Better suspension for Indian trains

India has the largest rail network in the world. It is currently improving the suspension in its coaches.

It is the largest rail network in the world, transporting more than 17 million passengers and two million tons of freight every day. That is why the Asia Market Manager at Trelleborg Industrial AVS, part of Trelleborg Engineered Systems, Tony Carter, thinks the Indian Railways project to retrofit its rail coaches with quality anti-vibration systems from the company "will never end."

The association between Trelleborg and Indian Railways began ten years ago, and after teaming up with the Calcutta-based Ashika Commercial, Trelleborg started supplying components – mainly bearer springs – to Indian Railways' vehicles. "We are now one of its largest component suppliers," says Keith Croysdale, Sales and Marketing Director, Trelleborg Industrial AVS, in the UK.

Indian Railways' basic requirement was to increase the velocity and reliability of its trains so it could carry more passengers and freight.

"Indian Railways approached Trelleborg to retrofit its locomotives with better suspension systems, since the previously used, locally made products had a short service life and poor quality," says Carter.

The supplied Metacone conical mountings and air springs from Trelleborg will improve the primary and secondary suspension of rail coaches and facilitate better maintenance planning and overhaul schedules, according to Croysdale, "If a vehicle needs a full overhaul once every seven years, our components are designed to surpass that period so the maintenance people know for sure that they won't have to replace them earlier or in a haphazard way."

The Metacone conical mountings, a primary spring used in electricity-driven citytrains, are being supplied as part of a field trial project, the biggest of its kind in India. This will help to increase the speed of trains, from 60 to 90 kilo-meters per hour, and make journeys smoother.

Once the trials are over, "we will face the wonderful challenge of making Indian Railways one of our top five customers; at the moment, it is in the top 10," says Croysdale.

Despite the high level of service and punctual trains in India, there also are challenges specific to the country's geography, primarily its size and the hot climate. There are also distortions in railway lines and un-even ground underneath the tracks.

The old technology or steel coil springs used in the suspension of Indian Railways coaches is now being replaced with Trelleborg's rubber components or air spring – a rubber mounting combined with rubber bellows, which improves secondary suspension, resulting in a smooth and comfortable journey for passengers. Photo Trelleborg

"We have developed products to cope with these conditions," says Croysdale. "We're trying to achieve the highest standards in India, to make the journey as smooth and comfortable as possible," he adds. These smooth journeys are ensured by Trelleborg's air spring systems for secondary

suspension. This is an area in which Trelleborg excels. “For Indian Railways, we made use of the technology applied in very difficult applications, such as the Heathrow Express, where the challenge was a very uneven surface and many railway lines crossing each other at junctions.”

Yogesh Mohan, Director of Carriage, Research Designs and Standards Organisation at Indian Railways says the preliminary results from the trial runs are satisfactory. “Trelleborg is a company with an impressive history of working with many railway systems, but the conditions in India are unique; our coaches are extremely overcrowded, which many suppliers find shocking, and that is the real challenge.”

Trelleborg manufactures specialized components linked to primary and secondary suspension for Indian Railways. These include about 20 different products comprising air spring and conical rubber mountings. The old technology or steel coil springs used in the suspension of Indian Railways coaches is now being replaced with Trelleborg’s rubber components or air spring – a rubber mounting combined with rubber bellows, which improves secondary suspension, resulting in a smooth and comfortable journey for passengers.

The air spring is about the size of a truck tire; the conical mountings, primarily for suspension, are much smaller, each shaped like a cone with a 200 mm diameter. Trelleborg anti-vibration solutions are also used the other way round - to protect nearby buildings, platforms and any sensitive systems from train-induced vibrations. The rail track “floats” on a rubber bearing system.

More info: Trelleborg AB, P.O. Box 153, 231 22 Trelleborg, Sweden
Tel: +46 410 670 00
Fax: +46 410 427 63