

Helping save energy with lightweight solutions

Lightweighting is one of the key trends driving improvements in manufacturing efficiency. For the rail industry reducing carriage weight means a reduction in energy use, and that's a real benefit. The lower the weight of the carriage, the less energy is required to move it, and this delivers both cost and performance benefits as well as sustainability improvements.

Our structural adhesives can offer you significant lightweighting benefits. They allow greater design freedom over traditional mechanical fasteners - they can join composites to metal, build hard-to-bond plastics and allow the use of thinner, lighter weight materials. And to top it all, they improve the appearance of the product with invisible joints and smoother bond lines whilst offering a significant reduction in weight as well as noise.

Solutions from 3M:



Lightweighting benefits of structural adhesives

3M is an innovator in structural adhesives. Our 3M™ Scotch-Weld™ Structural Adhesives are known for their strength, durability, longevity and versatility, and trusted by industrial engineers and designers throughout the world.

Recently a major rail manufacturer teamed up with 3M and a small number of engineering and design companies. Their purpose was to explore ways to achieve a 30% weight reduction of the primary structure of an aluminium rail car, by using innovative materials such as composites, sandwich constructions and fibre-reinforced thermoplastics. In order to guarantee maximum joint performance of these new materials, structural bonding was identified as the technology of choice and 3M was selected as the sole supplier of bonding solutions for this project.

A 1:1 scale version of the lightweight rail car was built and successfully tested, proving that structural bonding (as well as 3M adhesives) offers a working solution for lightweight rail cars.





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For more information visit
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