacturers
Nickel Cadmium Batteries	Nickel mesh, cadmium oxide, alkaline electrolyte (KOH), steel cans	Aviation, railways, defense, industrial backup	Nickel/cadmium from Indian and global suppliers (Japan, Korea); KOH from Indian chemical firms; steel from Indian mills
Specialized Batteries	Silver, zinc, lithium compounds, carbon black, PTFE, polymer binders (SBR)	Torpedo, missile, submarine, aviation, e-mobility	Silver/zinc from global suppliers (Germany, Japan); lithium from China, Korea; additives from Indian/global vendors
Lithium-Ion Batteries	Lithium cells (NMC/LFP), graphite anodes, electrolyte, BMS components, separators	E-mobility, defense, energy storage, export	Lithium cells from China, Korea, Japan; BMS and pack assembly in-house; separators from global/Indian suppliers
Electrolytes & Additives	Sulfuric acid, KOH, polymer binders, specialty additives	All battery chemistries	Indian chemical manufacturers (primary), imports for specialty needs

2) Electronics

Electronics Type	Key Raw Materials/Components	Application/Usage Area	Sourcing Approach/Origin
Semiconductors & Ics	Microcontrollers, processors, memory chips, power Ics	Battery management, defense electronics, drive train kits	Sourced from global leaders (Texas Instruments, Infineon, Renesas), Indian distributors
PCBs & Electronic Components	PCB laminates (FR-4, ceramic), resistors, capacitors, relays, sensors	All electronics, control systems, monitoring, signalling	In-house assembly, Indian PCB makers, imports for high-spec defense/railway boards
Sensors & Communication Modules	GPS, RFID, radio modems, antennas, signal processors	Defense, railways, industrial automation	Mix of Indian and international suppliers (Japan, Germany, US, China)
Connectors & Casings	MIL-spec connectors, rugged enclosures, wiring harnesses	Defense/railway electronics, battery packs	Indian manufacturers for standard parts, imports for specialized military/railway-grade components
Software & Firmware	Embedded software, real-time operating systems, cybersecurity modules	Battery management, defense/railway electronics	Developed in-house at Yapral R&D Centre (Hyderabad)

Central Side:

Manufacturing Process

Stage	Battery Manufacturing Process	Electronics Manufacturing Process
Raw Material Preparation	Sourcing and preparation of metals (lead, nickel, cadmium, lithium, silver, zinc), chemicals, plastics, additives	Sourcing of semiconductors, PCBs, sensors, connectors, communication modules, casings
Electrode/PCB Preparation	Casting, pasting, and curing of electrodes (lead-acid); sintering (Ni-Cd); slurry coating and calendaring (Li-ion)	PCB design, fabrication, and assembly (surface-mount and through-hole components)
Cell/Module Assembly	Stacking/winding electrodes, inserting separators, filling electrolyte, sealing cells, assembling battery modules	Assembly of electronic modules (control units, BMS, communication boards, defense electronics, etc.)
Formation & Initial Testing	Formation charging (electrochemical activation), capacity and leakage testing, cycling	Software/firmware loading, initial power-up, functional and environmental testing
System Integration	Assembling cells into battery packs, integrating with BMS or power electronics as required	Integration of modules into final systems (e.g., drive train kits, defense systems, rail electronics)
Quality Control & Certification	Electrical, safety, and environmental testing; compliance with IEC, UL, MIL-STD, or customer-specific standards	Functional, safety, and environmental testing; compliance with railway, defense, or industrial standards
Final Assembly & Packaging	Labelling, date coding, packaging, and dispatch	Final inspection, packaging, and dispatch

HBL Manufacturing & Development Facilities

Our Integrated Facilities



VIZIANAGARAM

Near Visakhapatnam, Andhra Pradesh

Product line: 2V/12V-AGM VRLA



SHAMIRPET

Hyderabad, Telangana

Product line: Ni-Cd & Specialty batteries and power electronics



NANDIGAON

Near Hyderabad, Telangana

Product line: PLT, Lithium-Ion and Submarine Batteries



THUMKUNTA

Hyderabad, Telangana

Product line: Electronics



VISAKHAPATNAM (SEZ)

Andhra Pradesh

Product line: Ni-Cd batteries



YAPRAL (Development Centre)

Hyderabad, Telangana

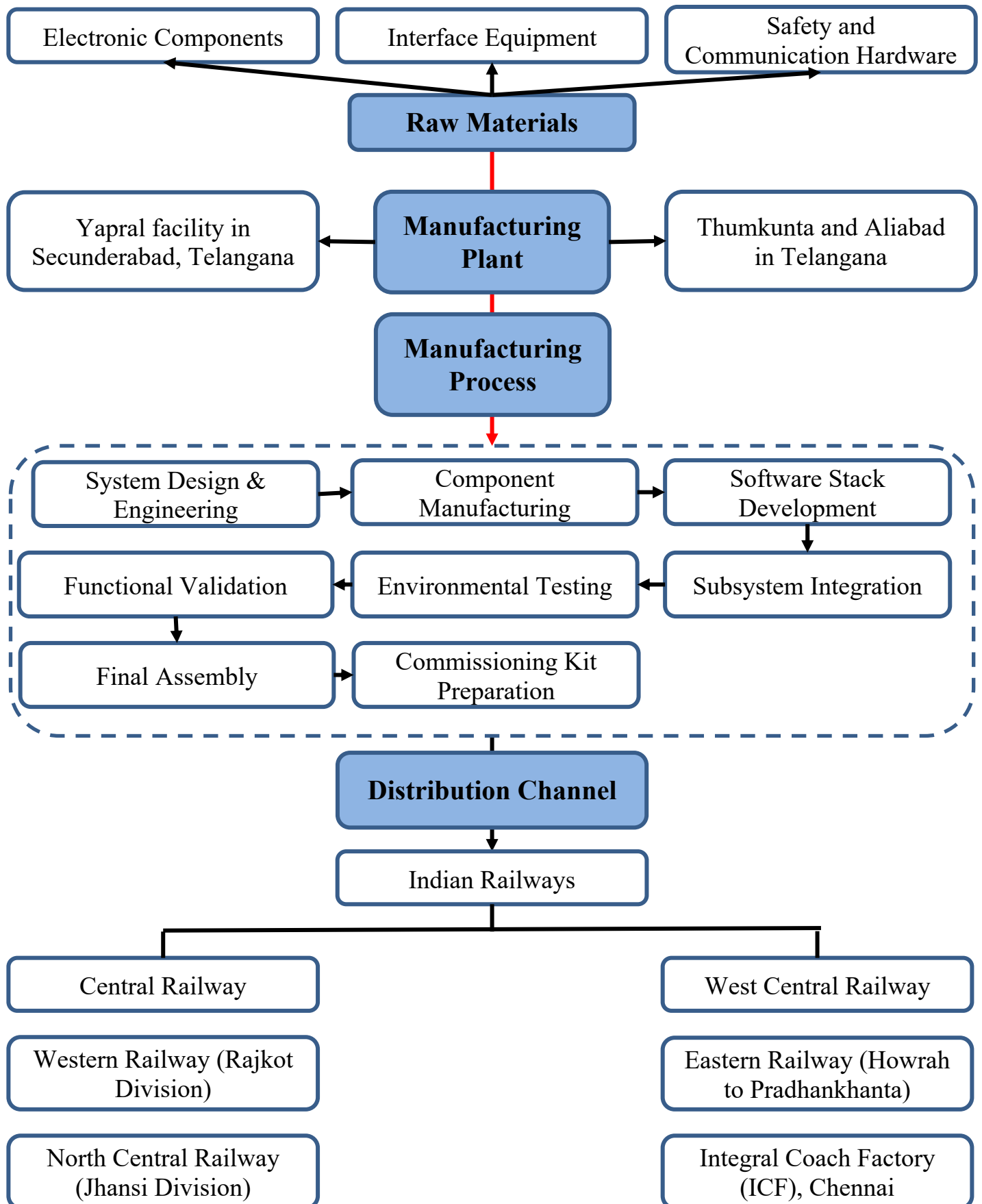
Product line: Product development initiatives

Demand Side:

Segment	Applications/End Uses	Key Clients/Markets
Railways & Transport	Coach/loco batteries, signaling electronics	Indian Railways, Metro Rail, Siemens (Germany), MBTA (USA)
Defence & Aerospace	Tank/torpedo/submarine/missile batteries, defense electronics	Indian Air Force, Indian Navy, MOD Labs, HAL, Israel/UAE MOD
Oil & Gas, Power, Ind.	Refineries, pipelines, power backup, process automation	Reliance Industries, oil majors, EPCs, utilities
Telecom & Data Centers	Tower/data center backup, rectifiers, chargers	BSNL, Indus Towers, major telecom operators
Renewable/Energy Sector	Solar/wind storage, inverters, grid support	EPCs, global developers
UPS, Hospitals, Comm.	Stationary backup batteries, UPS, power electronics	Data centers, hospitals, corporates
E-Mobility/Automotive	Li-ion packs, drive trains, BMS	fleet/public transport

Value chain

KAVACH (Train Collision Avoidance System)



Supply Side:

1) Electronic Components

Material/Component	Where Used in KAVACH	Sourcing
Microprocessors & Semiconductors	Core of onboard computers, master computers, RIUs (processing, safety logic)	Domestic and international suppliers, selected for SIL-4 safety certification and reliability
Printed Circuit Boards (PCBs)	All electronic modules: onboard units, RFID readers, radio modems, master computers	Manufactured in-house and from Indian/global PCB suppliers
Memory Chips, Control Ics	Embedded in all processing and communication modules	Sourced from global and Indian vendors
Software & Firmware	Embedded in all electronic modules for system logic and communication	Developed in-house by HBL's R&D and engineering teams (Yapral, Hyderabad)

2) Interface Equipment

Material/Component	Where Used in KAVACH	Sourcing
RFID Tags & Readers	RFID tags fixed on track; readers on locomotives for location and track identification	Specialized vendors, both Indian and international, to meet Indian Railways' standards
Brake Interface Units	Onboard units: interface with locomotive braking systems for automatic intervention	Qualified vendors with railway/industrial experience, both in India and abroad
Display Panels/Operator Interfaces	Cab displays for driver alerts and system status	Indian suppliers, customized to railway specifications
Connectors, Mounting Hardware	For assembling and installing interface equipment in trains and trackside	Primarily Indian manufacturers, supporting "Make in India"

3) Safety and Communication Hardware

Material/Component	Where Used in KAVACH	Sourcing
GPS/GNSS Receivers	Onboard units for high-precision train location tracking	Global suppliers with proven railway-grade reliability
Radio Modems & Antennas	Onboard and trackside units for secure, real-time communication	Mix of domestic and international suppliers, chosen for technology and certification
Power Electronics & Redundant Power Supplies	Ensures safe, uninterrupted operation of all critical modules	Indian and international vendors, selected for reliability and compliance
Mechanical Enclosures & Casings	Protection of sensitive electronics from dust, vibration, temperature, EMI	Primarily Indian manufacturers, railway-grade standards

Central Side:

Manufacturing Process

Process	Brief Description
System Design & Engineering	Designing the system architecture and customizing for Indian Railways' requirements.
Component Manufacturing	Producing and assembling hardware modules (electronics, sensors, interface units).
Software Stack Development	Developing and integrating the software and algorithms for KAVACH operation.
Subsystem Integration	Combining hardware and software components into a unified, functional system.
Environmental Testing	esting all subsystems under railway operating conditions (vibration, temperature, EMI, etc.).
Functional Validation	Verifying system performance, safety logic, and compliance with SIL-4 and railway standards.
Final Assembly	Completing assembly of all modules into deployable KAVACH units.
Commissioning Kit Preparation	Preparing and packaging the system for installation and deployment at railway sites.

Manufacturing Plants

HBL Engineering manufactures and integrates KAVACH systems primarily at its advanced electronics facilities in Hyderabad, Telangana. The key plants involved are:

- **Thumkunta Plant (Hyderabad, Telangana):** This is HBL's primary electronics manufacturing and system integration facility, where the core hardware for KAVACH—including onboard computers, RFID modules, radio units, and interface hardware—is assembled and tested.
- **Yapral Development Centre (Hyderabad, Telangana):** Focused on R&D, software/firmware development, and prototyping for KAVACH and other advanced railway and defense electronics.
- **Aliabad Facility (Shameerpet, Hyderabad):** Supports electronics assembly and sub-systems integration for large-scale projects.

Demand Side:

Primary Client: Indian Railways

Indian Railways is the sole and principal client for the KAVACH system. KAVACH is a safety-critical, indigenous Automatic Train Protection (ATP) technology mandated by Indian Railways for nationwide deployment to prevent train collisions and automate train protection.

Key Indian Railways Divisions and Projects

HBL Engineering's KAVACH demand is driven by large, multi-year contracts from various Indian Railways zones, divisions, and manufacturing units. The company's client base spans the most strategic and high-density railway corridors in India.

Key Indian Railways Divisions and Projects

Date Awarded	Division/Entity	Project Description	Value (₹ crore)
Sep-22	first contract under Mission Raftar project, with Eastern Railway for deployment of Kavach	over 260 kms of track and 120 locomotives, from Howrah to Pradhankhanta.	205.88
Sep-22	West Central Railways	KAVACH over 549kms of track and 87 locomotives	353.84
Sep-22	Integral Coach Factory (ICF) is manufacturing the Vande Bharat trainsets, designed to run at 160 kmph.	ICF for the supply of 46 sets of Kavach, to be installed at the time of manufacture of the trainsets,	31.66
Jun-23	East Central Railway (via Ashoka Buildcon Ltd)	Kavach & OFC for 417 km, 60 locos (Pradhankhunta-DDU)	135
Dec-24	Chittaranjan Locomotive Works	Kavach (TCAS) on 2,200 locos	1522.4
Feb-25	Western Railway (Ahmedabad Div., Consortium)	Kavach for Ahmedabad-Palanpur & Ahmedabad-Samakhiyali (402 km)	410.42
Mar-25	Bhopal Division, West Central Railway	Kavach for Bina-Itarsi-Jujharapur & BPL-SHRN sections	148.44
Mar-25	Western Railway (Consortium)	Kavach implementation (consortium order)	244.68
Mar-25	North Central Railway (Consortium)	Kavach implementation (consortium order)	255
Mar-25	Central Railway (5 contracts)	Kavach for 413 stations, 3,900 km (18 months)	762.56
May-25	Western Railway	Kavach for 48 stations, 428 km (to be completed in 730 days)	145.83
May-25	IRCON International Limited	Kavach for 85 stations, 778 km (to be completed in 18 months)	101.55
Jun-25	South Central Railways (Vijayawada —Ballarshah section)	Kavach for station 48 & No of locomotives 10, 446kms track (to be completed in 18 months)	132.95
Jun-25	South Central Railways upgradation of the Kavach Version 3.2 to Version 4.0 in Mudkhed (Including)- Manmad (Excluding) Section	Kavach for 350 Kms (to be completed in 24 months)	30.67

Industry growth drivers:

- **Electric Vehicle (EV) Battery Demand Surge:** India's EV battery market is projected to grow at a 22.6% CAGR (2025–2033), driven by government incentives (FAME scheme), declining battery costs, and expanding charging infrastructure. The market size is expected to reach USD 13.89 billion by 2033, fueled by rising EV adoption across two-wheelers, three-wheelers, and commercial vehicles.
- **Renewable Energy Storage Expansion:** India's renewable energy storage market is forecast to grow at an 11.5% CAGR (2025–2033), reaching USD 7.3 billion by 2033. Government targets of 500 GW renewable capacity by 2030 and investments in grid stability solutions are key drivers.
- **Defense Electronics Modernization:** The global defense electronics market is growing at a 5.8% CAGR (2025–2034), with India prioritizing indigenous production under “Make in India.” The Indian defense budget is projected to reach USD 24.39 billion by 2030, driven by UAVs, cybersecurity, and space-based systems.
- **Railway Safety and Automation Investments:** Indian Railways' KAVACH 4.0 initiative aims to deploy collision avoidance systems on 30,000 km of tracks by 2028, creating a ₹30,000 crore opportunity for safety and signaling technologies Industry Context.
- **Telecom and Data Center Boom:** India's data center market is expanding at a 15.07% CAGR (2025–2030), necessitating reliable backup batteries (VRLA, Ni-Cd) and power electronics. 5G rollout and telecom tower expansion further drive demand Industry Context.

Company's growth drivers:

- **KAVACH Market Leadership:** HBL holds 45% market share in Indian Railways' KAVACH systems, with an order book of ₹3,618 crore (as of April 2025). Recent contracts include 3,900 km of track, 413 stations, and 2,200 locomotives, ensuring revenue visibility for 3–5 years.
- **Lithium-Ion Battery Expansion:** HBL is investing ₹100 crore in FY25 to scale lithium-ion production, targeting e-mobility and defense applications. Partnerships with Siemens for metro/train batteries enhance global competitiveness.
- **Defense Electronics Expertise:** HBL supplies 100% indigenous torpedo batteries and SIL-4 certified systems for artillery fuses and UAVs. Defense contracts contribute 29% of revenue, with exports to Israel and UAE.
- **Global Export Growth:** Exports account for 15% of revenue, including railway batteries for Siemens (Germany) and the Massachusetts Bay Transportation Authority (USA). Defense battery exports to Israel/UAE are growing at 20% YoY.
- **Strategic Partnerships:** Collaborations with Reliance Industries (Jamnagar Refinery), BSNL, and automotive OEMs provide recurring orders. Long-term defense contracts with HAL and the Indian Navy ensure stable revenue.
- **E-Mobility and Renewable Energy Push:** HBL's electric drive train kits and Li-ion packs target commercial EVs. Renewable energy storage solutions, including grid-scale Li-ion systems, align with India's 500 GW renewable target, tapping into a projected ₹7.3 billion market by 2033.

Gross Profit:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Cost of Goods Sold	₹835	₹780	₹885	₹1,064	₹816	₹687	₹563	₹753	₹833	₹1,150	₹971
as a % of Revenue	62%	55%	58%	65%	64%	63%	62%	61%	61%	51%	49%
Y-O-Y growth		-7%	13%	20%	-23%	-16%	-18%	34%	11%	38%	-16%
Cost of materials consumed	₹765	₹767	₹892	₹1,017	₹805	₹676	₹553	₹759	₹831	₹1,208	₹997
as a % of Revenue	57%	55%	58%	62%	64%	62%	61%	61%	61%	54%	51%
Y-O-Y growth		0%	16%	14%	-21%	-16%	-18%	37%	9%	45%	-17%
Purchases of Stock-in-Trade	₹4	₹3	₹6	₹12	₹4	₹2	₹3	₹2	₹1	₹0	₹0
as a % of Revenue	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Y-O-Y growth		-25%	100%	100%	-67%	-50%	50%	-33%	-50%	-100%	-
Changes in Inventory	₹66	₹10	(₹12)	₹35	₹7	₹10	₹7	(₹7)	₹1	(₹59)	(₹26)
as a % of Revenue	5%	1%	-1%	2%	1%	1%	1%	-1%	0%	-3%	-1%
Gross Profit	₹515	₹626	₹652	₹570	₹450	₹405	₹349	₹483	₹536	₹1,084	₹996
YoY Gross profit Growth		22%	4%	-13%	-21%	-10%	-14%	38%	11%	102%	-8%
Gross profit Margin	38%	45%	42%	35%	36%	37%	38%	39%	39%	49%	51%

- **FY16 and FY17:** - margin swing from expansion to early contraction. In FY16, gross margin expanded by 6–8% (from 38% to 45%) as global lead prices dropped and the company executed a sharp inventory reduction from ₹66 Cr to ₹10 Cr lowering cost of goods sold. This favourable cost environment helped lift profitability despite flat revenue growth. However, in FY17, margins **contracted by 2–4%**, falling to 42%. This was primarily due to a rebound in input costs, especially for lead and nickel, which drove material consumption up 16% well ahead of the 9% revenue increase. HBL couldn't fully pass on this inflation, leading to partial margin erosion.
- **FY18 to FY23:** - Marked by **volatile yet broadly subdued gross margins**, with a pronounced low in FY18 and a modest recovery by FY22–23. In FY18, gross margin **declined steeply by 6–8%**, dropping to 35%, as lead prices surged again and materials consumed rose to 62% of sales. Competitive pricing pressures constrained HBL's ability to recover input cost hikes, causing one of its worst margin compressions. In the years that followed, margins remained relatively flat until FY22, when a **modest gain of 0.5–1.5%** was achieved. This improvement came as HBL diversified into higher-value offerings like defence batteries, rail electronics, and export products. These segments carried better pricing power and operational efficiency, helping to partially offset the continued inflationary pressures in raw materials.
- **FY24 and FY25:** - Was a phase of **strong margin expansion**, driven by strategic repositioning. In FY24, HBL's gross margin surged by 9–11%, rising from 39% to 49%. The company exited low-margin stock-in-trade and leaned into its most profitable verticals defence, aviation, and railway electronics where it commanded better pricing and customer leverage. Additionally, improved scale and project execution further enhanced margin efficiency. The growth trend continued into FY25, with an additional **1.5–2.5% gain** pushing margins up to 51%. This was backed by the execution of large, high-margin Make-in-India defence orders, steady in-house manufacturing volumes, and disciplined pricing strategy, solidifying HBL's turnaround into a high-margin business model.

EBITDA:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
EBITDA	₹140	₹135	₹129	₹126	₹97	₹81	₹67	₹139	₹151	₹423	₹392
YoY EBITDA Growth		-4%	-4%	-2%	-23%	-17%	-16%	106%	9%	180%	-7%
EBITDA Margins	10%	10%	8%	8%	8%	7%	7%	11%	11%	19%	20%

- **FY15 and FY16:** - HBL operated a **labour-intensive manufacturing model**, with high employee costs (₹136–99 Cr) and steady “Other Expenses” (20–21% of revenue). However, strategic restructuring began: **contract wages doubled**, while energy and admin costs dropped by 26–24%. This leaner cost approach modestly improved EBITDA margin toward 12%.
- **FY17 and FY18:** - Despite revenue growth, EBITDA margin **contracted** due to rising input costs and a **cost-heavy expansion into defence electronics**. Manufacturing costs rose (₹150 Cr→₹174 Cr), and **consultancy expenses spiked** (₹13 Cr) for TCAS/TMS approvals. Operating cost inflation, not yet

offset by scale, trimmed margins back to 10%.

- **FY19 to FY21:** - In response to COVID and sluggish demand, HBL **aggressively cut costs** employee expenses fell to ₹72 Cr, and “Other Expenses” dropped 37% (₹315 Cr→₹200 Cr). Despite flat revenue, this **leaner cost structure lifted EBITDA margin** steadily to 13–14%, aided by stable gross margins.
- **FY22 and FY23:** - As revenue rebounded, margin held firm due to **operating leverage**. Employee and other costs rose, but remained contained as a share of sales. New costs like **works contract (₹11 Cr in FY23)** emerged, but better product mix (defence, exports) helped sustain EBITDA margin near 11%.
- **FY24 and FY25:** - Though gross margin soared from 39% to 51%, **EBITDA margin dipped slightly** due to a sharp spike in costs. Employee expenses jumped 43% YoY (₹158 Cr), and **Other Expenses surged 83% to ₹503 Cr (23% of revenue)** driven by **works contract (₹143 Cr)** and contract wage inflation. The pivot to **KAVACH and turnkey tech projects** scaled revenue, but with high upfront execution costs, EBITDA margin slipped back toward ~14%.

EBIT:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
EBIT	₹87	₹84	₹80	₹80	₹53	₹40	₹29	₹104	₹116	₹382	₹348
Y-O-Y growth		-4%	-4%	0%	-34%	-24%	-28%	264%	12%	230%	-9%
EBIT Margins	6%	6%	5%	5%	4%	4%	3%	8%	8%	17%	18%

- **FY15 and FY18:** - EBIT margins saw a gradual dip due to flat operating profit and higher depreciation. The sharp jump in depreciation to ₹53 Cr in FY15 was driven by the **Companies Act, 2013 (Schedule II)**, which accelerated asset write-downs. Although revenue grew modestly, EBIT remained flat at ₹80 Cr due to elevated cost structures and rising depreciation, keeping margins suppressed around 5–6%.
- **FY19 - FY21:** - Amid rising input costs and COVID-led revenue pressure, EBIT fell further despite cost rationalization. Though depreciation moderated (₹35–44 Cr), weak gross margins and subdued topline resulted in **EBIT margins bottoming out at just 3% in FY21**. This reflected both **volume pressure** and **minimal contribution from high-value segments** during this transition phase.
- **FY22 - FY23:** - The margin recovery was led by **strong topline rebound** and better sales mix (defence, exports). Despite the depreciation charge staying steady, EBIT more than tripled (₹29 Cr → ₹116 Cr), lifting margin to 8%. Asset-light expansion helped operating leverage kick in, without adding to depreciation, keeping **EBITDA-to-EBIT conversion efficient**.
- **FY24 - FY25:** - A significant EBIT surge (₹116 Cr → ₹382 Cr) came as gross margins soared, and HBL executed large, **Make-in-India defence and KAVACH contracts**. Crucially, despite the ₹1,600 Cr revenue in FY24, depreciation remained stable, thanks to HBL’s **tech-oriented, capex-light model**. This enabled EBIT margins to **nearly double to 18%**, as margin gains weren’t eroded by incremental depreciation.

PBT:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Profit before Tax	₹26	₹27	₹54	₹55	₹43	₹40	₹19	₹122	₹130	₹377	₹374
Y-O-Y growth		6%	101%	1%	-22%	-6%	-52%	530%	6%	190%	-1%
PBT Margins	2%	2%	4%	3%	3%	4%	2%	10%	9%	17%	19%

- **FY15 and FY16:** - PBT fell to around ₹26–27 crore, a steep decline from ₹47 crore in FY14. This drop was primarily due to heavy legacy debt accumulated from earlier capex cycles, with total debt standing at ₹734 crore in FY14. High finance costs of ₹68–76 crore per year (5–6% of revenue), driven by interest rates of 10–12%, significantly eroded profitability. While other income ranged from ₹9–14 crore, it wasn’t enough to offset the interest burden. Margins compressed to just 2%, reflecting operational stress and limited financial flexibility.
- **FY17 - FY21:** - FY17 and FY19, PBT steadily recovered, reaching ₹54–55 crore with margins improving to around 4%. This turnaround was driven by HBL’s strategic focus on debt reduction

through strong internal accruals and asset monetization. Finance costs dropped from ₹68 crore to ₹46 crore, supporting improved bottom-line performance. Though PBT dipped slightly to ₹43 crore in FY19 due to market softness, the company maintained financial discipline. However, FY20 and FY21 saw another dip in PBT to ₹40 crore and ₹19 crore, respectively, as COVID-19 disrupted operations. Even though finance costs continued to decline (down to ₹14.49 crore in FY21), weak operational profits and lower other income (₹9.48 crore) kept margins suppressed at around 2%.

- **FY22 - FY25:** - From FY22 onward, HBL Engineering witnessed a major profitability transformation. PBT surged from ₹122 crore in FY22 to an all-time high of ₹374 crore by FY25, with margins expanding dramatically from 10% to 19%. This explosive growth was driven by a shift toward high-margin businesses like defence electronics and railway safety systems (including KAVACH), combined with strong cost control and operating leverage. Debt was almost eliminated by FY22, keeping finance costs minimal. Although FY24–25 saw a temporary rise in finance costs to ₹13 crore due to short-term high-interest working capital borrowings (effective rate 18%), the impact was limited in the context of soaring profits.

TAX:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Tax expense	₹10	₹12	₹16	₹23	₹15	₹14	₹6	₹29	₹31	₹96	₹97
as a % of Total Revenue	1%	1%	1%	1%	1%	1%	1%	2%	2%	4%	5%
Effective Tax Rate	41%	46%	30%	44%	36%	36%	32%	24%	24%	27%	26%

From FY14 to FY25, HBL Engineering's tax trends reflect major regulatory and strategic shifts. The effective tax rate was 16% in FY14 but jumped to 41–46% in **FY15–16** due to Schedule II of the Companies Act 2013, which changed depreciation norms and created deferred tax liabilities. In **FY17–18**, rates fluctuated between 30–44% as earlier exemptions were phased out and MAT became applicable. During FY19–21, tax payments dropped (₹15 Cr to ₹6 Cr) due to lower COVID-era profits, but effective rates stayed high (32–36%) because of deferred tax adjustments. A turning point came in **FY22–25** when HBL adopted the new 22% corporate tax regime, stabilizing effective rates around 24–25.6%

PAT:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Profit After Tax	₹15	₹15	₹38	₹32	₹28	₹26	₹14	₹94	₹98	₹280	₹276
Y-O-Y growth		-2%	158%	-18%	-13%	-5%	-48%	583%	5%	185%	-1%
PAT Margins	1%	1%	2%	2%	2%	2%	2%	8%	7%	13%	14%

- **FY15 and FY16:** - PAT came under significant pressure. The main driver was the spike in effective tax rates due to the implementation of Schedule II under the Companies Act 2013. This mandated accelerated depreciation, creating deferred tax liabilities and pushing the effective tax rate as high as 41–46%. Despite modest profits, a disproportionately large tax outgo ate into the bottom line, suppressing PAT. FY16 showed no real improvement, as continued regulatory headwinds and weak PBT meant the company struggled to deliver meaningful net profits.
- **FY17 - FY21:** - This phase saw gradual stabilization in PBT, but PAT growth remained muted. From FY17 to FY19, the tax burden stayed elevated—between 30–44%—as the company exhausted earlier tax benefits and became fully subject to MAT. PAT improved nominally as operations strengthened, but high tax incidence limited the net gains. FY20 and FY21 were particularly weak due to COVID-19 disruptions. Even though the absolute tax outgo declined due to lower profits, the effective tax rate remained high (32–36%) because of deferred tax impacts, leaving PAT margins at their lowest point in the decade.
- **FY22 - FY25:** - A clear turnaround began in FY22. With a substantial jump in pre-tax profits and the adoption of the new 22% corporate tax regime, HBL's effective tax rate moderated to ~24–25.6%. This tax efficiency, combined with strong earnings from higher-margin segments, drove a sharp increase in PAT. FY23 built further on this trend with record profitability. By FY25, PAT margins hit a decade-high, reflecting not just improved operations but also a clean and sustainable tax structure. HBL entered a new phase of robust, fully-taxed earnings growth.

Fixed Assets:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Fixed Assets	₹502	₹463	₹450	₹389	₹358	₹331	₹322	₹346	₹370	₹375	₹465
As a % of Total Assets	32%	32%	31%	29%	31%	30%	31%	31%	29%	23%	23%
Fixed assets turnover	2.69	3.03	3.41	4.2	3.54	3.3	2.83	3.57	3.69	5.96	4.23

- FY14-FY21:** HBL Engineering's fixed assets decreased steadily from ₹551 crores in FY14 to ₹322 crores in FY21 (a 41.5% reduction) due to some strategic factors:
 - Deliberate Asset-Light Strategy:** The company shifted toward an asset-efficient model, "At HBL, engineering includes development of both the products and the customised equipment made in-house. This reduces capital cost..."
 - Asset Monetization:** During this period, the company likely sold or retired older, less efficient assets while focusing on improving utilization of remaining facilities.
- FY22-FY25:** The trend reversed from FY22-FY25, with fixed assets increasing to ₹465 crores by FY25, driven by:
 - Selective Technology Investments:** The rise in CWIP to ₹81 crores in FY22 indicates targeted investments in new production capabilities.
 - Revenue-Driven Expansion:** As business grew (especially in high-tech segments), the company made strategic asset additions.
 - Project-Specific Assets:** The company invested in specialized equipment for turnkey projects like KAVACH, necessitating some fixed asset growth.

Working capital:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Working Capital	₹682	₹626	₹695	₹683	₹600	₹518	₹465	₹493	₹526	₹635	₹726
As a % of Revenue	51%	45%	45%	42%	47%	47%	51%	40%	38%	28%	37%
Working capital turnover	1.98	2.25	2.21	2.39	2.11	2.11	1.96	2.51	2.6	3.52	2.71
Working capital days	184	162	165	152	173	173	186	146	140	104	135
Trade Receivable	₹390	₹427	₹471	₹453	₹363	₹305	₹254	₹293	₹312	₹382	₹373
As a % of Revenue	29%	30%	31%	28%	29%	28%	28%	24%	23%	17%	19%
Trade Receivable turnover	3.46	3.3	3.26	3.61	3.49	3.58	3.59	4.22	4.39	5.84	5.27
Trade Receivable days	105	111	112	101	105	102	102	86	83	62	69
Inventory	₹517	₹396	₹408	₹367	₹325	₹304	₹290	₹307	₹336	₹433	₹534
As a % of Revenue	38%	28%	27%	22%	26%	28%	32%	25%	25%	19%	27%
Inventory turnover	2.61	3.55	3.77	4.45	3.9	3.59	3.15	4.03	4.07	5.16	3.68
Inventory days	140	103	97	82	94	102	116	91	90	71	99
Trade Payable	₹183	₹165	₹164	₹126	₹76	₹78	₹67	₹88	₹98	₹130	₹181
As a % of Revenue	14%	12%	11%	8%	6%	7%	7%	7%	7%	6%	9%
Trade payable turnover	7.38	8.54	9.37	12.97	16.62	13.98	13.54	14.11	13.93	17.11	10.87
Trade payable days	49	43	39	28	22	26	27	26	26	21	34
Advance Received From Customer	₹42	₹32	₹20	₹12	₹12	₹13	₹11	₹19	₹24	₹49	
As a % of Revenue	3%	2%	1%	1%	1%	1%	1%	2%	2%	2%	

- FY14-FY16:** During this period, HBL Engineering actively tackled its bloated working capital (52% of revenue in FY14), implementing fundamental structural changes. This wasn't merely cyclical but represented a deliberate strategic shift. "transitioning from commodity telecom batteries to value-added product segments," requiring a complete overhaul of inventory management. The most dramatic improvement was in inventory, which dropped from 47% of revenue (170 days) to 28% (103 days) as the company eliminated slow-moving stock from legacy businesses.
- FY17-FY18:** This period saw the first real impact of operational discipline. Inventory days dropped sharply (to 82 by FY18), and receivable days improved as the company implemented better inventory planning, tighter credit controls, and more efficient supply chain management. A focus on "improving working capital management" and "optimizing inventory and receivables." These actions were supported by a shift toward higher-value, faster-moving segments like defence and electronics, which allowed for leaner inventories and quicker cash conversion.

- **FY19–FY21:** The onset of COVID-19 disrupted both sales and supply chains. HBL adopted a defensive posture, increasing inventory to ensure production continuity amid global uncertainties, which pushed inventory days back up (to 116 by FY21). Receivable days remained elevated as some customers delayed payments during the pandemic. Working capital as a percentage of revenue rose again (peaking at 51% in FY21), and the working capital cycle lengthened (186 days), reflecting a conscious choice to prioritize supply security and customer retention over efficiency during a turbulent period.
- **FY22–FY24:** Post-pandemic, HBL shifted toward tech-driven, project-based segments like railway electronics (KAVACH) and defence, which are less working capital intensive and benefit from milestone-based or advance payments. Improved inventory and receivable management led to a sharp drop in inventory days (71) and receivable days (62) by FY24. CARE Ratings noted a working capital cycle improvement to 114 days in FY24 (from 152 in FY23), driven by strong cash flows and better customer terms. Consequently, working capital fell to just 28% of revenue, with turnover hitting a decade-high 3.52.
- **FY25:** The spike in inventory was primarily due to project-specific stocking for large Railway TCAS orders and high-value Defence contracts

ROIC:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
NOPAT	₹51.27	₹45.39	₹56.45	₹44.56	₹33.79	₹25.65	₹19.56	₹79.36	₹87.67	₹279.56	₹257.74
Invested Capital	₹1,184	₹1,089	₹1,145	₹1,072	₹958	₹849	₹787	₹839	₹896	₹1,010	₹1,191
ROIC	4%	4%	5%	4%	4%	3%	2%	9%	10%	28%	22%

- **From FY14 to FY17,** HBL Engineering's ROIC stayed flat at 4–5% as modest NOPAT growth (₹47.4–₹56.4 crores) was offset by a large capital base (₹1,100–1,200 crores). The company remained dependent on low-margin lead-acid batteries, while investments in higher-margin railway and defence segments were yet to scale.
- **FY18 and FY21,** ROIC fell from 4% to 2% as NOPAT dropped sharply from ₹44.6 crores to ₹19.6 crores. This was due to telecom sector disruption (Jio, Vodafone-Idea merger) and COVID-19-related demand shocks, despite a reduction in invested capital from ₹1,072 crores to ₹787 crores.
- **FY22 to FY25** saw ROIC surge from 9% to 28%, driven by a 252% jump in NOPAT (₹79.4–₹279.6 crores) in FY24 and only a 20% increase in capital. Growth was fuelled by strong traction in railway electronics (KAVACH/TCAS), defence battery orders, and rising demand from the 5G telecom rollout. In FY25 NOPAT dropped because of degrowth in battery segment and invested capital increased because of pile up of inventory and Capex in Fixed assets.

Reinvestment Rate:

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Purchase of Assets	₹28	₹19	₹39	₹16	₹27	₹38	₹39	₹68	₹64	₹53	₹153
Working capital changes	₹11	(₹49)	₹87	(₹53)	(₹85)	(₹78)	(₹58)	₹60	₹14	₹98	₹93
CFO before working capital	₹95	₹119	₹138	₹132	₹100	₹84	₹74	₹149	₹173	₹458	₹432
Reinvestment Rate	41%	-25%	91%	-28%	-58%	-48%	-26%	86%	45%	33%	57%

HBL Engineering's reinvestment rate was high and volatile during FY14–FY17 due to heavy working capital and capex outflows. It turned low or negative in FY18–FY21 as the company cut inventory and adopted an asset-light approach. From FY22–FY25, it stabilized between 33–86%, reflecting efficient reinvestment to support strong growth in railway and defence segments.

LEVERAGE (D/E):

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Debt	₹594	₹522	₹458	₹344	₹216	₹151	₹70	₹63	₹86	₹67	₹75
Equity	₹604	₹608	₹728	₹750	₹766	₹773	₹782	₹866	₹951	₹1,220	₹1,483
Debt/Equity	0.98	0.86	0.63	0.46	0.28	0.2	0.09	0.07	0.09	0.06	0.05

- **FY14–FY17:** HBL maintained a high debt-to-equity ratio (above 0.40) due to its capital-intensive manufacturing roots. The company relied heavily on borrowings to fund operations and working capital, keeping leverage elevated during this period.

- **FY18–FY20:** The ratio steadily declined from 0.46 in FY18 to 0.19 in FY20. This was driven by improved cash generation, asset monetization, and disciplined working capital management as HBL shifted towards a leaner, more efficient operating model with lower capital requirements.
- **FY21–FY25:** HBL's debt-to-equity ratio dropped further, reaching 0.05 by FY25. With minimal borrowing, strong profit growth, and rising cash reserves, the company became virtually debt-free highlighting its transition to an asset-light, technology-driven model with high financial flexibility.

Return on Equity (DU-PONT):

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
PAT	₹15	₹15	₹38	₹32	₹28	₹26	₹14	₹94	₹98	₹280	₹276
Revenue from operations	₹1,350	₹1,406	₹1,537	₹1,634	₹1,266	₹1,092	₹912	₹1,236	₹1,369	₹2,233	₹1,967
PAT Margin	1%	1%	2%	2%	2%	2%	2%	8%	7%	13%	14%
Revenue from operations	₹1,350	₹1,406	₹1,537	₹1,634	₹1,266	₹1,092	₹912	₹1,236	₹1,369	₹2,233	₹1,967
Total Assets	₹1,558	₹1,435	₹1,467	₹1,342	₹1,160	₹1,103	₹1,036	₹1,133	₹1,294	₹1,654	₹1,979
Total Assets Turnover	0.87	0.98	1.05	1.22	1.09	0.99	0.88	1.09	1.06	1.35	0.99
Total Assets	₹1,558	₹1,435	₹1,467	₹1,342	₹1,160	₹1,103	₹1,036	₹1,133	₹1,294	₹1,654	₹1,979
Equity	₹604	₹608	₹728	₹750	₹766	₹773	₹782	₹866	₹951	₹1,220	₹1,483
Financial leverage	2.58	2.36	2.02	1.79	1.51	1.43	1.33	1.31	1.36	1.36	1.33
Return on Equity	3%	2%	5%	4%	4%	3%	2%	11%	10%	23%	19%

- **FY15 - FY16:** - Remained very weak in this phase, falling from 3.2% in FY15 to 2.3% in FY16. The drop was driven by a combination of declining profitability and inefficient capital use. Despite early attempts to improve working capital (like reducing inventory and tightening collections), interest costs on debt stayed high. The company was still burdened by a legacy business model with limited pricing power and stretched operating costs, which kept net income and therefore ROE suppressed.
- **FY17 - FY19:** - Moved up from 2.4% to 4.0%. The improvement was modest but meaningful, fuelled by steady gains in asset turnover. HBL started managing working capital better reducing inventory days and improving receivables and also began shifting focus toward technology-led and defence-related projects. These newer segments had better margins and required less capital intensity, which helped lift ROE even as debt reduction was still in progress.
- **FY20 - FY21:** - ROE declined again during this stretch, falling to 3.1% in FY20 and hitting a bottom at 1.8% in FY21. The COVID-19 pandemic severely impacted business operations and profitability. Sales dropped, and the company had to maintain higher inventory levels to guard against supply disruptions, which hurt asset efficiency. Additionally, with most debt already repaid by this point, HBL lacked financial leverage to amplify returns meaning any hit to profits had a direct impact on ROE.
- **FY22 - FY23:** - ROE surged to 11% in FY22 and stayed strong at 10% in FY23. A sharp rebound in profits driven by large, high-margin orders in the railway signalling and defence electronics space was the main catalyst. The business had transitioned to a more asset-light, technology-oriented model, while working capital was tightly managed. With virtually no debt, profit growth flowed straight to shareholders, significantly boosting ROE.
- **FY24 - FY25:** - FY24 saw a record high ROE of 23% as profits surged dramatically from major project wins. Efficient capital use and a lean balance sheet amplified returns, showcasing the power of HBL's transformed business model. However, FY25 saw ROE moderate to 19%. The decline wasn't due to lower profits, but rather to a rise in total assets. New capex and an increase in inventory (likely tied to future growth) reduced asset turnover, pulling down overall ROE. Still, the performance marked a continuation of strong, well-capitalized growth.

Return Equity (Leverage Constant):

Particular	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Net Profit Margin	1%	1%	2%	2%	2%	2%	2%	8%	7%	13%	14%
Asset Turnover	0.87	0.98	1.05	1.22	1.09	0.99	0.88	1.09	1.06	1.35	0.99
Leverage	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13	3.13
ROE (Leverage Constant)	3%	3%	8%	7%	7%	7%	4%	26%	24%	53%	44%

While keeping leverage constant over the year at 3.13 times ROE would look better than the original ones instead of Equity company could grow more by debt

Return on Equity (Assets turnover Constant):

Particular	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Net Profit Margin	1%	1%	2%	2%	2%	2%	2%	8%	7%	13%	14%
Asset Turnover	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Leverage	2.58	2.36	2.02	1.79	1.51	1.43	1.33	1.31	1.36	1.36	1.33
ROE (Asset Turnover Constant)	2%	2%	4%	3%	2%	3%	1%	7%	7%	13%	14%

While keeping assets turnover constant over the year at 0.75 times ROE would look different from original but if we think practical this is not possible because a growing business need to expand its capacity.

CASH CONVERSION

Particular	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
CFO Before taxes/ EBITDA	60%	125%	40%	147%	191%	201%	182%	64%	105%	85%	86%
ΣCFO Before taxes/ ΣEBITDA (5-Years)					94%	103%	131%	110%	99%	85%	91%
Trade Receivable Days	105	111	112	101	105	102	102	86	83	62	69
Inventory Days	140	103	97	82	94	102	116	91	90	71	99
Trade Payable Days	49	43	39	28	22	26	27	26	26	21	34
Cash Conversion Cycle	196	171	170	155	176	178	191	151	147	112	135
FCFF (cr)	₹62	₹143	₹5	₹149	₹168	₹140	₹86	₹41	₹68	₹228	₹88

- **CFO Before Taxes / EBITDA:** This ratio shows how efficiently profits turn into cash. HBL improved from poor conversion in the early years to a healthy 86% in FY25, thanks to tighter working capital and better collections.
- **ΣCFO Before Taxes / ΣEBITDA (5-Years):** The five-year average rose from 73% to 131% and settled at 91%, showing that HBL now consistently converts most of its profits into cash.
- **Cash Conversion Cycle:** CCC improved from 209 to 112 days, meaning HBL now gets its cash back much faster, boosting liquidity but in FY25 it increased because of inventory pile up
- **FCFF:** HBL went from negative to strong positive free cash flow (₹228 crore in FY24), showing improved profitability and disciplined capital use. Dropped in FY25 because of capex and working capital

FUND FLOW

Consolidated Fund flow					
Inflows	FY15-FY25		Outflows	FY15-FY25	
CFO before working capital changes	₹1,955	93%	Net Debt Repayment	(₹662)	33%
Interest received	₹55	3%	Net Working Capital	(₹49)	2%
Total busniess combination	₹91	4%	Net addition to fixed Assets	(₹395)	20%
Total Inflow	₹2,101	100%	Investment	(₹282)	14%
			Interest paid	(₹179)	9%
			Dividend paid	(₹103)	5%
			Income tax paid	(₹335)	17%
			miscellaneous	(₹2)	0%
			Total Outflow	(₹2,007)	100%

Inflows

- **CFO Before Working Capital Changes – ₹1,955 Cr (93%):** The company generated the bulk of its inflows from core operations, showcasing strong and sustainable business performance. High operational cash flow indicates minimal dependence on external funding.
- **Interest Received – ₹55 Cr (3%):** Earnings from surplus cash reflect disciplined treasury management and a conservative approach to liquidity deployment.
- **Business Combination – ₹91 Cr (4%):** Modest inflows from acquisitions suggest a targeted approach to inorganic growth, favouring synergy-driven deals over aggressive expansion.

Outflow

- **Net Debt Repayment – ₹662 Cr (33%):** The single largest use of funds highlights a clear priority on deleveraging and reducing financial risk. Reflects a prudent capital structure strategy.
- **Net Working Capital – ₹49 Cr (2%):** Minimal requirement indicates excellent operational efficiency in inventory, receivables, and payables management.
- **Net Addition to Fixed Assets – ₹395 Cr (20%):** Indicates reinvestment into capacity and technology, though moderate relative to operational inflows – pointing to an asset-efficient business model.
- **Investments – ₹282 Cr (14%):** Likely strategic or financial investments, balancing growth with capital preservation.
- **Interest Paid – ₹179 Cr (9%):** A significant but manageable cost, reduced over time in line with debt repayments.
- **Dividend Paid – ₹103 Cr (5%):** Reflects a balanced shareholder return policy while preserving cash for internal priorities.
- **Income Tax Paid – ₹335 Cr (17%):** This sizeable outflow reflects strong profitability and consistent tax compliance, aligned with the company's robust cash flows.

DEBT TABLE

INR Crores	Mar'15	Mar'16	Mar'17	Mar'18	Mar'19	Mar'20	Mar'21	Mar'22	Mar'23	Mar'24	Mar'25
Total Debt	₹594	₹522	₹458	₹344	₹216	₹151	₹70	₹63	₹86	₹67	₹74
Y-O-Y Growth		-12%	-12%	-25%	-37%	-30%	-54%	-10%	37%	-22%	10%
Long Term Debt	₹ 167	₹ 107	₹ 28	₹ 6	₹ 7	₹ 1	₹ 11	₹ 28	₹ 39	₹ 23	₹ 6
Y-O-Y Growth		-36%	-74%	-79%	28%	-90%	1305%	163%	42%	-42%	-74%
Long Term Lease Liability	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 8	₹ 10	₹ 11	₹ 5	₹ 5	₹ 15
Y-O-Y Growth							18%	10%	-50%	-11%	210%
Short Term Debt	₹ 427	₹ 415	₹ 430	₹ 338	₹ 209	₹ 140	₹ 48	₹ 22	₹ 38	₹ 36	₹ 49
Y-O-Y Growth		-3%	4%	-21%	-38%	-33%	-66%	-53%	70%	-5%	34%
Short Term Lease Liability	₹ 0	₹ 0	₹ 0	₹ 0	₹ 0	₹ 3	₹ 2	₹ 2	₹ 3	₹ 3	₹ 5
Y-O-Y Growth							-24%	-7%	60%	11%	44%
Total Interest	₹ 71	₹ 68	₹ 46	₹ 41	₹ 31	₹ 22	₹ 15	₹ 7	₹ 7	₹ 13	₹ 13
Avg. Cost of Borrowing	12%	12%	9%	10%	11%	12%	13%	11%	9%	17%	18%
Loans as a % of Total Asset	38%	36%	31%	26%	19%	14%	7%	6%	7%	4%	4%
Interest Coverage Ratio	1.23	1.23	1.73	1.97	1.73	1.80	1.97	13.91	17.72	29.53	26.73

From **FY15 to FY17**, carried a heavy debt load nearly ₹600 Cr in **FY15**, of which more than 70% was short-term and paid interest at roughly 12% with Interest coverage just above 1×. As the company streamlined operations and monetized assets, total debt plunged by over 50% between **FY17 and FY20**, driving the average cost of borrowing down to near 10% and lifting interest coverage toward 2× by **FY18–FY19**. From **FY21** onward, entered a near-debt-free phase: short-term borrowings dipped below ₹50 Cr, long-term debt nearly vanished, and lease liabilities remained minimal. At the same time, record profits super-charged interest coverage soaring to 14× in **FY22** and nearly 30× in **FY24** underscoring ample cushion against financing costs. Even with a modest uptick in short-term debt to support working-capital and project readiness in **FY25** (₹49 Cr), the interest burden stayed flat and coverage held above 25×, reflecting the company's shift to an asset-light, self-funded model.

EQUITY TABLE

Equity	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Shareholders Fund	₹565	₹609	₹729	₹752	₹767	₹773	₹782	₹866	₹952	₹1,221	₹1,483
No. of shares	25	25	25	28	28	28	28	28	28	28	28
Equity Capital	₹25	₹25	₹28	₹28	₹28	₹28	₹28	₹28	₹28	₹28	₹28
Reserves	₹540	₹584	₹701	₹724	₹739	₹745	₹754	₹838	₹924	₹1,193	₹1,455

Except for a one-time FY18 capital rise due to Beaver Engineering's merger, HBL's equity structure has remained stable. Growth since then has been fully funded through retained earnings, with no fresh equity raises or buybacks highlighting disciplined, self-sustained capital management.

YEAR	Mar 15	Mar 16	Mar 17	Mar 18	Mar 19	Mar 20	Mar 21	Mar 22	Mar 23	Mar 24	Mar 25
Beaver Engineering & Holdings Ltd	57%	59%	59%	0%	0%	0%	0%	0%	0%	0%	0%
A J Prasad	11%	8%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Kavita Prasad Aluru	4%	4%	4%	3%	3%	3%	3%	4%	4%	4%	4%
Advay Bhagirath Mikkilineni	2%	2%	2%	1%	1%	1%	1%	1%	1%	1%	1%
Satyanarayana Subramani Srinath Mikkilineni	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Mikkilineni Deeksha Srinath	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
A UMADEVI	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Barclays Wealth Trustees India Pvt Ltd- Mikkilineni Family Private Trust	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Barclays Wealth Trustees India Pvt Ltd- Aluru Family Private Trust			7%	49%	49%	50%	51%	51%	51%	51%	51%
Promoters & Promoter Group	74%	74%	74%	56%	56%	58%	59%	59%	59%	59%	59%
1. Institutions	6%	8%	9%	24%	24%	22%	20%	18%	1%	5%	5%
Mutual Funds	5%	8%	9%	3%	3%	1%	0%	0%	0%	0%	0%
Financial Institutions /Banks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Foreign Institutional Investors	0%	0%	0%	0%	1%	1%	0%	1%	1%	5%	5%
Venture Capital Funds	0%	0%	0%	10%	10%	10%	10%	9%	0%	0%	0%
Foreign Venture Capital Investors	0%	0%	0%	10%	10%	10%	10%	8%	0%	0%	0%
Alternate Investment fund	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%
Insurance Companies	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Others	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
2. Non-Institutions	7%	3%	2%	3%	2%	1%	1%	1%	2%	2%	2%
Bodies Corporate	7%	3%	2%	3%	2%	1%	1%	1%	2%	2%	2%
Individuals	13%	14%	14%	15%	16%	17%	19%	20%	34%	31%	30%
Individuals holding nominal share capital up to Rs.2 lakh	11%	13%	13%	14%	15%	16%	18%	20%	29%	27%	28%
Individuals holding nominal share capital in excess of Rs.2 lakh	2%	1%	1%	1%	1%	1%	1%	1%	5%	4%	2%
3. Others	1%	1%	1%	2%	2%	2%	1%	1%	3%	3%	4%
Public	26%	26%	26%	44%	44%	42%	41%	41%	41%	41%	42%
Total Number of shares (Promoter and Public)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

ACQUISITION TABLE

Date	Entity Name	Type	Purpose/Activity (Detailed)	Funding Source	Status	Notes
Mar'16 – Jul'17	Beaver Engineering & Holdings Ltd	Acquisition (Merger)	Consolidation of promoter group holdings and simplification of group structure through merger; eliminated cross-holdings, improved transparency, and enabled unified strategic decision-making for HBL's transformation into a technology-driven enterprise.	₹650 Cr (all shares) Equity swap	Current	Merged by equity swap; no cash outflow.
2011–2012	HBL America Inc	Subsidiary	Establish direct sales and distribution presence in North America to access US defense, railways, and industrial clients; enabled better customer service, faster deliveries, and compliance with US procurement requirements, supporting global expansion strategy.	Internal accruals	Current	100% owned.
Not disclosed	HBL Germany GmbH	Subsidiary	Expand into European markets by providing local distribution, after-sales support, and regulatory compliance for HBL's battery and electronics products, thus diversifying revenue streams and reducing dependence on Indian market cycles.	Internal accruals	Current	100% owned.
27-Jan-21	Torquedrive Technologies Pvt Ltd	Subsidiary	Achieve backward integration for critical manufacturing equipment and automation, reduce supply chain risk, and improve cost competitiveness for HBL's core product lines; also supports R&D and prototyping for new tech initiatives.	Internal reserves	Current	100% owned.
12-Jul-21	TTL Electric Fuel Pvt Ltd	Subsidiary	Enter the fast-growing EV charging infrastructure sector, leveraging HBL's battery expertise to diversify into clean energy and mobility solutions; positions HBL for long-term growth in the Indian and global EV ecosystem.	Internal reserves	Current	100% owned.
Not disclosed	SCIL Infracon Private Ltd	Subsidiary (Dormant)	Retain ownership of legacy real estate and infrastructure assets; kept dormant to enable potential future monetization or development as per strategic requirements.	Internal accruals	Current	Dormant subsidiary.
29-Aug-06	Naval Systems & Technologies Pvt Ltd	Associate	Strategic partnership to co-develop advanced platform management and automation systems for Indian Navy submarines and warships; aligns with HBL's defense electronics expansion and leverages synergies in R&D and government contracting.	Internal reserves	Current	41% stake.
18-Dec-03	Tonbo Imaging India Pvt Ltd	Associate	Acquire minority stake in a leading electro-optics and imaging tech company to access cutting-edge surveillance, night-vision, and targeting solutions for defense and homeland security; strengthens HBL's position in high-value defense electronics.	₹86.67 Cr (Mar 24) Internal accruals	Current	15.83% stake.

HBL Engineering's initial joint venture with Tonbo Imaging in 2022 failed to launch and was dissolved within a year due to strategic misalignment, leading HBL to write off its investment. Undeterred, HBL later took a direct equity route, investing ₹86.67 crore by March 2024 to become a significant associate in Tonbo Imaging, thereby securing access to Tonbo's advanced defence imaging technologies and strengthening its position in the defence electronics sector.

Divested Subsidiary

Date	Entity Name	Type	Purpose/Activity (Detailed)	Status
29-May-12	Bhagirath Energy Systems Pvt Ltd (BES)	Subsidiary	Divested to exit a non-core, low-margin energy systems business and sharpen focus on high-margin, technology-driven segments; freed up capital and management attention to accelerate HBL's strategic transformation and improve overall capital allocation.	Disinvested 2012
2012–13	Autotec Systems Pvt Ltd (ATS)	Subsidiary	Exited the automation systems business as part of a portfolio rationalization to concentrate on core battery, electronics, and defense verticals; divestment improved capital efficiency, reduced operational complexity, and allowed redeployment of resources.	Disinvested 2012–13
2013–14	Agile Electric Sub Assembly Pvt Ltd	Subsidiary	Divested from the electric drives and sub-assembly business to reduce diversification risk, focus on core competencies, and improve return on invested capital; part of a broader strategic cleanup to streamline operations and enhance shareholder value.	Disinvested 2013–14

Competitive advantage

Moat Dimension	Business Segment	Moat Type	Details	Strength/Advantage
Product & Customer Stickiness	Railway Electronics (KAVACH) & All Segments	Switching Costs & Mission-Critical Applications	Started R&D in 2012 with deep integration into critical infrastructure; defense, telecom, and railway clients depend on reliability and proven performance	High vendor lock-in, extremely low churn rate, consistent repeat orders across multiple segments

Regulatory & Certification Barriers	Railway Electronics & Defense Electronics	Government Approval Framework	Among few RDSO-approved vendors for railway safety systems (~40% market share); one of limited DCPD-approved vendors for defense components	Restricted competitive landscape with high qualification hurdles and lengthy approval processes
Proprietary Technology & IP	Defense Electronics & R&D	IP-Led Innovation Moat	Own design of electronic fuzes and submarine systems; ₹66 Cr spent on R&D in FY24 with multiple products developed in-house	DRDO partnerships, IPMS monopoly, technological differentiation through indigenous development
Cost Leadership & Pricing Power	Industrial Batteries & Electronics	Vertical Integration & Premium Position	In-house plate manufacturing enables cost control; fuzes and KAVACH command premium pricing due to limited alternatives	Higher margins through operational efficiency and ability to maintain premium pricing in niche markets
Niche Market Position	Industrial Batteries	Market Dominance	>70% share in defense batteries, 80% in railway Ni-Cd batteries	Critical applications, long-term clients
Export Competence	Batteries	Global Acceptance	16% of revenue from 50+ countries	Quality validation, diversification

Management

Name	Designation	Education	Key Responsibilities / Involvement	Compensation (FY24)	Other Roles / Notes
Dr. A.J. Prasad	Chairman & Managing Director	B.Tech (IIT-Kgp), MS (MIT), PhD	Founder; strategic leadership; R&D vision	₹2.01 Cr	Personal guarantor for loans (2008-09); on board of HBL Engineering, NSTPL
Kavita Prasad Aluru	Non-Executive Director	Not disclosed	Transitioned from executive to non-exec; closely involved in ops (till 2023)	₹12.87 L	Director at Naval Systems & Technologies (NSTPL)
M.S.S. Srinath	President & Executive Director	Not publicly disclosed	Oversees execution incl. KAVACH, key defense initiatives	₹56.60 L	Director at Tonbo Imaging; strategic project execution
P. Ganapathi Rao	Independent Director (since 2005)	FCA	Financial oversight; audit committees	NA	Long tenure raises independence concerns
Preeti Khandelwal	Independent Director (since 2009)	B.Com, ACS	Serves on CSR, Audit, Remuneration committees	NA	

Competency Table

Parameter	Stated Objective	Achievement	Gap/Concern
Revenue Diversification	Reduce telecom battery reliance (from 60% in FY14)	Achieved: Contribution down to ~30% in FY24; growth from defense/ railway segments.	None
Technology Leadership	Champion in indigenous R&D (e.g., KAVACH, Li-ion batteries)	KAVACH deployed on 3,900 km rail; batteries supplied to Siemens & Vande Bharat.	Delay in EIS field trials; thermal batteries took 4+ years for commercial use.
Profitability Improvement	Expand margins through high-value segments	EBITDA margin doubled to 20% by FY24; Net Profit up 178% YoY.	Cost volatility—"Other Expenses" surged to 23% of revenue due to project execution costs.
Balance Sheet Optimization	Become net debt-free by FY22	Achieved: Net cash of ₹176 crore in FY24.	Despite this, high-cost working capital loans taken for defense execution.
R&D Commercialization	Launch 5+ commercial products by FY23	Partial: KAVACH succeeded; delays in others.	Execution lag in field trials and manufacturing scale-up.
Export Expansion	Enhance export footprint	Ni-Cd batteries sold to NY Transit, Siemens Canada.	Limited export scale in Li-ion beyond Siemens; no material international traction otherwise.

Risk Category	Risk	Impact	Mitigation Strategy	Expected Time to Mitigate
Raw Material Risks	Lead price volatility (60% of battery costs)	Increased production costs, margin pressure	Diversify suppliers; long-term contracts; vertical integration (in-house recycling)	Short-term (Ongoing)
	Lithium/specialty metal shortages (geopolitical tensions)	Supply chain disruptions, delayed KAVACH production	Explore alternative chemistries (e.g., sodium-ion); secure partnerships in stable regions	Medium-term (1–3 years)
	Environmental regulations (lead toxicity)	Compliance costs, operational shutdowns	Invest in zero-liquid discharge (ZLD) systems; adopt circular economy practices	Medium-term (1–2 years)
Labour Risks	Occupational hazards (lead exposure, machinery accidents)	Worker safety incidents, legal liabilities	Rigorous safety protocols (ISO 45001); regular training	Immediate (3–6 months)
Technology Risks	Battery tech obsolescence (lithium-ion/solid-state advancements)	Loss of market share in industrial/defense battery segments	R&D investments in lithium-ion and AI-driven predictive maintenance	Long-term (3–5 years)
	Cybersecurity threats (KAVACH/data breaches)	Operational disruption, reputational damage	Enhanced IT security (VPNs, restricted access); regular audits	Immediate (6–12 months)
Geopolitical Risks	Trade restrictions (U.S.-China semiconductor disputes)	Delays in KAVACH component sourcing	Diversify suppliers (Southeast Asia, Europe); natural hedging	Medium-term (1–2 years)
	Middle East/Russia-Ukraine conflicts (oil/nickel price spikes)	Increased input costs for industrial clients	Strategic stockpiling; alternative material sourcing	Short-term (Ongoing)
Operational Risks	Project delays (bureaucratic hurdles in railway contracts)	Penalties, strained client relationships	Collaborate with Indian Railways for faster clearances; agile project management	Short-term (Ongoing)
	Working capital intensity (90–120-day payment cycles)	Liquidity crunch, reduced R&D capacity	Negotiate advance payments; optimize inventory turnover	Immediate (6–12 months)
Regulatory Risks	Defense contract audits (DRDO/MoD quality checks)	Delayed product approvals, loss of contracts	Pre-compliance testing; dedicated quality control teams	Medium-term (1–2 years)
Reputational Risks	KAVACH malfunctions (collision due to system failure)	Loss of trust with Indian Railways, contract cancellations	SIL-4 certification; real-time monitoring and rapid response protocols	Ongoing (Continuous)

BATTERIES INDUSTRY MASTERSHEET:

YEARS	FY21	FY22	FY23	FY24	FY25
REVENUE FROM OPERATIONS					
HBL Engineering Ltd	₹912	₹1,236	₹1,369	₹2,233	₹1,967
Exide Industries Ltd	₹10,359	₹12,789	₹15,078	₹16,770	₹17,238
Amara Raja Energy & Mobility Ltd	₹7,150	8,696	10,390	₹11,260	₹12,405
GROSS PROFIT MARGIN					
HBL Engineering Ltd	38%	39%	39%	49%	51%
Exide Industries Ltd	35%	32%	31%	32%	33%
Amara Raja Energy & Mobility Ltd	34%	30%	33%	33%	32%
EBITDA MARGIN					
HBL Engineering Ltd	7%	11%	11%	19%	20%
Exide Industries Ltd	13%	11%	11%	11%	10%
Amara Raja Energy & Mobility Ltd	16%	12%	14%	14%	13%
EBT MARGIN					
HBL Engineering Ltd	3%	8%	8%	17%	18%
Exide Industries Ltd	9%	8%	7%	8%	7%
Amara Raja Energy & Mobility Ltd	11%	7%	10%	10%	9%
PAT MARGIN					
HBL Engineering Ltd	2%	8%	7%	13%	14%
Exide Industries Ltd	8%	34%	5%	5%	5%
Amara Raja Energy & Mobility Ltd	9%	6%	7%	8%	8%
ROIC					
HBL Engineering Ltd	2%	9%	10%	28%	22%
Exide Industries Ltd	14%	16%	12%	12%	8%
Amara Raja Energy & Mobility Ltd	14%	9%	13%	15%	11%
TOTAL ASSET TURNOVER					
HBL Engineering Ltd	0.88	1.09	1.06	1.35	0.99
Exide Industries Ltd	0.36	0.92	1.02	0.92	0.81
Amara Raja Energy & Mobility Ltd	1.23	1.36	1.31	1.27	1.24
LEVERAGE (ASSETS/EQUITY)					
HBL Engineering Ltd	1.33	1.31	1.36	1.36	1.33
Exide Industries Ltd	3.91	1.31	1.33	1.41	1.54
Amara Raja Energy & Mobility Ltd	1.38	1.40	1.32	1.31	1.35
LEVERAGE (DEBT/EQUITY)					
HBL Engineering Ltd	0.09	0.07	0.09	0.06	0.05
Exide Industries Ltd	0.07	0.05	0.05	0.09	0.14
Amara Raja Energy & Mobility Ltd	0.02	0.03	0.03	0.02	0.04
RETURN ON EQUITY					
HBL Engineering Ltd	2%	11%	10%	23%	19%
Exide Industries Ltd	11%	41%	7%	7%	6%
Amara Raja Energy & Mobility Ltd	15%	11%	12%	13%	13%

Metric	HBL	Exide	Amara Raja
Revenue (₹ Cr)	912 → 1,967	10,359 → 17,238	7,150 → 12,405
Revenue Growth	Nearly doubled, driven by scaling of niche verticals railway electronics (esp. KAVACH orders), defence batteries, and growth in industrial and UPS sales.	Modest 16% growth as core lead-acid segment saturates; lithium-ion remains in investment phase, yet to meaningfully contribute to top-line.	53% growth supported by auto OEM/aftermarket demand, telecom batteries revival post-COVID, and healthy industrial & UPS battery growth.
Gross Margin (%)	38% → 51%	35% → 33%	32–34% (stable)
GPM Reason	Premium pricing power due to niche, customized products (like missile batteries, KAVACH units); limited price competition in defence/railway verticals.	Shrinking margins due to rising lead prices, high competition in automotive OEMs, and pricing pressure in low-margin replacement markets.	Stable margins due to tight cost control and a balanced mix of OEM and industrial segments; no meaningful dilution from low-margin businesses.
EBITDA Margin (%)	7% → 20%	13–10%	13–14%
EBITDA Reason	High operating leverage kicking in with fixed costs absorbed over larger base; better product mix with high-margin defence/railway verticals scaling fast.	Limited margin improvement despite scale — price-sensitive markets, and upfront lithium investment (e.g., cell manufacturing) adds fixed costs.	Stable due to volume growth + tight cost control; no large R&D/capex hit yet from lithium which is still under planning.
PAT Margin (%)	2% → 14%	8–5%	8–9%
PAT Reason	Lower interest costs (debt-free), minimal depreciation drag, and consistent cost controls drive PAT margin expansion; tax benefits from defence orders help.	PAT stagnates due to depreciation from large capex (Bangalore lithium plant) and higher input costs not fully passed on.	Strong EBITDA + low finance costs = healthy PAT. Lithium-related R&D/infra still in prep stage, not yet dragging profitability.
ROE (%)	2% → 19%	11–6%	13–15%
ROE Driver	ROE expansion led by strong profit growth without major equity dilution or capex; margin expansion directly impacts returns due to lean capital employed.	ROE capped due to subdued earnings and large lithium capex (JV + infra); capital employed rising faster than PAT.	Decent return profile due to stable earnings, no equity dilution, and reinvestment in profitable, non-disruptive verticals.
ROIC (%)	2% → 22%	14–8%	11–14%
ROIC Driver	Highly capital-efficient model; expansion focused on asset-light defence and electronic systems, not manufacturing-intensive areas.	Lithium-related projects dilute ROIC temporarily; full benefits yet to flow in, leading to lower near-term capital productivity.	Healthy ROIC from gradual, measured capex cycle; investing in automation and selective cell infrastructure.
Asset Turnover (x)	2.4x → 3.5x	2.0–2.3x	2.0–2.2x
Turnover Reason	High asset efficiency as the business leans toward engineering, not large-scale manufacturing; capital discipline allows better throughput on assets.	Manufacturing-intensive model — large plants and inventory cycles keep turnover moderate; lithium expansion will suppress near-term efficiency further.	Consistent production cycles and diversified sales (auto + industrial) keep turnover steady; no sharp efficiency jump but no slippage either.
Leverage (D/E)	0.1x (essentially debt-free)	0.3–0.5x	0.2–0.3x
Leverage Reason	Funded all expansion via internal accruals; government projects often come with upfront payments, keeping WC needs minimal.	Raised debt to fund lithium JV and cell infra; some term loans for capacity expansion also contribute.	Conservative capital structure; co. uses moderate borrowing only for capex in cell infra & backward integration.

KAVACH (TCAS) INDUSTRY MASTERSHEET:

YEARS	FY20	FY21	FY22	FY23	FY24
REVENUE FROM OPERATIONS					
HBL Engineering Ltd	₹1,092	₹912	₹1,236	₹1,369	₹2,233
KERNEX MICROSYSTEMS (INDIA) LTD	₹ 15	₹ 18	₹ 7	₹ 4	₹ 20
Medha Servo Drives	₹ 1,948	₹ 1,592	₹ 1,724	₹ 2,336	₹ 3,937
QUADRANT FUTURE TEK LTD		₹ 73	₹ 104	₹ 153	₹ 151
GROSS PROFIT MARGIN					
HBL Engineering Ltd	37%	38%	39%	39%	49%
KERNEX MICROSYSTEMS (INDIA) LTD	31%	78%	45%	30%	34%
Medha Servo Drives	37%	48%	48%	41%	43%
QUADRANT FUTURE TEK LTD		35%	25%	29%	43%
EBITDA MARGIN					
HBL Engineering Ltd	7%	7%	11%	11%	19%
KERNEX MICROSYSTEMS (INDIA) LTD	-49%	21%	-142%	-416%	-103%
Medha Servo Drives	18%	18%	15%	10%	22%
QUADRANT FUTURE TEK LTD		15%	9%	17%	24%
EBT MARGIN					
HBL Engineering Ltd	4%	3%	8%	8%	17%
KERNEX MICROSYSTEMS (INDIA) LTD	-61%	12%	-164%	-475%	-129%
Medha Servo Drives	17%	17%	13%	7%	20%
QUADRANT FUTURE TEK LTD		11%	6%	15%	17%
PAT MARGIN					
HBL Engineering Ltd	2%	2%	8%	7%	13%
KERNEX MICROSYSTEMS (INDIA) LTD	23%	11%	-259%	-496%	-136%
Medha Servo Drives	14%	15%	14%	5%	20%
QUADRANT FUTURE TEK LTD		7%	2%	9%	10%
ROIC					
HBL Engineering Ltd	7%	5%	16%	17%	52%
KERNEX MICROSYSTEMS (INDIA) LTD	-18%	4%	-25%	-48%	-30%
Medha Servo Drives	25%	17%	12%	5%	33%
QUADRANT FUTURE TEK LTD		12%	5%	15%	14%
TOTAL ASSET TURNOVER					
HBL Engineering Ltd	0.99	0.88	1.09	1.06	1.35
KERNEX MICROSYSTEMS (INDIA) LTD	0.17	0.19	0.08	0.04	0.12
Medha Servo Drives	0.87	0.63	0.63	0.68	0.95
QUADRANT FUTURE TEK LTD		1.24	0.92	1.29	1.06
LEVERAGE (ASSETS/EQUITY)					
HBL Engineering Ltd	1.43	1.33	1.31	1.36	1.36
KERNEX MICROSYSTEMS (INDIA) LTD	1.44	1.51	1.66	1.27	1.51
Medha Servo Drives	1.30	1.29	1.24	1.50	1.36
QUADRANT FUTURE TEK LTD		4.28	7.22	4.04	3.24
LEVERAGE (DEBT/EQUITY)					
HBL Engineering Ltd	0.20	0.09	0.07	0.09	0.06
KERNEX MICROSYSTEMS (INDIA) LTD	0.18	0.32	0.37	0.13	0.26
Medha Servo Drives	0.00	0.00	0.00	0.18	0.06
QUADRANT FUTURE TEK LTD		2.99	5.17	2.52	1.85
RETURN ON EQUITY					
HBL Engineering Ltd	3%	2%	11%	10%	23%
KERNEX MICROSYSTEMS (INDIA) LTD	6%	3%	-36%	-24%	-25%
Medha Servo Drives	16%	12%	11%	5%	26%
QUADRANT FUTURE TEK LTD		35%	12%	47%	33%

Metric	HBL Engineering Ltd	Kernex Microsystems	Medha Servo Drives	Quadrant
Revenue (₹ Cr)	1,092 → 2,233	15 → 4 → 20	~2,000 → ~3,500+	~700 → ~1,050+
Revenue Growth	Nearly doubled, driven by scaling of niche verticals railway electronics (KAVACH), defence batteries, and growth in industrial and UPS sales.	Highly volatile; weak orders post-FY21 hurt top-line, but FY24 saw recovery via KAVACH deployment.	Strong multi-year growth driven by Vande Bharat, rail electrification, and modernization.	Robust growth fueled by large ₹979 Cr loco order and rising signaling demand.
Gross Margin (%)	37% → 49%	78% (FY21) → 30% (FY23) → ~50% (FY24 est.)	Peaked at 48%, fell to 41% due to rising costs.	Improved post R&D phase, ~44–46% in FY24.
GPM Reason	Premium pricing on niche defence/railway products with limited price competition.	FY21 peak from high-margin projects; margin dip due to cost absorption issues during low-revenue years; FY24 improved with project scale.	Initially strong margins, but competitive pricing and input costs pressured GPM.	Scale-driven efficiencies, better pricing on tech-intensive projects.
EBITDA Margin (%)	10% → ~20%	21% (FY21) → -416% (FY23) → -103% (FY24)	18% → 10% → 22% (FY24 recovery)	Dropped during R&D ramp, surged to 24.16% in FY24.
EBITDA Reason	Operating leverage and mix shift toward high-margin segments.	Volatility due to inability to cover fixed costs at low revenue base; FY24 better due to improved absorption.	Expansion phase lowered margins, then strong topline led to fixed-cost absorption.	Revenue scale and reduced R&D drag enhanced margin profile.
PAT Margin (%)	~3% → 12.1%	23% (FY20) → -496% (FY23) → -136% (FY24)	Compressed during capex phase, then rebounded to ~13–15%.	Improved to 10% in FY24 with stronger execution and control.
PAT Reason	Low interest burden, tax benefits, and cost efficiency.	Persistent fixed costs + low revenue base = deep losses; FY24 better but still negative.	Leverage and interest costs hurt PAT earlier; FY24 rebound with revenue surge.	Rising margins, improving cost structure and finance discipline boosted PAT.
ROE (%)	7% → 10% → 25% (consistent climb)	6% → -496% (FY23) → -25% (FY24)	10% (FY22) → 5% (FY23) → 26%	14% (FY22) → 47.25% (FY23) → 33.35% (FY24) (normalizing)
ROE Driver	Strong PAT growth with asset-light expansion.	High losses despite capital employed and leverage expansion.	PAT recovery + improved asset efficiency = higher ROE.	Profit expansion + capital efficiency = high ROE.
ROIC (%)	15% → 18% → 32% (steady rise)	12.5% → -410% (FY23) → -122% (FY24) (deep dip)	25% (FY22) → 5% (FY23) → 33% (sharp rebound)	12% (FY22) → 9% (FY22) → 30% (strong recovery)
ROIC Driver	Capital-light project mix; excellent margin-to-capital use.	Weak profitability + rising capital base = poor ROIC.	Capex temporarily suppressed ROIC; rebound from better asset turnover.	Asset-light product deployment boosted post-investment ROIC.
Asset Turnover (x)	2.4x → 2.8x → 3.5x (gradual efficiency gain)	0.8x (FY22) → 0.6x (FY22) → 1.2x (FY24 rebound)	2.2x (FY22) → ~2.0x (FY22) → 3.0x	1.4x (FY22) → ~1.2x (FY22) → 3.0x
Turnover Reason	Engineering-led model, no heavy manufacturing.	Poor utilization of assets in weak years; FY24 a recovery year.	Efficient project execution with improving asset throughput.	Scale from new orders improved efficiency.
Leverage (D/E)	~0.1x (essentially debt-free)	0.13 → 0.37	0.00 → 0.18	1.85 → 5.17
Leverage Reason	Internal accruals + upfront gov't payments minimized working capital needs.	Took on more capital for project buildup amid losses.	High growth phase funded partly by debt; now leveraging operating cash.	Expansion capital needs peaking, operating leverage now improving returns.

Balance Sheet	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Assets								
Non- Current Assets								
Property, plant and equipment	₹252	₹243	₹301	₹338	₹373	₹494	₹589	₹603
Capital work in progress	₹14	₹43	₹25	₹20	₹68	₹68	₹68	₹68
Right of use assets	₹10	₹10	₹7	₹6	₹18	₹18	₹18	₹18
Goodwill	₹0	₹0	₹0	₹2	₹2	₹2	₹2	₹2
Intangible assets	₹17	₹11	₹12	₹8	₹4	₹4	₹4	₹4
Intangible assets under development	₹29	₹39	₹25	₹0	₹0	₹0	₹0	₹0
Assets held for disposal	₹0	₹0	₹0	₹0	₹0	₹0	₹0	₹0
Investment accounted for using equity method	₹7	₹8	₹9	₹108	₹118	₹118	₹118	₹118
Financial assets								
Investments (Other than using Equity Method)	₹0	₹0	₹0	₹0	₹91	₹91	₹91	₹91
Other financial assets	₹46	₹31	₹43	₹70	₹53	₹53	₹53	₹53
Non current tax assets (net)	₹0	₹0	₹0	₹0	₹0	₹0	₹0	₹0
Other non-current assets	₹1	₹0	₹1	₹3	₹34	₹34	₹34	₹34
Total non-current assets	₹376	₹384	₹423	₹556	₹761	₹881	₹976	₹990
Current Assets								
Inventories	₹290	₹307	₹336	₹433	₹534	₹658	₹854	₹921
Financial assets :								
Investments	₹0	₹0	₹0	₹0	₹81	₹81	₹81	₹81
Trade receivables	₹254	₹293	₹312	₹382	₹373	₹560	₹726	₹782
Cash and cash equivalents	₹26	₹50	₹132	₹223	₹117	₹296	₹643	₹1,319
Bank balances other than Cash & Cash equivalents	₹42	₹55	₹14	₹11	₹26	₹26	₹26	₹26
Other financial assets	₹7	₹11	₹10	₹16	₹49	₹49	₹49	₹49
Current tax assets (Net)	₹1	₹0	₹3	₹0	₹0	₹0	₹0	₹0
Other current assets	₹22	₹32	₹64	₹32	₹39	₹39	₹39	₹39
Assets held for sale	₹19	₹1	₹0	₹0	₹0	₹0	₹0	₹0
Total Current Assets	₹660	₹748	₹872	₹1,098	₹1,219	₹1,709	₹2,418	₹3,217
Total Assets	₹1,036	₹1,133	₹1,294	₹1,654	₹1,979	₹2,590	₹3,394	₹4,208
Equity & Liabilities								
Equity share capital	₹28	₹28	₹28	₹28	₹28	₹28	₹28	₹28
Other equity	₹754	₹838	₹924	₹1,193	₹1,455	₹1,972	₹2,678	₹3,459
Non-controlling interest	₹0	₹0	₹0	₹1	₹0	₹0	₹0	₹0
Total Equity	₹782	₹866	₹951	₹1,220	₹1,482	₹2,000	₹2,706	₹3,486
Liabilities								
Non-Current Liabilities								
Financial Liabilities :								
Borrowings	₹11	₹28	₹39	₹23	₹6	₹0	₹0	₹0
Lease liabilities	₹10	₹11	₹5	₹5	₹15	₹15	₹15	₹15
Provisions	₹2	₹2	₹2	₹3	₹41	₹41	₹41	₹41
Deferred tax liabilities (net)	₹12	₹10	₹10	₹8	₹9	₹9	₹9	₹9
Total Non-Current Liabilities	₹34	₹50	₹57	₹38	₹71	₹65	₹65	₹65
Current liabilities								
Borrowings	₹48	₹22	₹38	₹36	₹49	₹99	₹128	₹138
Lease liabilities	₹2	₹2	₹3	₹3	₹5	₹5	₹5	₹5
Trade payables	₹67	₹88	₹98	₹130	₹181	₹230	₹299	₹322
Other financial liabilities	₹52	₹50	₹60	₹66	₹47	₹47	₹47	₹47
Other current liabilities	₹32	₹26	₹47	₹85	₹95	₹95	₹95	₹95
Provisions	₹19	₹26	₹39	₹67	₹46	₹46	₹46	₹46
Current tax liabilities	₹0	₹2	₹0	₹8	₹3	₹3	₹3	₹3
Total Current Liabilities	₹220	₹216	₹286	₹396	₹426	₹525	₹623	₹656
Total equity and liabilities	₹1,036	₹1,133	₹1,294	₹1,654	₹1,979	₹2,590	₹3,394	₹4,208

Income Statement	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
Revenue from operation	₹912	₹1,236	₹1,369	₹2,233	₹1,967	₹3,292	₹4,268	₹4,603
COGS	₹563	₹753	₹833	₹1,150	₹971	₹1,580	₹2,006	₹2,117
Gross Profit	₹349	₹483	₹536	₹1,084	₹996	₹1,712	₹2,262	₹2,485
Employee benefits expenses	₹82	₹100	₹110	₹158	₹179	₹272	₹346	₹374
Other expenses	₹200	₹244	₹274	₹503	₹425	₹697	₹897	₹979
EBITDA	₹67	₹139	₹151	₹423	₹392	₹743	₹1,019	₹1,133
Depreciation and amortisation expenses	₹39	₹35	₹35	₹41	₹44	₹49	₹64	₹77
EBIT	₹29	₹104	₹116	₹382	₹348	₹695	₹955	₹1,056
Other Income	₹10	₹14	₹18	₹18	₹26	₹32	₹38	₹41
Finance costs	₹15	₹7	₹7	₹13	₹13	₹18	₹21	₹23
EBT before Exceptional Items	₹23	₹111	₹127	₹387	₹361	₹708	₹971	₹1,074
Exceptional Items Gain/(loss)	-₹5	₹11	₹1	-₹28	-₹1	₹0	₹0	₹0
EBT after Exceptional Items	₹18	₹122	₹128	₹359	₹360	₹708	₹971	₹1,074
Tax expenses	₹6	₹29	₹31	₹96	₹97	₹179	₹246	₹272
PAT	₹12	₹93	₹97	₹263	₹263	₹529	₹725	₹802
Share of Gain/(loss) of JV	₹1	₹1	₹1	₹18	₹14	₹16	₹18	₹20
PAT after Joint venture company	₹14	₹94	₹98	₹280	₹276	₹545	₹743	₹822
Non-controlling interest-C/Y share of Profit/(Loss)	₹0	₹0	₹0	-₹1	₹0	₹0	₹0	₹0
PAT after Non-controlling interest	₹14	₹94	₹99	₹281	₹276	₹545	₹743	₹822

Cash Flow Statement	FY21	FY22	FY23	FY24	FY25	FY26E	FY27E	FY28E
CASH FLOW FROM OPERATING ACTIVITIES								
Total comprehensive income before tax	₹18	₹121	₹128	₹375	₹373	₹724	₹989	₹1,094
Adjustments for:								
Depreciation and amortisation expenses	₹39	₹35	₹35	₹41	₹44	₹49	₹64	₹77
Profit on sale of assets	₹5	-₹20	-₹5	₹0	₹0	₹0	₹0	₹0
Advances & deposits written off	₹0	₹1	₹0	₹2	₹0	₹0	₹0	₹0
Interest income	-₹4	-₹5	-₹6	-₹6	-₹11	-₹32	-₹38	-₹41
Interest expense	₹6	₹2	₹4	₹8	₹4	₹18	₹21	₹23
Bad debts written off (Credit impairment)	₹6	₹3	₹1	₹0	₹0	₹0	₹0	₹0
Provision for doubtful debts (Lifetime expected credit loss)	₹4	₹5	₹1	₹10	₹6	₹0	₹0	₹0
Other provisions	₹1	₹7	₹13	₹29	₹18	₹0	₹0	₹0
Cash flows from operating before working capital changes	₹74	₹149	₹173	₹458	₹432	₹759	₹1,037	₹1,153
(Increase)/decrease in sundry debtors	₹42	-₹46	-₹21	-₹80	-₹26	-₹186	-₹166	-₹57
(Increase)/decrease in inventories	₹14	-₹17	-₹29	-₹96	-₹101	-₹125	-₹195	-₹67
(Increase) / decrease in loans & advances	-₹26	-₹12	-₹4	-₹1	-₹8	₹0	₹0	₹0
Increase/(decrease) in trade payables	-₹11	₹20	₹11	₹32	₹51	₹49	₹68	₹23
Increase/(decrease) in current liabilities	₹28	-₹5	₹30	₹47	-₹9	₹0	₹0	₹0
Change in working capital	₹48	-₹60	-₹14	-₹98	-₹93	-₹262	-₹293	-₹100
Cash flow from operating activities before taxes	₹123	₹89	₹159	₹360	₹339	₹497	₹744	₹1,053
Income tax paid net of refunds	-₹1	-₹27	-₹37	-₹87	-₹100	-₹179	-₹246	-₹272
Net cash flow from operating activities (A)	₹121	₹62	₹122	₹273	₹239	₹318	₹498	₹780
CASH FLOWS FROM INVESTING ACTIVITIES								
Purchase of fixed assets	-₹39	-₹68	-₹64	-₹53	-₹153	-₹169	-₹159	-₹91
Sale proceeds of fixed assets	₹3	₹47	₹10	₹8	₹2	₹0	₹0	₹0
Investment of associates/JV	-₹1	-₹1	-₹1	-₹99	-₹181	₹0	₹0	₹0
Net outflow on account of Non-controlling Interest	₹0	₹0	₹0	-₹1	₹1	₹0	₹0	₹0
Interest received	₹4	₹5	₹6	₹6	₹11	₹32	₹38	₹41
Net cash flow from/(used in) investing activities (B)	-₹32	-₹17	-₹50	-₹139	-₹320	-₹137	-₹121	-₹50
CASH FLOWS FROM FINANCING ACTIVITIES								
Repayment of long-term borrowings	-₹1	-₹20	-₹18	₹9	₹16	₹6	₹0	₹0
Payment of lease liability	₹3	₹2	₹3	₹3	₹3	₹0	₹0	₹0
(Increase)/decrease in working capital borrowings	₹91	₹24	-₹10	₹9	-₹12	-₹50	-₹29	-₹10
(Increase)/decrease in unsecured loans	₹2	₹4	₹0	₹0	₹0	₹0	₹0	₹0
Dividend payment	₹3	₹10	₹11	₹12	₹14	₹27	₹37	₹41
Interest paid	₹6	₹2	₹4	₹8	₹4	₹18	₹21	₹23
Net cash flow from/(used in) in financing activities (C)	₹104	₹22	-₹10	₹42	₹26	₹2	₹29	₹54
Net increase/(decrease) in cash and cash equivalents	-₹14	₹23	₹82	₹91	-₹107	₹179	₹348	₹676
Cash and cash equivalents at the beginning of the year	₹41	₹26	₹50	₹132	₹223	₹117	₹296	₹643
Cash and cash equivalents at the end of the year	₹26	₹50	₹132	₹223	₹117	₹296	₹643	₹1,319

Relative Valuation

Peer Group - Relative Valuation

Company Name	5 year Median P/E	5 year Median EV/EBITDA	5 Year Median P/BV	5 year Median EV/ Sales	5 year Median EV/CFO
HBL engineering Ltd.	44.8x	17.0x	2.8x	1.9x	28.1x
Exide Industries Ltd	18.8x	10.6x	1.7x	1.3x	18.8x
Amara Raja Energy & Mobility Ltd	17.6x	9.3x	2.1x	1.2x	13.7x
Kernex Microsystems (India) Ltd	-17.6x	-24.8x	5.1x	42.8x	-12.0x
Quadrant Future Tek Ltd (FY25)	-	-	7.1x	13.0x	-

Exit Multiple

Exit Multiple through PE Multiple					
Exit P/E					
FY25 PAT	₹276				
Last Year Forecasted FY27	₹822				
No. of Shares	27.72				
Market Cap	₹16,204				
CMP	₹587				
Entry P/E	59				
Exit P/E	30				
CAGR	44%				

Years	0	1	2	3
Future PAT	276	545	743	822
Exit M-cap				24656
Gain				8452
Gain (%)				52%
CAGR				15%

Scenarios	PAT Growth Rate					
	15%	24%	34%	44%	54%	64%
P/E	20	-13%	-6%	1%	8%	15%
	25	-7%	1%	8%	16%	23%
	30	-1%	7%	15%	23%	31%
	35	4%	13%	21%	30%	38%
	40	9%	18%	27%	36%	44%

DCF

Discounted Cash Flow	Entry				Exit
Date	31/03/25	31/03/26	31/03/27	31/03/28	31/03/28
Year Fraction		1	1	1	1
PAT		₹545	₹743	₹822	
NOPAT		₹519	₹713	₹789	
EBIT		₹695	₹955	₹1,056	
Plus: Depreciation & Amortization		₹49	₹64	₹77	
EBITDA		₹743	₹1,019	₹1,133	
Less: Operating Taxes					
Less: Changes in Working Capital					
Net Cash provided by operating activities		₹318	₹498	₹780	
Investments in Property & Equipment		-₹169	-₹159	-₹91	
Sell of Property & Equipment's					
Cash Flow from Investing/net Capex		-₹137	-₹121	-₹50	
Int paid		-18	-21	-23	
Int (1-tax rate)		-16	-19	-21	
Net debt		44	29	10	

FCFE (Exit multiple)	₹0	₹208	₹387	₹720	₹24,656
Transactional FCFE (Exit multiple)	₹0	₹208	₹387	₹720	₹24,656

Intrinsic Value (Exit multiple)-FCFE	
Equity Value	16,281
Equity Value/Share	588

Rate of Return	
Current Price	₹587
Target Price	₹588
TP Upside	0%

Scenarios	PE					
	₹588	20	25	30	35	40
COST OF EQUITY	15%	424	522	619	717	814
	16%	414	509	604	699	794
	17%	403	495	588	680	773
	18%	393	483	574	664	754
	19%	384	472	560	648	736

Disclosure

Disclosure Document – Trinetra Asset Managers

The particulars provided in this Disclosure Document have been prepared following SEBI (Research Analyst) Regulations, 2014. This Document aims to offer essential information about the research and recommendation services offered by **Trinetra Capital** (hereinafter referred to as “Research Analyst”) to assist prospective clients in making an informed decision before subscribing to such services.

Business Activity:

Trinetra Capital is registered with SEBI as a Research Analyst under Registration No. INH000015783 dated **26 March 2004**. The company provides research and investment recommendation services across various listed securities and sectors. The Research Analyst aims to offer unbiased, client-aligned insights through fundamental research methodologies.

Terms and Conditions:

- Research Reports or Investment Recommendations are provided only to registered clients.
- Reports are based on fundamental analysis and are solely for informational purposes.
- The reports do not constitute an offer to buy, sell, or subscribe to any financial instruments.
- Clients are advised to perform independent verification and consult financial advisors before making investment decisions.

Disciplinary History:

- No penalties or directions have been issued by SEBI under the SEBI Act or any other applicable regulations against Trinetra Capital.
- There are no pending material litigations or legal proceedings against the Research Analyst or its employees.
- No findings of inspections or investigations have been initiated by any regulatory authority to date.

Disclosures with respect to Research Reports and Recommendations:

- The Research Analyst, its associates, or relatives may have financial interests in the subject companies.
- The Research Analyst or its associates or relatives may hold one percent or more of the equity securities of the subject company at the end of the month preceding the publication of the research report.
- No material conflict of interest exists at the time of publishing the report or making a public appearance.
- Trinetra Capital or its associates have not received any compensation from the subject company in the last twelve months.
- The Research Analyst has not managed or co-managed any public offering of the subject company’s securities in the past twelve months.
- The Research Analyst has not received compensation for investment banking, merchant banking, or brokerage services from the subject company in the past twelve months.
- The subject company was not a client of the Research Analyst or its associates during the twelve months before the publication of the research report.
- The Research Analyst or its associates have not received compensation for any product or service other than permitted research services from the subject company.
- No compensation or other benefits have been received from the subject company or any third party in connection with the research report.
- The Research Analyst is not engaged in market-making activity for the subject company.
- The Research Analyst has not served as an officer, director, or employee of the subject company.
- The Research Analyst did not receive any compensation or other benefits in preparation of the research document from the subject company or a third party.

Disclaimer

- Investments in the securities market are subject to market risks. Please read all related documents carefully before investing.
- Registration granted by SEBI and certification from NISM do not guarantee the performance of the intermediary or assure returns to investors.
- Fees paid for research reports and/or investment recommendations are non-refundable and non-cancellable under any circumstances.
- Trinetra Asset Managers does not offer guaranteed profits, fixed returns, or any form of assured income.
- Any images, graphics, or illustrations shared are for representational purposes only and should not be construed as investment advice.
- Trinetra Asset Managers shall not be held liable for any financial loss or damages incurred by clients as a result of investment decisions based on our reports or services.
- Please ensure that you are fully aware of the risks and costs involved in trading and investing. Consult a qualified investment advisor before making any financial decisions. Invest only as per your individual risk tolerance and profile.
- Investing or trading in equity markets involves high risk due to inherent volatility. By availing our services, you acknowledge that you fully understand the risks involved.
- Investing or trading in equity markets involves high risk due to inherent volatility. By availing our services, you acknowledge that you fully understand the risks involved.
- Testimonials, if shared, reflect the personal experience of specific clients and may not be representative of all clients. Past performance is not indicative of future results.
- All research reports, investment recommendations, and communications are confidential and intended solely for registered clients. Unauthorized distribution or sharing of this material will be treated as a breach of confidentiality and may attract legal action.
- The research and recommendations provided are general in nature and do not consider the specific financial objectives, risk profile, or needs of any particular investor. Readers are advised to seek professional financial advice before making any investment decisions. These recommendations are not to be construed as personalized investment advice.
- For any queries, please write to us at info@trinetraassetmanagers.com. Include your registered phone number to help us resolve your query faster.
- Technical or derivative-based reports are developed by analysing price trends, volumes, and market data. These may differ significantly from fundamental research, which is based on company-specific financial analysis.

Website: <https://trinetraassetmanagers.com/>

Date: 11th Aug, 2025

Analyst Name: Priyam Shah, Vishal Dudhwala