TATA TECHNOLOGIES

INNOVATIVE EV SYSTEM DESIGN - A CHINA STORY

IMPLEMENTED INNOVATIONS

Tata Technologies' development of a unique body system for an electrical vehicle has enabled its customer in China to successfully launch an efficient and affordable EV and gain a competitive edge in the Chinese market.

THE CONTEXT

Electric vehicles (EV) are set to disrupt the automobile industry. However, every original equipment manufacturer (OEM) faces the challenge of launching EVs that are both efficient and affordable. One of Tata Technologies' customers, a Chinese start-up, wanted to build a reliable and cost-effective EV to challenge market leader Tesla on parameters such as weight, cost, battery swapping time and reliability, passenger room and cabin noise, vibration and harshness (NVH).

THE INNOVATION

Tata Technologies developed an innovative EV body system, which helped the customer to deliver a reliable and cost-effective product. The innovation involved the first ever use of aviation-grade 7003 series aluminium in the automotive industry. In addition, Tata Technologies used Bay-o-Bolt technology, which prevents premature loosening of bolts and helps to reduce battery swapping time. It also packaged the heating, ventilation and air conditioning (HVAC) blower outside the cabin so as to improve legroom and reduce cabin NVH.

KEY CHALLENGES

TO ENSURE THAT THE HVAC PACKAGING DID NOT AFFECT FRONTAL CRASH MANAGEMENT

The Tata Technologies team addressed this by ensuring efficient energy management and by using 7 Series aluminium in the structural design at the front of the vehicle. The team also positioned the motor and sub-frame in such a way that it transferred the impact load to the structural members on the side.

TO ENSURE THE BOLTS WERE NOT LOOSENED BY FREQUENT BATTERY SWAPPING

The company ensured this by implementing Bay-o-Bolt technology. The use of springs and plastic bushes allowed the battery mounting bolts to be operated on a low mounting torque, which reduced the wear and tear of the nuts, and hence, the loosening of the bolts. The customer went on to patent this design.

THE IMPACT

For Tata Technologies, the innovation began with one customer engagement in 2015, which generated revenues of

$1.4 MN

It then enabled the company to generate additional business (three top hat and five platform programmes) from China. The company's workforce in China has grown from six employees in 2015 to 256 in 2018.

Tata Technologies' customer has sold more than 11000 vehicles till December 2018 since its launch in July 2018. 2019 First quarter ES8 deliveries exceeded the Company's prior guidance range of 3,500 to 3,800, and were above the midpoint of the guidance range, 3,650, by 339 vehicles, or 9.3%.

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