IUID Item Unique Identification

Naval Surface Warfare Center, Corona Division: Infantry Weapons Gage Calibration Program

Unique Identification Policy Office Integration Project

NAVSEA WARFARE CENTERS

To improve the identification, tracking, and management of Department of Defense (DoD) assets, the Office of the Secretary of Defense has funded multiple projects, including the Naval Surface Warfare Center, Corona Division: Infantry Weapons Gage Calibration Program Integration Project.

Description

Naval Surface Warfare Center (NSWC), Corona Division implemented an outcome-based project integrating Unique Identification (UID) technology into a Marine Corps gage inspection and maintenance program. This project's UID integration efforts provided improved tracking and pedigree information for the Marine Corps Infantry Weapons Gage Calibration Program (IWGCP).

The NSWC gage project also investigated methods for reading UID markings on many different sizes of gages and gage surfaces. Most Marine Corps infantry gages are small and require a small data matrix mark, some on shiny and/or curved surfaces.

Various reader types were tested, including optical diffusers/magnifiers to assist the readers in "picking up" the UID markings in various lighting conditions. Additionally, this project established an Automated Identification Technology (AIT) system to update the manual gage tracking system, which allows for automated interfacing with UID readers and provides real time visibility into gage location and status. This new AIT tracking system is easily accessible via web-based tools to shop personnel, management, customers, and program sponsors.

Large quantities of gages were available for marking, which allowed for the gathering of data in a realistic environment to demonstrate UID implementation within the Marine Corps. Parts were marked, and are still being marked in November 2007, by NSWC Corona lab personnel in a depot environment. Because of calibration recall times, complete marking of all IWGCP gages is an ongoing task with an estimated marking period of three years from the 2005 project launch.

Lessons Learned

Upon completion of the project, the NSWC Corona Gage team found valuable lessons to share with future groups implementing UID:

- High quality marks are not necessarily expensive to produce.
  - Reading and verifying poor quality marks requires an expensive reader/verifier.
- The software used to read or verify is the most critical aspect of a quality reader/verifier.
- UID placement on legacy equipment requires flexibility.
  - In the case of legacy assets, a single location of UID marking is not always feasible. In marking the IWGCP gages, multiple locations had to be used to avoid impacting the usability and function of the gage.
- Expensive fixtures or hand-made tooling is required to read and grade most of the Marine Corps' gages.
- Marking on surfaces that have tight tolerances can be challenging: Lasers create heat that can change the characteristics of the surface. The heat can, in some cases, warp small diameter gages, making them unusable. Creating a UID on a gage, while keeping it within tolerances, requires care and experience.
- In some cases, like direct part marking on very small, round, steel gages, it is impossible to create high quality marks due to the reflectivity and shape of the asset.

Benefits & Achievements

Following extensive research on the optimal marking method for their gages, NSWC Corona selected laser etching to apply data matrix UID information to these assets. They have successfully marked over 12,000 of the 34,000 IWGCP gages that they maintain.

This UID project team performed concept analysis of the IWGCP gage pool to create and demonstrate an optimization model to prioritize gages to be marked. The optimization model was also used to:

- Ensure the maintenance of appropriate gage pool sizes for more efficient gage production.
- Ensure that gages are available when needed.
- Determine make-buy decisions for gage replacements.

Additional benefits realized with the implementation of the UID technology at NSWC Corona included cost reductions for the Marine Corps, increased efficiency of data input, decreased manual human entry, and increased validity of important information.

With the addition of UID technology and corresponding critical information, decisions are made with more confidence in the accuracy of the data. Consequently, the availability of gages has increased, providing better support to the warfighter.

Contact

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IUID

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