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Jonathan Stolp
Technical designer
Transport & Equipment Engineering, Gauteng

Turning payload into profit

Bulk tanker manufacturer, **Transport and Equipment Engineering (TEE)** is using Autodesk Inventor, to maximise its clients' payloads. It's also getting its tankers to market faster. The design technology has helped the company slash about 25% – or two weeks – off the overall production time of each of its tankers.

TEE manufactures pressurised tankers under licence from German manufacturer – Feldbinder Spezialfahrzeugwerke GMBH (FFB) – and non-pressurised aluminium auger bulkers under licence from American manufacturer, Warren Manufacturing, Inc.

The pressurised tankers are designed to transport dry loads, including cement, PVC beads, fly ash, soda ash, sugar and flour, with auger bulkers carrying dry bulk animal feed. Tanker capacity ranges from 25m³ to 70m³.

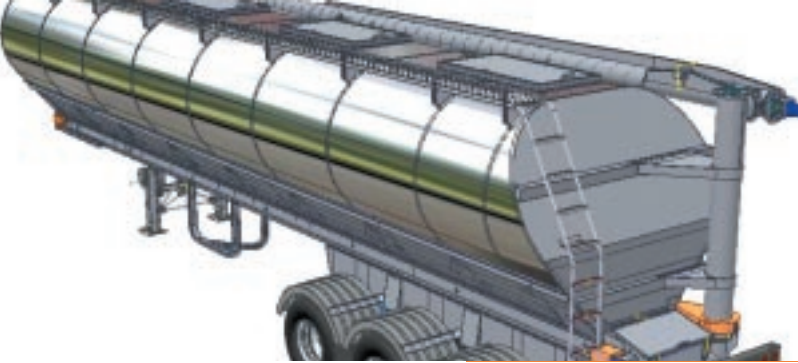
The introduction about eight years ago of aluminium as the main material for manufacturing tankers helped to reduce their weight, increasing transport operators' payloads. Today, even lighter tankers are built using special grade aluminium and innovative design techniques achieved with Autodesk Inventor software.

Introduced as the company's primary design tool in the 1990's, Autodesk Inventor replaced a 2D CAD installation.

Each tanker is customised to meet clients' specific requirements as well as stringent South African road regulations.

"It's a delicate balancing act providing maximum carrying capacity within the parameters of local road legislation and customers' requirements," says Jonathan Stolp, a technical designer at TEE.

Autodesk Inventor has given TEE greater control over this 'balancing act' and the precision with which it can now design tankers has enabled the company to optimise operators' payloads, maximising the profitability of every trip.



In Autodesk Inventor, the properties of all materials – including their weights – are specified. As TEE builds models of its tankers, its designers track the overall weight of a tanker.

“The accuracy of Autodesk Inventor is phenomenal. We know the weight of our tankers, down to the last kg, while we’re designing them. I can see immediately when a tanker is getting too heavy and can begin exploring alternative designs.”

The migration from 2D to 3D design software has not only improved the quality and speed with which designs are created, it’s also streamlined production processes, accelerating manufacture. The new software, combined with restructures, improved manufacturing methods and new jigs (also designed using Autodesk Inventor) have all contributed to an approximate 25% reduction in the manufacture time of tankers.

By choosing Autodesk Inventor, TEE is – without extra effort – able to increase the detail included on its drawings, improving visualisation of designs by operators on the shopfloor.

“The comprehensive information – from welds to dimensions – conveyed to the shopfloor in Autodesk Inventor drawings has helped to streamline manufacturing processes and prevent errors. Operators have a very clear understanding of designs and what is required of them. There is no room for misinterpretation and errors.

“The designs may be sent out directly to either our workshop or any outside suppliers for manufacturing, with confidence that they are correct, because they have been tested and work perfectly on screen,” says Stolp.

“The elimination of rework helps boost the profitability of each job,” says Stolp. “Any additional hours spent on reworking a manufacturing error can make a serious dent in our margins.”

The average pressurised tanker comprises about 3 000 components for which the design department creates some 500 detailed Autodesk Inventor drawings.

Gauteng Autodesk reseller, Caddman, works closely with TEE providing training and support and highlighting Autodesk Inventor’s solid modelling capabilities.

