



A special bolt has been developed which functions as both a tag and a seal, and has acquired the name "Smart Bolt." It is a mechanical seal with embedded tag/seal information. The bolt stores information (tag portion) such as a unique identification number, container and stored content data, and seal tamper indications. Once the bolt is applied and tightened to its specified torque, a reader/verifier (special adapter connected to a PC) is used to initialize the tag. Subsequent readings will verify the tag information including whether or not the seal was broken. The Smart Bolt has been specifically designed to tag/seal AT-400R canisters, but the bolt can be utilized in any application where standard bolts are used for sealing. The Smart Bolt is currently available in two versions: 1) single-use, for long term storage applications where stored materials would be infrequently accessed and 2) reusable, for sealing applications where material is stored for short periods of time or is frequently accessed. Several other designs for different types of sealing applications and scenarios are currently being investigated.

For more information, please contact:

Michael Ross
Sandia National Laboratories
PO Box 5800, MS-1371
Albuquerque, NM 87185

Tel: 505-844-3301
Fax: 505-284-5055
Email: mpross@sandia.gov

Reusable Version

The reusable version of the Smart Bolt is intended for applications where the seal must be broken frequently in order to access the contents of the sealed container. In addition to storing a unique identification number, a description of the contents, and a seal tamper indication, this version also stores the number of times the seal has been broken and reapplied.

Features:

- Reusable
- 10mm threaded diameter
- Battery voltage: 3v (two 1.5v watch-size, or one 3v lithium)
- Battery life (based on one read/month)
 - Alkaline – 2 years
 - Lithium – 5 years
- Mechanical seal, embedded electronic tag
- Stainless steel construction
- Temperature range: -20° C to +80° C
- Reader/Verifier includes an opto-electronic tag reader (adapter) and a laptop computer
- Tag reading via opto-electronic communication
- Tag reader has RS-232 output to the computer
- Two levels of password control (verifier and tag)
- Verifier is capable of initializing, modifying, and verifying tag

The Smart Bolt was developed in collaboration between the All-Russian Research Institute of Experimental Physics (VNIIEF) and Sandia National Laboratories (SNL).

