21-May-25

SECTOR UPDATE

EHV Cables

Powering India's Future Grid and Renewable Ambitions

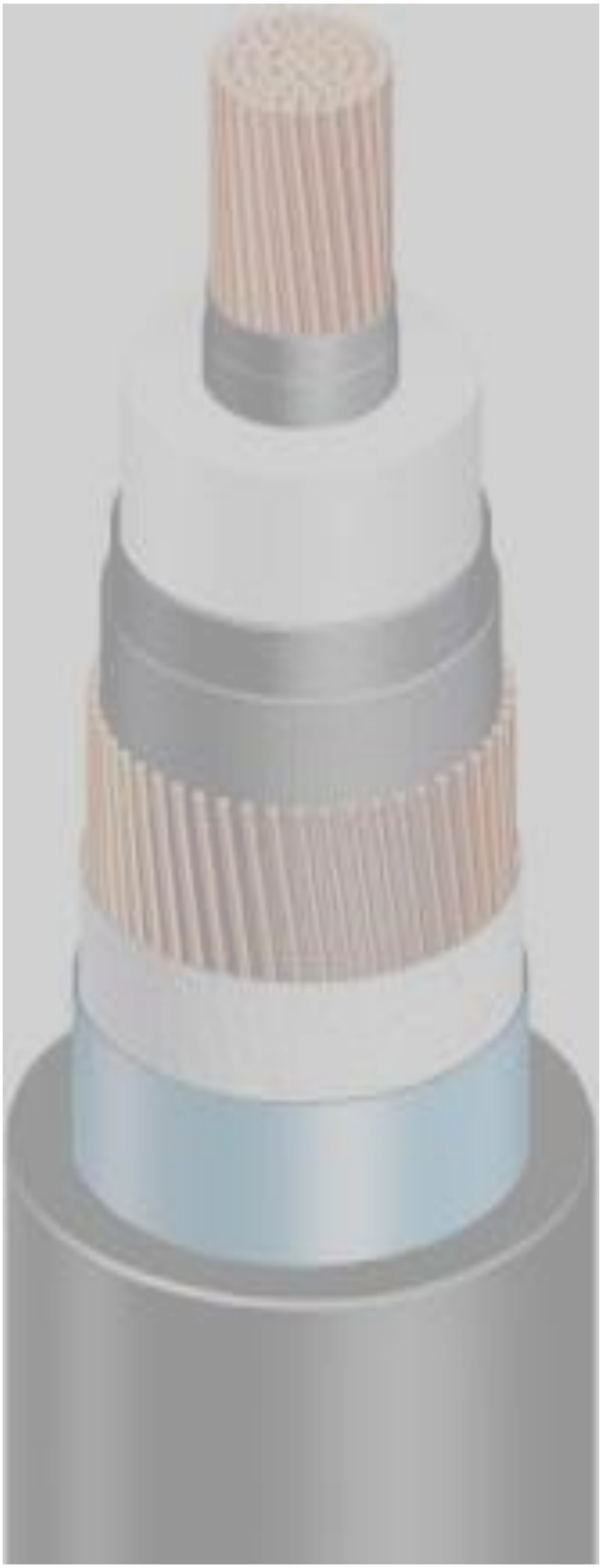


TABLE OF CONTENTS

Contents

INTRODUCTION:

India's energy infrastructure is undergoing a massive transformation to support its growing economy and rising urbanization. One critical but often underappreciated component of this transformation is the deployment of Extra High Voltage (EHV) cables. With major Indian manufacturers expanding capacity and investing in new technologies, EHV cables are poised to play a central role in strengthening the national grid.

Segment	Voltage Range	Share of Demand (%)
Low Tension (LT)	Up to 1 kV	45-50%
High Tension (HT)	1 kV to 33 kV	30-35%
Extra High Voltage (EHV)	Above 66 kV	15-20%

What are EHV Cables?

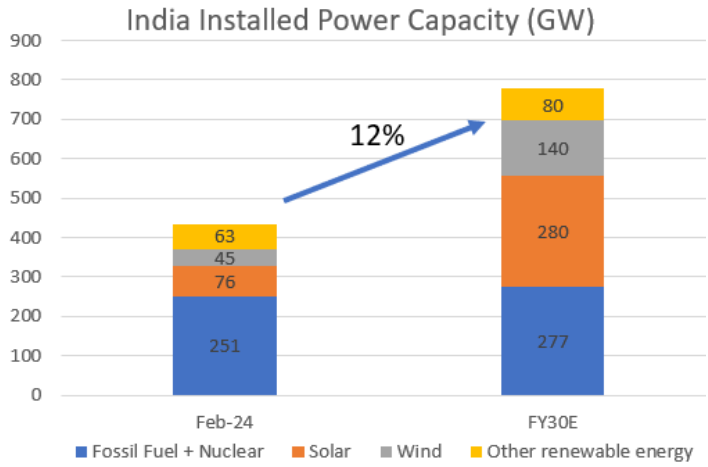
EHV (Extra High Voltage) cables typically refer to power cables rated above 132 kV, with common ratings including 220 kV, 400 kV, and in some projects, even 765 kV. These cables are used for the transmission of electricity over long distances and in urban areas where overhead lines are impractical.

Segment	Key Applications
Low Tension (LT)	Residential, commercial, urban & rural networks
High Tension (HT)	Industrial, substations, utility distribution
Extra High Voltage (EHV)	Transmission grids, renewable power evacuation

DEMAND DRIVERS:

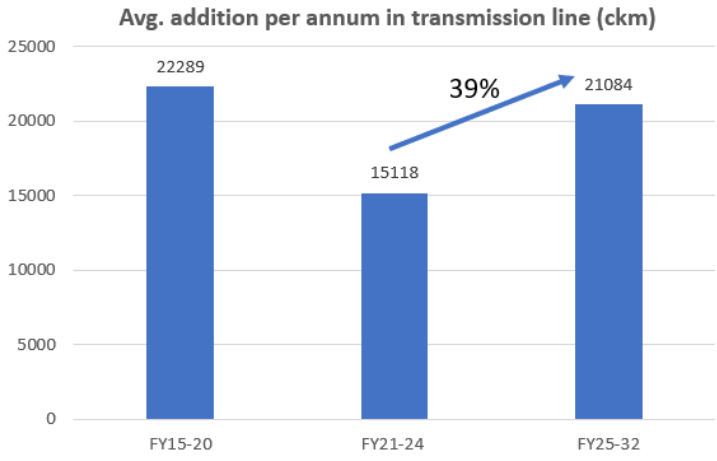
1. **Renewable Energy Integration:**

With India's installed power capacity expected to grow at a 12% CAGR, much of it from solar and wind, the need to connect generation sources to demand centers is accelerating. Transmission upgrades are crucial to avoid bottlenecks in the renewable push.



2. **Transmission & Distribution (T&D) Investment Boom:**

T&D capex is expected to outpace normal capex by nearly 2x. From FY25 to FY32, average annual additions in transmission lines are projected to rise by ~39%, with a 4% CAGR growth in the cumulative transmission network. This directly translates into higher cable volumes—especially in the EHV segment.



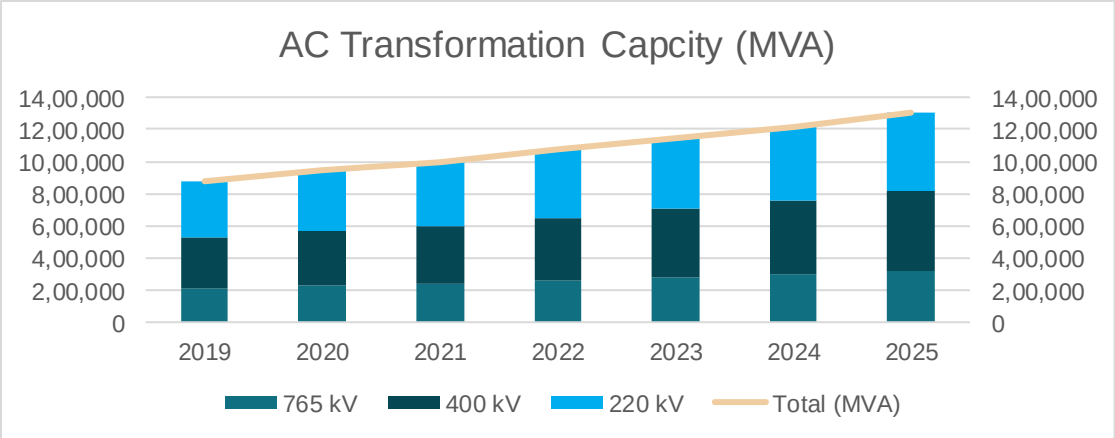
- EHV cables help minimize transmission losses, which is essential for a country like India with a geographically dispersed demand and supply landscape.
- Underground EHV cables are critical in densely populated cities where overhead lines are not feasible due to space constraints and safety concerns.
- EHV networks offer better reliability and are less susceptible to weather-related outages compared to overhead lines.
- They play a crucial role in evacuating power from remote solar and wind farms to consumption centers.

EHV CABLES AND TRANSFORMERS: A SYMBIOTIC RELATIONSHIP

The rise of EHV cables is tightly linked to the growth of EHV transformers, which step up or down voltages to levels suited for long-distance transmission and local distribution. System design mandates that cable and transformer voltage ratings must match — any EHV cable deployment typically requires a corresponding transformer upgrade.

Component	Role	Interdependence
EHV Transformers	Adjust voltage levels for transmission	Require matching EHV cable capacity to transmit efficiently
EHV Cables	Transmit high-voltage electricity across regions	Depend on transformers to match and stabilize voltage

India's power transmission infrastructure has witnessed a steady and substantial upscaling in transformation capacity across Extra High Voltage (EHV) levels—particularly at 220 kV, 400 kV, and 765 kV.



Consequently, this uptrend in higher voltage transformation capacities makes a compelling case for the parallel expansion in EHV cable manufacturing, as EHV cables are integral to modern, compact, and efficient transmission systems capable of handling such high voltages over long distances with minimal losses.

INDUSTRY UPDATES

Transformers & Rectifiers India Ltd has announced plans to expand its production capacity from 40,000 Mega Volt Ampere (MVA) to 75,000 MVA over the next 12 to 18 months, reflecting a significant commitment to supporting EHV infrastructure growth

Comments from Group CFO, TARIL

> Launched two major capacity expansions. 15,000 MVA capacity expansion started in April 2024, the Phase 1 operation by May 2025. During the year, the company has also started a capacity expansion of 22,000 MVA at the EHV transformers expansion at its Moraiya facilities, which is expected to be completed by February 2026.
>
> These projects will take our total manufacturing capacity to 75,000 MVA, enabling us to cater the rising demand from all the corners of the industry. In the next 15 months, the company will be spending INR550 crores on capex expansions to strengthen its organic as well as backward integration growth, with the target to become 100% backward integrated.

Voltamp Transformers Ltd announced it expects to complete the construction of its new transformer manufacturing facility by July 2026. The company has identified land near Vadodara in Gujarat for a new manufacturing unit for transformers. The facility will roll out transformers of up to 250 MVA capacity, in the 220 kV class.

Hitachi Energy India Ltd announced the receipt of a landmark order for an HVDC project. India's HVDC expansion is gaining significant momentum, signaling a robust pipeline for EHV cable demand.

Comments from MD , Hitachi Energy

> Moving to the next slide, Slide #5. As you can see, the Company reported its highest ever quarterly order intake of Rs. 11,594.3 crores for the Quarter 3, with a year-on-year growth of 838% on the back of large HVDC order to transmit renewable energy from Khavda in Gujarat to Nagpur in Maharashtra over a distance of 1,200 kilometers.

Other HVDC projects to be executed or under planning:

Project Name	Developer / Partners	Purpose
Leh–Kaithal (Ladakh HVDC)	MoP, under TBCB	Evacuate solar & hydro from Ladakh to North India
NEI–North India HVDC Link	MoP, CEA	Evacuation of North-East hydropower
India–Bangladesh (Bheramara)	PGCIL, Bangladesh Power Grid	Cross-border power transfer
India–Nepal (Dhalkebar Link)	PGCIL, Nepal Electricity Authority	Cross-border renewable integration

LEADING MANUFACTURERS & STRATEGIC POSITIONING

India's wires and cables sector is evolving fast, with several players making their mark in EHV:

- Polycab and KEI Industries are seen as market leaders with strong capabilities.
- Apar Industries holds above-average positioning.
- RR Kabel, Havells India, and Finolex Cables are currently placed in the average capability tier.

KEI Industries, notably, leveraged a technology collaboration with Brugg Kabel AG (Switzerland) to enter the EHV market. EHV cables now constitute 9% of KEI's cable portfolio, and the company has a strong footing in T&D-oriented projects.

Polycab: Strategic Entry into EHV Manufacturing

Polycab, already a major player in the W&C space, is making a calculated entry into EHV cable manufacturing with a greenfield facility expected to become operational by end-FY26, with commercial sales beginning in FY27.

Comments from Head of IR, Polycab

Amidst a significant infrastructure upcycle sweeping across the nation, Polycab reaffirms its unwavering dedication to playing a pivotal role in the country's development journey. We steadfastly pledge to harness our extensive expertise and ample resources towards bolstering vital infrastructure projects critical for the nation's progress. To be able to succinctly deliver on this promise, we have augmented our capital expenditure to enhance our manufacturing capacities. In FY24, we allocated ₹ 8.6 Billion towards capex. Over the next 2-3 years, we will be investing between ₹ 10 Bn & 11 Bn, each year, to expand our capacities.

To give you a more granular picture of the capex that we've undertaken in this and coming year, almost 20% of the capex that I just mentioned, will go towards the EHV manufacturing plant in Halol. This will have an asset turnover of 5x to 6x at peak capacity. The plant is expected to become operational by the end of FY26, contributing to the company's top line from FY27

Polycab has been involved with EHV cables in the past through its Engineering, Procurement and Construction (EPC) division, which has completed projects including extra high voltage cable laying. This capex marks a pivotal move for Polycab, transitioning from a distributor of EHV cables to a domestic manufacturer—which will enhance margins, supply chain control, and credibility in large infra projects

An excerpt from the FY23 Annual Report of POLYCAB gives a very good understanding of their vision in regards to EHV

- It talks about their partnership with a leading Swiss Cable manufacturer for technology transfer
- The capability to cater to higher voltage ratings up to 550 KV – making it ready for the future requirement of load transmission systems
- Their capex for a cutting edge EHV production facility in Halol is expected to commence production in FY26
- The potential estimate of the size of the domestic market of INR 40-50 bn indicating a major opportunity

Entering the Extra High-Voltage (EHV) market

India's growing power demand, especially in Tier 1 and 2 cities and smart cities, is fuelling the need for High-Voltage (HV) and Extra-High-Voltage (EHV) cables. Furthermore, as load transmission systems continue to expand, 220 KV transmission lines will soon be replaced by 400 KV, with the possibility of even higher 550 KV transmission lines.

We are seizing the opportunity to expand our market leadership in the cable industry by investing in a cutting-edge EHV production facility in Halol. Our capex investment this year will kick off the establishment of this facility, which we anticipate will commence production in FY26.

We have partnered with leading Swiss cable manufacturer, Brugg Cables, to procure the high-end technology required for EHV production. Brugg will transfer the latest design, testing, production, and installation knowledge to Polycab, enabling us to produce EHV cables up to 550 KV voltage systems. This investment will open up a potential domestic market of ₹40-50 billion, as well as significant overseas business opportunities for our Company.

EHV Power Cable	Range
High Life	1CX240 sq.mm to 1CX2500 sq.mm (IEC 60840) (66 kV to 110 kV)
UV Resistant	1CX300 sq.mm to 1CX2500 sq.mm (IEC 60840) (132 kV)
Longitudinal Water Resistant	1CX400 sq.mm to 1CX2500 sq.mm (IEC 62067) (220 kV)
Radial Water Resistant	

KEI Industries: First-Mover Advantage and Aggressive Scaling

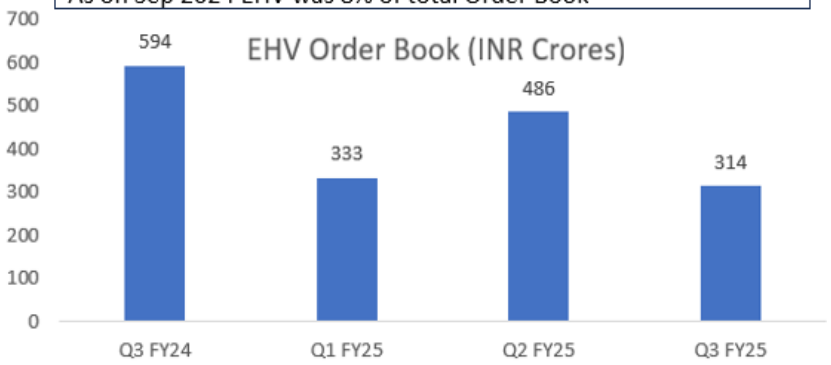
KEI, already manufacturing EHV cables, has faced both headwinds and progress in its journey. While it initially partnered with Brugg Kabel AG (Switzerland) for EHV technology, the joint venture was dissolved in November 2022, signaling KEI's intent to internalize capabilities and chart its own growth path.

In FY25, KEI is focusing on its Sanand greenfield project, which will house new capacity for LT, HT, and EHV cables:

Total capex for Sanand project: ~₹5,000 crore

- EHV allocation: ₹1,200–1,300 crore
- HT allocation: ₹1,500 crore
- Rest for LT and other segments

EHV has contributed ~9% to overall revenue in the past
EHV capacity is kept fully utilised by utilising for HT in project delays
As on Sep 2024 EHV was 8% of total Order Book



KEI Concall Excerpt

Harshit Kapadia: thanks for the opportunity, Congratulations for a very strong results again. Just wanted to clarify on the Sanand plant, we are spending INR900 crores, and that will only be for the cables manufacturing. No wires would be manufactured, right? And secondly, within cables, what proportion would be EHV, LT and HT? Could you give us some colour on that, sir?

Anil Gupta: See, EHV and HT have similar plant and machinery and they are always replaceable in terms of capacities. So we have not for any segment, of the reason, we have never kept any of our capacity idle. So secondly, LT cable I think later on, we can give you the you can explain.

Rajeev Gupta: Yes. For the Sanand, that total capacity will be close to INR5,000 crores. Out of that, close to INR1,200 crores to INR1,300 crores belonging to the extra-high voltage, close to INR1,500 crores belonging to the high-tension power cable and balance will be for low-tension power cable.

Harshit Kapadia: And HT and EHV is fungible. So that will be INR2,700 crores if, let's say, if you want to do completely HT or complete EHV on demand?

Rajeev Gupta: No, no. It's only one way around. From HT, we cannot make EHV. But from EHV, we can make HT. So basically, EHV we will be limiting to INR1,200 crores to INR1,300 crores, but HT maybe INR1,500 crores to INR3,000 crores.

A critical technical insight from the company is that EHV capacity can be flexibly used to produce HT cables, but HT capacity cannot produce EHV—giving KEI more adaptability in managing demand variability. In fact, while the structural demand for EHV is strong, KEI's quarterly performance reveals the real-world frictions that can affect execution and sales.

Achal Lohade: Good afternoon sir, thank you for the opportunity, Sir, two questions. One is any particular reason for the EHV weakness? Is it entirely for the exports? Or how do we look at this particular sub-segment in terms of FY25 and then FY27 onwards, given the new capacity?

Anil Gupta: See, sometimes this is a segment which is normally only the government utilities in the transmission sector, they buy. So a little bit of variation in the demand, in the tender process, in the clearances at site for the execution are always there. Order book is there. But projects are not executable because of the ROW issues and non-clearances. Overall, in the full year period, it will improve. But sometimes, even 2 years back also, we saw a similar situation. And this year also, we are seeing similar situations. But overall period, it will improve.

An interesting piece in KEI's Sanand capex is its vision to prepare for HVDC projects. While the company currently supplies medium-voltage and control cables for HVDC substations, it has set its sights on the more specialized segment of Extra High Voltage (EHV) DC cables. In anticipation of future requirements for underground HVDC cable systems, KEI is actively developing capabilities at its upcoming greenfield facility in Sanand. This strategic positioning will enable the company to deliver high-performance EHV DC cables, marking its foray into a critical growth area aligned with the nation's energy transmission ambitions.

Shrinidhi: Sir, just want to understand, there's a lot of demand coming from the HVDC projects. So I just want to understand, does cable go in some of the sections of these HVDC projects, high-voltage direct current transmission?

Anil Gupta: See, at the moment, in overhead transmission projects, we are supplying cables for HVDC project. But that is mostly medium-voltage and control cables for the substations and that kind of applications.

But in HVDC segment, in the times to come, EHV cable -- will be coming. And for that, we are developing our capabilities and the -- in our new capex, which is coming up at Sanand in that direction. So that -- once that project is commissioned, we are able to supply extra high-voltage cable -- extra high-voltage DC cables also, high-voltage DC cables also which are meant for underground transmission.

Apar Industries: Leveraging HVDC Expertise for EHV Ambitions

While KEI and Polycab lead today's EHV landscape, Apar Industries is quietly laying the groundwork for a significant entry by 2026, building on its deep legacy in high-voltage transformer oil.

- HVDC Experience: Apar has supplied transformer oil to India's HVDC systems since 2001 and currently commands over 85% market share in transformer oil used in HVDC applications.
- Strategic Capabilities: With a sharp rise in planned HVDC transmission projects and cables, the company is investing in a new facility to manufacture 220kV EHV cables, with machinery already finalized.
- Timeline: Commercial entry into the EHV cable segment is targeted for 2026, aligning with its broader five-year expansion strategy, which also includes an electron beam facility.

Recent concall comments from APARINDS

We are adding capacity in in-house compounding, we are doing a backward integration. This would be added in next few months. We also doubling the capacity of our copper wire drawing, that is copper which are required for cables and your house wires. We are doubling the capacity there and as far as aluminium stranding and wire drawing facilities are concerned, the expansions are going on every year. Most of the orders we have placed, I'm happy to say that by 26 we would also be in the business of EHV cables.

We are putting up a plant for 220kv cables, we have already finalised the machinery for producing these cables even for testing facilities. We are also looking at expanding our electron beam facility at the factory. So, keeping in mind where we want to be in next five years time, we are putting money into the right kind of machineries and looking at growing in those segments where we want to focus in next few years.

Apar's EHV ambitions represent a natural extension of its existing high-voltage product ecosystem. While it lags KEI and Polycab in timeline, its technical credibility in the power transmission ecosystem may enable a smoother ramp-up and differentiated positioning.

Conclusion

India's transition to renewable energy and its ambitious transmission expansion plan make EHV cables a structural growth story. KEI, Polycab, and soon Apar is well-positioned to benefit from this opportunity, backed by significant capex, strong execution, and technical edge.

The next 3–5 years will be decisive as new capacities come online, and Indian firms emerge not just as domestic leaders but credible exporters in the EHV space.

DISCLAIMER

Research Report prepared by Prateek Dugar. SEBI Registered Corporate Research Analyst. Registration: Cupressus Enterprises Pvt Ltd (owner of Intelsense.in) - INH000013828.

Compliance Officer: Soumyadip Roy. Email: equity@intelsense.in

Registration granted by SEBI, membership of BASL (in case of IAs) and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors.

This report is issued by Intelsense.in, which is regulated by the SEBI.

References to "Cupressus Enterprises Pvt Ltd" or “Intelsense.in” in this report shall mean Cupressus Enterprises Pvt Ltd unless otherwise stated. This report is prepared and distributed for information purposes only, and neither the information contained herein, nor any opinion expressed should be construed or deemed to be construed as solicitation or as offering advice for the purposes of the purchase or sale of any security, investment, or derivatives. The information and opinions contained in the report were considered by Intelsense.in to be valid when published. The report also contains information provided by third parties. The source of such information will usually be disclosed in the report. Whilst Intelsense.in has taken all reasonable steps to ensure that this information is correct, it does not offer any warranty as to the accuracy or completeness of such information. Any person placing reliance on the report to undertake trading does so entirely at his or her own risk and Intelsense.in does not accept any liability as a result. Securities and Derivatives markets may be subject to rapid and unexpected price movements and past performance is not necessarily an indication of future performance.

This report does not regard the specific investment objectives, financial situation, and the particular needs of any specific person who may receive this report. Investors must undertake independent analysis with their own legal, tax, and financial advisors and reach their own conclusions regarding the appropriateness of investing in any securities or investment strategies discussed or recommended in this report and should understand that statements regarding future prospects may not be realised. Under no circumstances can it be used or considered as an offer to sell or as a solicitation of any offer to buy or sell the securities mentioned within it. The information contained in the research reports may have been taken from trade and statistical services and other sources, which Intelsense.in believe is reliable. Intelsense.in, Cupressus Enterprises Pvt Ltd or any of its group/associate/affiliate companies do not guarantee that such information is accurate or complete and it should not be relied upon as such. Any opinions expressed reflect judgments at this date and are subject to change without notice.

1. Whether the research analyst or research entity or his associate or his relative has any financial interest in the subject company and the nature of such financial interest.	No
2. Whether it or Its associates have received any compensation from the subject company in the past twelve months.	No
3. Whether the research analyst or research entity or its associates or relatives have actual/beneficial ownership of one percent or more securities of the subject company (at the end of the month immediately preceding the date of publication of the research report or date of the public appearance).	No
4. Whether the research analyst or research entity or his associate or his relative, has any other material conflict of interest at the time of publication of the research report or at the time of public appearance.	No
5. Whether it or its associates have managed or co-managed public offering of securities for the subject company in the past twelve months	No
6. Whether it or its associates have received any compensation for investment banking or merchant banking or brokerage services from the subject company in the past twelve months.	No
7. Whether it or its associates have received any compensation for products or services other than investment banking or merchant banking or brokerage services from the subject company in the past twelve months.	No
8. Whether the subject company is or was a client during twelve months preceding the date of distribution of the research report and the types of services provided.	No
9. Whether the research analyst has served as an officer, director or employee of the subject company.	No
10. Whether the research analyst or research entity has been engaged in market making activity for the subject company.	No