Altair

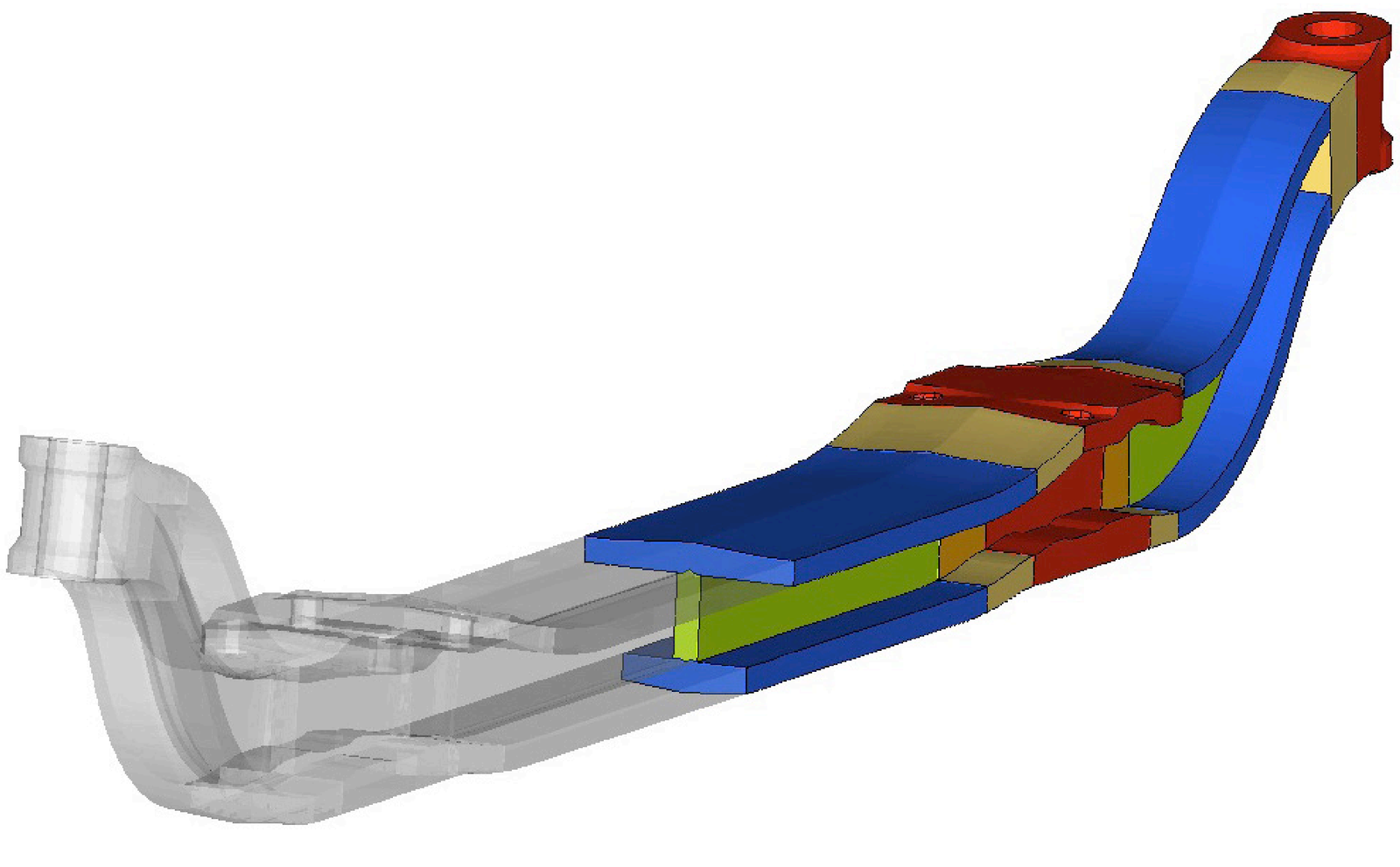
enlighten award

Volvo-Eicher Commercial Vehicle Ltd.

Front Axle of the Low and Medium Duty Truck

In commercial vehicle trucks Front Axle is a Dead Axle i.e. it is not part of the drive train but is instead free-rotating and is used for strictly load-bearing purposes. Its mass contributes to the unsprung mass in the mass of the suspension. Reduction of unsprung mass is vital for better ride comfort and handling of the vehicle.

- The initial mass of the axle was 50kg. After optimization the mass was reduced by 9kgs. This reduced mass gave a double benefit of cost saving as well as improved ride comfort.
- The most important factor of achieving weight saving were the dimensions of the I cross section of the axle beam. These were identified as Design variable for the optimization run. The result was an optimized I cross section of the axle.
- Optimization using morphing of mesh was used for the first time. This enabled us to directly give dimension of the axle beam as design variables. This led to a result which met all manufacturing constrains without any need for optimization results interpretations.



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