

Q-EFFICIENT™ GAUGE TRACKER
FOR
AEROSPACE MANUFACTURING



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A Summary of Q-Efficient™ Gauge Tracker uses in Aerospace

Reason for Using Gauge Tracking

The ACADZ Q-Efficient™ Gauge System with read and write capability uses small Java Q-Efficient™ iButtons (see photo below). These Q-Efficient™ iButtons can be attached to a gauge with a Fob, which is a small piece of sturdy plastic that holds the Q-Efficient™ iButton in place. They can be attached to any product (see key chain Fob to get an idea of size of a Q-Efficient™ iButton and other Fob types in Figure 1). Q-Efficient™ iButtons include a small database of information such as time used, gauge number, operation-number, storage-location and gauge description in addition it functions as a bar code identifier. Q-Efficient™ iButtons and the Q-Efficient Control Box can also identify the location of a gauge based on where it was tagged last (when contacted with the Q-Efficient™ handheld reader). The Q-Efficient™ iButtons can also be used to track a gauge's actual usage and store this information on the button and in a database on a network.



Tracking actual gauge usage is important for gauges that require calibration. Calibration is expensive and a gauge that is being calibrated may slow down or even stop certain operations on the manufacturing floor. Many manufacturers calibrate gauges based on the number of calendar days a gauge is checked out of the storage area whether the gauge is used or not. Because of this many under-utilized gauges are being over calibrated costing thousands of dollars in calibration fees in addition to costs associated with delays of parts when a necessary gauge is not available because it is out for calibration.

The Q-Efficient™ handheld reader accesses information on a Q-Efficient™ iButton attached to a gauge (photo right). In particular, it will access the identifying gauge number and its location in the factory, then it tags the start time and end time when contacted with the handheld reader. All this information is stored on the gauge. It also can tell the operator when tagging the gauge the amount of time left before calibration.



The readers buzz if the gauge is due for calibration within 48 hours or any user preset limit. This information is pulled from the Q-Efficient™ iButton that is attached to a gauge. Also modifications can be made to a gauge information by a Manager using the Q-Efficient™ Administrator from anywhere on the network (i.e. assigning a gauge a number). Next time the gauge specified is contacted with any Q-Efficient™ handheld reader, the new process flow information is updated.

- The software is written in Java and runs on Windows 2000 or NT
- The Q-Efficient™ devices communicate using TCP/IP
- The Q-Efficient™ Readers are Plug and Play on the network
- They are automatically addressable using an IP address
- Q-Efficient™ iButtons have databases on them and memory which can be increased depending on requested features

See the next pages for pictures of the Q-Efficient™ Box, Hold-in-Place Q-Efficient™ Reader, Q-Efficient™ iButton attachments and Q-Efficient™ iButtons. For additional manufacturing solutions that save time and money see our web site at www.acadzinc.com.

To arrange for a demonstration of the Q-Efficient™ gauge tracking devices for lowering your calibration costs, please call us at 602-212-2485. Thank you for your interest in our products.

Figure 1 – Photo of the Q-Efficient™ Reader (connected with Ethernet cable)



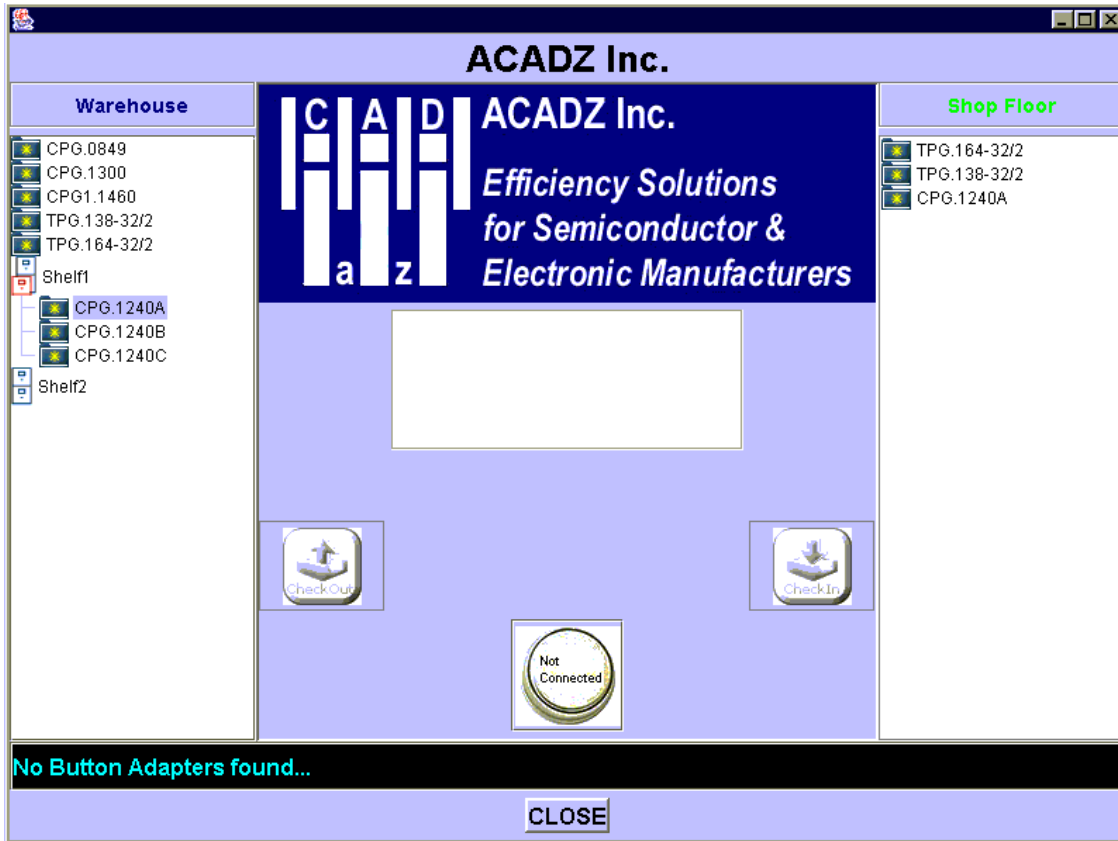
The above photo depicts a hold-in-place reader used to contact an iButton, connected to a Q-Efficient™ box. The Q-Efficient™ box is a small computer that communicates with the Q-Efficient™ iButtons attached to the Gauge. There is a small database loaded on each Q-Efficient™ iButton from the factory Database, updating the time at the start and end each time a gauge is used.

The small screen communicates to the operator in real time confirmation that the start time is loaded and the stop time is loaded after a contact. Display data can be customized to fit manufacturers specific needs. The small database in the Q-Efficient™ iButton contains the total amount of time a gauge is used and when it needs to go for calibration. It also can track who used the gauge last if the operator also tags their ID Q-Efficient™ iButton. Below are different Fob types that you can use to secure the Q-Efficient™ iButton to your gauges.

Figure 2 – Photo of the Q-Efficient™ Hold-In-Place Reader and Fobs for attaching the iButtons to Gauges



Figure 3 – Computer Screen Shot of the GUI for the Q-Efficient Device



GUI eliminates data key entry for gauges entering or exiting the warehouse saving operator time and improving quality control. IButtons also remember when a gauge was checked out and who checked it out.

Figure 4 – Photo of the Handheld Q-Efficient™ Wireless Readers



The above is several Q-Efficient™ Wireless handheld readers, which an operator can use to download and upload information to the Q-Efficient™ iButtons. When a Q-Efficient™ iButton is connected to the wireless handheld, information is then sent by radio frequency to the database from the Q-Efficient™ iButton or to the Q-Efficient™ iButton allowing further flexibility to the operators when storing, stocking or doing queries on products during their process flow. There is also a display on the Q-Efficient™ Wireless handheld similar to the display described in the Photo of the Q-Efficient™ Reader (see Figure 1).