

Rane Group banks on alternate materials

Rane engineers are empowered with easy-to-use conceptual design tools to help them optimise designs and test components in simulated conditions, says **Murrli Thalor**.

Chennai-headquartered Rane Holding Ltd which has eight automotive components manufacturing companies in 24 locations in India has taken up lightweighting as a major focus area to support its customers' ongoing exercise to enhance fuel efficiency.

The Group makes manual and power steering systems, suspension systems, valve train components, friction material products, steering columns, seatbelt systems and die-cast products.

L Ganesh, chairman of the Rane Group, told *Autocar Professional* that the Group companies have taken several initiatives to reduce weight of components. Prominent among these are the use of alternate materials, optimising design using CAE analysis and the deployment of new manufacturing processes like changing from gravity to pressure die casting.

India's automotive industry is just about gearing up to reduce the weight of vehicles. The learning curve is steep as it not only helps achieve better fuel efficiency but meet stringent emission standards as well. Towards this objective, Rane Group companies are currently optimising the design using



Hydrostatic steering system.

advanced technologies. "We use plastics in place of metal, non-ferrous in place of ferrous, tube in place of bar and sheet metal in place of forging," said Ganesh.

These initiatives will substantially reduce the weight of components. However, the challenge is to design components that are lighter without compromising on safety and quality. Realising that by realigning product design activities, and ensuring that final testing will validate expected results, the Rane Group has empowered its engineers with easy-to-use conceptual design tools together with CAE. This helps the engineers to optimise designs and also test components in simulated working conditions which helped reduce the number of product iterations. It also helps the companies to enhance productivity and



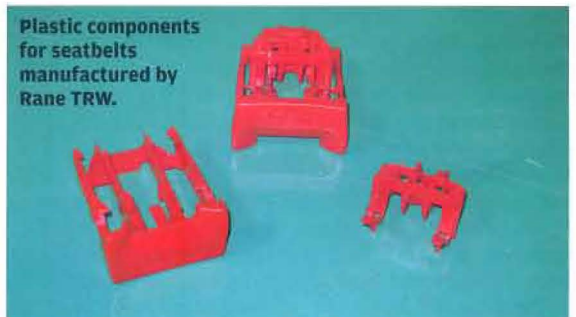
Steering control unit.



L Ganesh: "We are looking at using more plastics, metal-bonded plastic/nylon, special alloys and aluminium."



OUTER BALL JOINTS
TRW / DAIMLER CHRYSLER



Plastic components for seatbelts manufactured by Rane TRW.

manufacture components at the least possible cost.

The Group has been analysing several options for materials and technology, and assessing ways to scale up production. Among metals, strengthened steel has been widely used but it does not fully solve all problems and is expensive. Using materials such as aluminium and magnesium as alternative metals is an option but the cost and availability of the materials that meet quality requirements are an issue.

Among composite

materials, some come with past failures, others are expensive to source and others such as carbon fibre come with the need for huge investment.

Going forward, the Rane Group will be looking at, "more plastics, metal-bonded plastic/nylon, special alloys and aluminium," he said.

In 2008-09, the Group recorded revenues of Rs 1,366 crore. It hopes to cross Rs 1,600 crore in 2009-10. The Group embraces TQM as a way of life and four of its companies have bagged the coveted Deming prize. ■