Assuring the integrity of industrial fasteners

truload

The truth about industrial fastenings

No two joints are precisely the same. For example, two apparently identical bolts, tightened with equal torque, can produce vastly differing loads.

This is largely due to variable friction resulting from slight differences in:

- lubrication
- washer specification
- thread quality
- material selection
- cleanliness
- service history

If a bolt is incorrectly loaded it can come loose or fracture. Either scenario could have significant consequences.

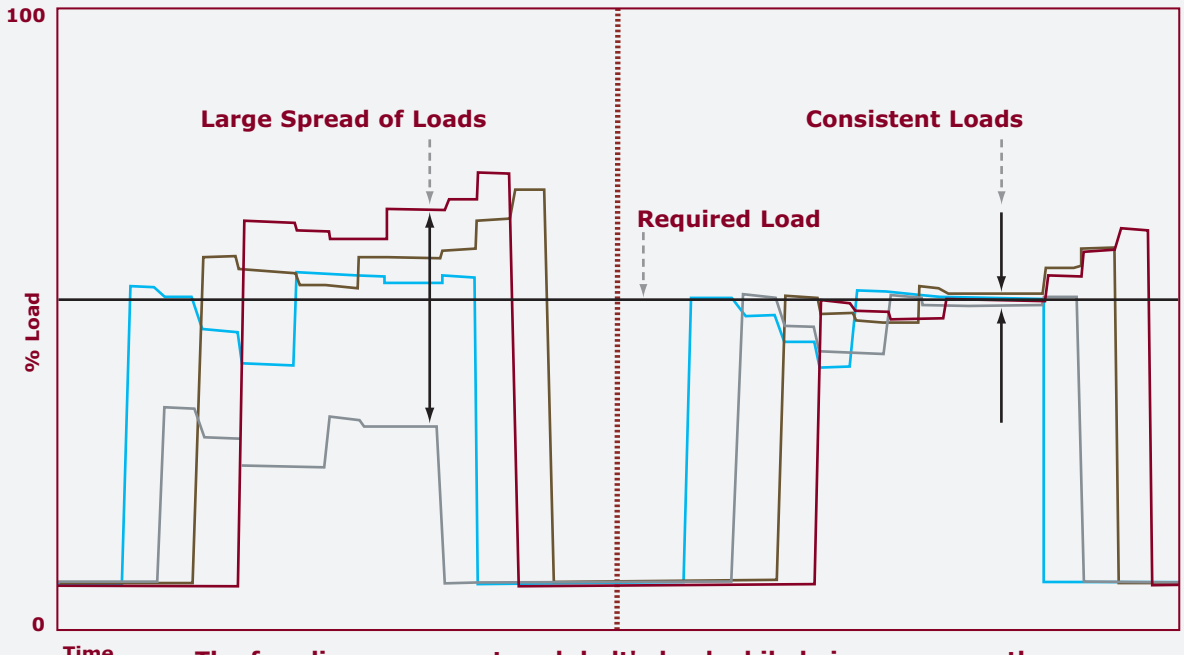
A comprehensive maintenance programme goes some way towards ensuring that a load-bearing fastening will

retain its integrity. However, this is not sufficient to eliminate unplanned downtime or lost revenue due to fastener failure. Moreover, there are safety concerns and environmental impact to be considered.

Can maintenance and service be improved, removing the uncertainty from traditional fastener systems by ensuring that every bolt is tightened precisely and offering advance warning of potential problems?

We've developed a way to do these things. It is called **truload**.

Graph to compare loading of a four bolt flange using torque and truload



The four lines represent each bolt's load while being permanently monitored by the truload system.

This section clearly shows the varying loads induced into the four bolts tightened using a pre-set torque. Even after re-tightening, the spread of values represents 75% of the expected load figure.

During this sequence, the same bolts were tightened using **truload**. After the second tightening the variance in load induced was less than 3%.

A load off your mind

truload is a range of intelligent fasteners that provide accurate loading during assembly and throughout service life.

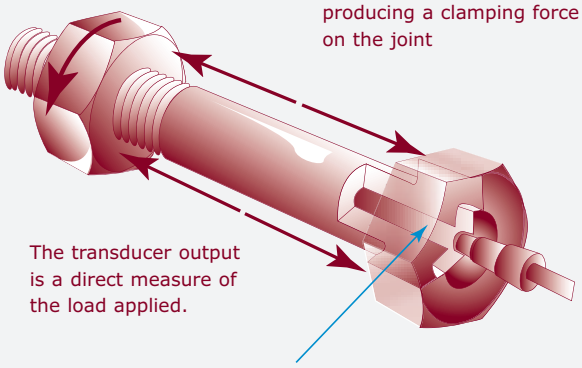
The previous illustration has shown that variable friction can account for a load difference of as much as 75% between identical bolts tightened to the same torque, with some actual loads at only 50% of expected values. **truload** allows the load in each fastener to be directly measured. This means that the effects of variable friction can be eliminated, ensuring that every fastener performs to its optimum capability.

truload patented technology is easy to use, is a direct replacement for existing bolts or studs and offers a range of tangible benefits:

- **Boost efficiency** – Not only are bolts loaded correctly first time, they can be easily spot-checked or continually monitored to track performance throughout their working life. This deeper insight allows maintenance downtime to be planned in advance – minimising disruption and improving the efficiency of core processes.
- **Saves money** – **truload** reduces the costs associated with routine maintenance, replacing damaged bolts, repairing defective joints or, worse still, accounting for incidents occurring as a result of joint failure.
- **Improves safety and environmental performance** – Depending on the application, the result of fastener failure can have significant safety and environmental consequences. A **truload** system optimises safety standards and minimises environmental impact.

How truload works

A precision transducer is inserted into a pre-machined hole in the fastener. As the fastener is tightened or alters in service, unique electronic technology allows the transducer to provide an accurate output of the load induced. Correct tightening of the fastener is ensured.



Performance under pressure

truload meets the rigorous demands of industrial applications including:

- Process facilities
- Road haulage
- Railway transport
- Pipelines
- Civil structures
- Power generation
- Military applications
- Aerospace

truload Tailor-made solutions

Hand-held monitoring

truload SC1-HP offers fastener monitoring for mass production environments at the press of a button. Easy periodic checking of fastener performance is made simple in even the most remote, extreme and hostile locations.

Permanent monitoring

truload SC3-OM series is a full, multi-channel monitoring system designed especially for safety-critical applications. The system constantly records the load in a given number of fasteners during their entire lifecycle, and alarm conditions can be pre-set to highlight potential failure conditions before they become critical.

Printed on recycled paper using environmentally conscious products and processes

truload

taking a load off your mind

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