Innovation Alley

compiled by Fastener World

Strength Tester for Welding Nuts

In recent years Japan has expanded the use of high-tension steel with more stringent requirements on welding. Given that testers are generally used in development and QC units and are highly-priced, factory owners hope for a way to briefly measure the bonding intensity of weld nuts. Ohashi Engineering's "ABK2700" tester can briefly measure the weld intensity of nuts and the company will target sales at automotive component plants.

The tester is 53cm x 60cm x 88.5cm in size and weighs 78 kilograms. In the measurement process, the steel is fixed and a bolt is fastened into a weld nut on the steel. Hydraulic pressure is applied from underneath to push in the bolt, and through the load cell on top, the tester measures the nut's strength up to the point where the nut detaches from the steel. The maximum load capacity is 40kN.

3D Tech Helps Keep Thieves at Bay

As car security systems become increasingly more sophisticated, thieves are targeting car parts instead, including alloy wheels. One method to deter wheel thieves is to use locking nuts, one on each wheel, which require a special adapter, or key, to loosen. But even these are not invulnerable. "Our engineers have now developed unique locking wheel nuts using 3D printing technology. Together with EOS, a leading supplier for high-end solutions in additive manufacturing, we have created locking nuts with contours based on the driver's voice."

Like an iris scan or a fingerprint, a person's voice can be used as a unique biometric identification. Engineers record the driver's voice for a minimum of one second, saying something like "I drive a Ford Mustang", and use software to convert that singular soundwave into a physical, printable pattern. This pattern is then turned into a circle and used as the design for the locking nut's indentation and key. With the geometry in place, the nut and key are designed as one piece, then 3D-printed using acid and corrosion resistant stainless steel. When finished, the nut and key are separated, with a small amount of grinding required to make them ready for use. The design also includes second level security features that prevent the nut from being cloned or copied. The unevenly spaced ribs inside the nut and indentations that widen the deeper they go prevent a thief from making a wax imprint of the pattern, as the wax breaks when it is pulled from the nut. If not using the driver's voice to create the contours, the nuts could feature designs specific to a vehicle, such as with the Mustang logo, or use the driver's initials. The design could also take inspiration from a driver's interest, for example, by using the outline of a famous racetrack.

High-performance BR12PP-8 Smart Rivet Tool

The high-performance BR12PP-8 Smart Rivet Tool from STANLEY® Assembly Technologies, the global leader in precision fastening, allows manufacturers to reduce scrap, optimize the assembly area, and provide real-time process data to the existing plant manufacturing execution system by recording the stem break load and rivet pull distance.

"The product launch of the BR12PP-8, STANLEY Assembly Technologies is the latest development in partnership with the STANLEY® Engineered Fastening to offer the best in smart, cordless, programmable rivet setting technology," said Deanna Postlethwaite, director of global product management at STANLEY Assembly Technologies.

The BR12PP-8 Smart Rivet Tool offers benefits including:

- Digitally adjustable force and distance acceptance values
- Use 1 tool for many rivets and applications for reduced cost of ownership and increased error detection
- Detects errors in the process, preventing customer returns and recalls
- Optional integrated force switch
- Programmable multi-function button provides a simple, flexible way to complete many different tasks with a single button
- Durable brushless DC servo motor engineered for the high production environment