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COMMERCIAL AUTOMOTIVE SEATING SYSTEMS



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Commercial Automotive Seating Systems

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Commercial Automotive Seating Systems

Pinnacle Industries has played a big hand in helping to evolve commuters' seating, pretty much across modes of transportation. **Ashish Bhatia** goes through the product lifecycle to understand what makes these commercial automotive seating systems click across the board.



 @atahishbhatia

 Ashish Bhatia

On your next trip, ditch the plan of boarding a flight. You must consider the Vande Bharat Express, to experience a modern commute that comes close to the in-flight experience. The experience is

elevated by the next generation of seating systems these trains flank. These commercial automotive seating systems are manufactured by Pinnacle Industries Ltd. Well known for seating systems, the company also dabbles in automotive interiors, EV components, and speciality



Seat Assembly

vehicles which gives it an edge over competition. Claimed to understand the crucial ergonomics like no other, Arihant Mehta, President, of Pinnacle Industries looked back in time to gauge the evolution. "Over the years, India's automotive industry has witnessed significant transformations in terms of the design, comfort, safety, and functionality of seating systems in commercial vehicles. From basic bench seats to ergonomic and technologically advanced configurations, our journey in commercial automotive seating systems showcases a remarkable evolution," he opined.

Manufacturing Railway seating systems

Under the broad spectrum of commercial automotive seating systems, the foray into railway seating holds a special place for Pinnacle Industries. "We are deeply grateful to the Indian Railways and Integral Coach Factory for entrusting Pinnacle Industries, a proud Indian company with the railway seating business, an industry by far typically dominated by established institutional or international players," Mehta averred. The opportunity is believed to have driven Pinnacle to work harder and continue delivering exceptional



Arihant Mehta,
President,
of Pinnacle Industries Ltd.

seating solutions that surpass expectations and contribute to the growth and success of the Indian Railways.

For almost a year, designers and engineers at the company are said to have worked very closely with both Indian Railways and Integral Coach Factory on the design, development, and validation of the seating range. The comprehensive range of seating systems for Vande Bharat Express trains includes 'Economy,' 'Executive,' 'Tip-Up,' and 'Folding Seats.' These have been engineered to deliver unparalleled comfort, safety, and seamlessness during train journeys.

The Economy Seats, for example, have been intelligently designed to cater to different seating capacities, offering single-seater, two-seater, and three-seater options. Passenger convenience remains a priority, with each occupant provided with modular-type charging units, allowing them to stay connected and charged throughout their journey. Moreover, the ergonomically designed seat foam profile ensures proper support and comfort during travel, with careful consideration of pressure mapping to enhance the seating experience as per Mehta. He added that the Executive Seats, designed to provide a premium



experience, incorporate a range of innovative features for enhanced passenger comfort and flexibility. Notably, passengers have taken to the luxury of a 180-degree rotating seat, offering the ability to adjust their seating position according to their preference, be it for relaxation, socialising, or work during their journey. Similar facility is also being offered on the Vistadome coach. The seat rotation can be conveniently locked or unlocked at 90 degrees using a pedal mechanism for added safety and ease of use.

To further ensure passenger convenience, a sideways sunken grab handle has been thoughtfully integrated into the seat design. Additionally, a passenger-friendly footrest with three adjustable stops offers personalised leg support during travel, enhancing overall comfort. The Executive Seats are equipped with Wago connector components, enabling easy electrical connections for various amenities. Each occupant is also provided with a modular type charging unit, ensuring they can stay connected and powered throughout the journey.

For added practicality, the side armrests of the Executive Seats are foldable, allowing easy movement between seats. Moreover, the middle armrest features a sunken snack tray, providing passengers with additional functional space and offering the in-flight experience on a train. To prioritise optimal lumbar support and comfort, the seat foam profile is ergonomically designed, considering pressure mapping for a more pleasant and relaxing travel experience. Furthermore, the electrical harness of the Executive Seats is also said to have been enclosed and routed through aluminium sections of the seats, to ensure secure and efficient electrical connections, and adding to the overall safety and reliability of the seating system.

All the seating options are claimed to have been crafted with meticulous attention to detail and high-quality materials to ensure durability and longevity. Seats are constructed with Fibre Reinforced Polymer (FRP), a material known for its exceptional corrosion resistance and cost-effectiveness in maintenance. These seats further conform to the European standard for fire-retardant properties, ensuring an elevated level of safety for passengers. To optimise space efficiency, tip-up seats and folding seats are also integrated making them suited for areas where flexibility and multipurpose usage are crucial. Passengers can easily fold them when not in use, creating additional space for passengers or luggage.

Headroom for growth

Pinnacle draws on its roots of providing seating for the iconic Matador over 27 years ago. This set the foundation over which the company expanded on volumes, product categories and business units. Fast forward to 2023, it is claimed to be one of the only integrated companies providing end-to-end products to OEMs across the ICE and EV spectrum. "Our vision has always been clear to become a one-stop solution for all categories of commercial vehicles for not just the seating systems, but also the interiors and other such components. While we were on that journey, we ventured into

newer territories, including speciality vehicles, ambulances, EV components, and now railway seating."

Focusing on the seating systems, Mehta acknowledged the significant shift towards prioritising of passenger comfort and safety. For buses, the focus has shifted towards modular seating arrangements, optimising space utilisation while ensuring passenger comfort, especially in the context of public transportation. For trucks, driver comfort and convenience have now taken precedence. In the special application vehicles category, customisation, personalising, and cost-effectiveness are the key, and customer requirements change as per the end use. The ambulance and medical application vehicle category has been witnessing a huge transformation since pre-COVID-19 though, he explained. Over the last year itself, Pinnacle Industries designed and customised a variety of such vehicles, including compact advanced life care support, neonatal ambulances, breast cancer detection vans, blood donation vans, pet grooming vans, veterinarian clinics on wheels, and much more. According to Mehta, this category holds a lot of under utilised potential, as India has an acute shortage of ambulances, and our medical transport infrastructure needs a reboot. **ACI**



The Next Tipping Point For Pinnacle Industries

In an Upfront conversation, **Arihant Mehta**, President, of Pinnacle Industries Ltd. speaks to **Ashish Bhatia** on the next tipping point.



 @atahishbhatia

 Ashish Bhatia

Q. How are you dabbling with the custom needs of light weighting and comfort?

A. At Pinnacle Industries, addressing the custom needs of light weighting and comfort is central to our design philosophy. We invest extensively in research and development, focusing not just on new product development, but also optimising our existing portfolio. We're investing in advanced materials research to develop seating solutions that are not only structurally robust but also significantly lighter, contributing to fuel efficiency and reduced environmental impact. Collaborating closely with ergonomic experts, we're incorporating cutting-edge designs that cater to individual comfort preferences, ensuring a pleasurable and stress-free travel experience. Our engineers are constantly exploring innovative techniques to strike the perfect balance between weight reduction and passenger well-being, as we strive to set new benchmarks for lightweight, comfortable seating across various industries.

Q. How fierce is the government tendering process in this case?

A. The government tendering process in our field is undeniably fierce. With a focus on transparency, competitiveness, and quality, securing government tenders demands rigorous preparation, technical expertise, and a strong proven track record. The process involves navigating complex regulatory requirements, extensive documentation, and keen attention to detail. It's a landscape where

innovation, cost-effectiveness, and adherence to stipulated time lines are paramount. Our team's unwavering commitment to excellence and continuous improvement has been pivotal in successfully navigating and thriving within this demanding environment.

Q. A word on the role in optimising ergonomics and safety for high-speed rail that the government is working towards?

A. We are exploring and developing best practices on safety and ergonomics. We are also introducing our new seating systems range with in built air bags and an Occupant Detection System (OD) to enhance the safety parameters.

Q. How do Indian seating solutions compare to global offerings?

A. Indian seating solutions have evolved significantly, now demonstrating a substantial parity with global counterparts. Pinnacle Industries Ltd. has remained instrumental in spearheading this transformation, harnessing state-of-the-art technologies and design ingenuity to engineer seating solutions that effectively rival international standards. Our unwavering focus on ergonomic precision, utilisation of advanced materials, and integration of cutting-edge safety features has facilitated the creation of products that not only meet but frequently surpass global benchmarks. Collaborative ventures with international partners have enabled us to assimilate insights from diverse markets, thereby elevating the quality and adaptability of our

seating solutions. Consequently, Indian seating solutions command a confident presence alongside global offerings, underscoring innovation, dependability, and a discerning acumen for the evolving spectrum of passenger requisites.

Q. What are the latest trends in seating solutions to watch out for? For example, rotating seats to ventilating seats? Including the upholstery from entry-level to premium offerings, from passenger vehicles to CVs?

A. The realm of seating solutions is experiencing dynamic shifts, with several noteworthy trends emerging. The latest trends in seating solutions encompass a spectrum of innovations, catering to diverse segments from Passenger Vehicles (PVs) to Commercial vehicles (CVs). Here are some notable trends to watch out for:

Rotating Seats: Rotating seats are gaining traction across various segments. They offer improved accessibility and flexibility, especially in camper vans, RVs, and premium passenger vehicles. These seats allow passengers to easily switch between driving and socialising configurations.

Ventilated Seats: Ventilated seats are becoming increasingly popular, particularly in regions with hot climates. They enhance passenger comfort by circulating air through perforations in the upholstery, preventing discomfort from sweating during long journeys.

Advanced Upholstery Options: Seating upholstery is evolving to



“One of our most significant collaborations has been the joint venture between VDL Groep of Netherlands and Pinnacle Industries, to establish VDL Pinnacle Engineering India.”

meet diverse customer preferences. From entry-level to premium offerings, manufacturers offer a wide range of materials, designs, and colour options. Eco-friendly and sustainable materials are also gaining prominence.

Integrated Technology: Seats are becoming more tech-savvy, with integrated features such as touchscreen controls, massage functions, and even seat occupancy sensors for enhanced safety and comfort. Connectivity options for devices like smart phones and tablets are also being integrated.

Smart Seating Systems: These systems are equipped with sensors and AI to monitor passenger comfort and health. They can adjust seat settings, provide posture recommendations, and even alert drivers or passengers to potential health issues.

Weight Reduction: Weight reduction remains a key trend, especially in the commercial vehicle sector, where it can improve fuel efficiency. Lightweight materials like carbon fibre and advanced engineering techniques are being employed.

Modular Seating: In commercial vehicles, modular seating arrangements are gaining prominence. These arrangements allow for flexible configurations to optimise passenger space and cargo capacity.

Safety Enhancements: Seating solutions continue to prioritise safety with features like built-in air bags, whiplash protection, and anti-submarine seats, which reduce the risk of passengers sliding under seat belts during sudden stops.

Sustainability: Eco-friendly and sustainable materials are being used to meet environmental regulations.

"By consistently innovating in collaboration with industry experts, we're aligning our seating solutions with road safety regulations and ergonomic standards."

Manufacturers are also working on designs that allow for easier recycling of seats at the end of their life cycle.

Customisation: Personalisation is becoming a cornerstone of seating solutions. Customers are looking for options to customise their seats, not only in terms of aesthetics but also for ergonomic adjustments that cater to their unique needs.

These trends reflect a growing emphasis on passenger comfort, safety, and sustainability, driven by evolving consumer preferences and regulatory demands across the spectrum of vehicles, from passenger cars to commercial vehicles.

Q. How are you contributing to road safety and driver ergonomics through the seating systems?

A. At Pinnacle Industries, our commitment to road safety and driver ergonomics is reflected in the meticulous design and engineering of our seating systems. We prioritise driver well-being by integrating ergonomic features that enhance posture support and reduce fatigue during long hours of operation. Adjustable lumbar support, seat height, and tilt mechanisms are among the elements tailored to individual comfort and health.

Moreover, our seats are constructed with high-quality

materials that provide impact absorption and stability, crucial for ensuring driver safety in case of sudden stops or collisions. We also incorporate features like integrated seat belts and headrests designed to offer both restraint and cushioning, further enhancing safety. By consistently innovating in collaboration with industry experts, we're aligning our seating solutions with road safety regulations and ergonomic standards. This dedication extends across all our product lines, spanning from commercial vehicles to passenger cars, to contribute to a safer and more comfortable driving experience for all.

Q. How are you faring across each of these segments from an order book perspective?

A. From our order book perspective, the company's strategic expansion into the railway seating business and our growing emphasis on exports mark significant milestones in our trajectory. These initiatives not only showcase our commitment to innovation and global outreach but also underscore our proactive approach to diversification and sustainable growth. We are setting up a new facility dedicated to the railway seating business in Pithampur. This expansion aligns with the increasing demand for modernised and

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comfortable seating arrangements within the railway industry, catering to the evolving needs of passengers and segments alike.

The combination of the new railway seating facility and the focus on exports is a strategic synergy. As we manufacture and deliver innovative seating solutions, we can simultaneously address the demands of both domestic and international customers. This synergistic approach allows the company to optimise its production capabilities while expanding its footprint in the railway industry value chain. These initiatives not only have the potential to drive revenue growth but also solidify Pinnacle Industries' reputation as a forward-looking and customer-focused organisation.

Q. Would you be able to split this over domestic and exports?

A. At present the split is about 80:20

Q. How strong is your manufacturing capability from a volume to manufacturing efficiencies perspective with localisation a priority?

A. Currently, we have manufacturing capability to produce three million seats and two million windows annually, along with approximately 25,000 components every day, exclusively for commercial vehicle Original Equipment Manufacturers (OEMs). We have proven expertise in large-scale manufacturing, operational efficiency, and commitment to meeting the demands of the automotive industry.

We have a vehicle conversion facility with the capacity to customise 10,000 vehicles annually. With regards to the railway seating business, as mentioned earlier, we are setting up a new facility, so we shall comment on those numbers later. We are a proud Indian company,

"Collaborative ventures with international partners have enabled us to assimilate insights from diverse markets, thereby elevating the quality and adaptability of our seating solutions."

that strongly believes in and supports the 'Make in India' vision. All our products are conceptualised, designed, developed, engineered, manufactured, tested, and validated in India, for domestic and global markets.

Q. Kindly elaborate on the JV with VDL where the latter was to contribute on fronts like fixing and tooling across the Pithampur facility and the planned Maharashtra facility.

A. One of our most significant collaborations has been the joint venture between VDL Groep of Netherlands and Pinnacle Industries, to establish VDL Pinnacle Engineering India. VDL Groep is active in 19 countries comprising more than 100 operating companies, with more than 16,000 employees. Starting as a design and engineering house to support the VDL Groep for engineering services, VDL Pinnacle has now developed into a turnkey production systems supplier to the automotive industry while parallelly supporting the VDL's global offices and projects, for the design of production automation systems, body-in-white tooling lines and product design for bus and coach. VDL Pinnacle is based in Pune, Maharashtra.

Q. What is the next tipping point for Pinnacle and what are the challenges

that you are focused on overcoming?

A. Our vehicle customisation business, particularly in the domain of ambulances and healthcare application vehicles, and our strategic entry into the railway seating business, are poised to be the next tipping points for the company. These ventures not only reflect Pinnacle Industries' commitment to innovation but also have the potential to reshape our market presence and industry impact.

Both the vehicle customisation business and the railway seating business align with Pinnacle Industries' core strengths, such as engineering innovation, manufacturing excellence, and a commitment to quality. These ventures not only diversify the company's portfolio but also position it as an industry leader capable of tackling complex challenges in various sectors.

As for the vehicle conversion business, the challenges that we foresee are more regulatory. Currently, this segment is flooded with unsafe and compromised products. This segment is majorly unorganised with a lack of organised industry players in this business. This has led to severe safety, quality, and technical compromises. We are slowly witnessing the introduction of new regulations, and going forward we are ready to align our business to the new norms. **ACI**

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