Gun Barrel Management System

GBMS
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GBMS (Gun Barrel Management System) is a database and analysis software that collects and contains measurement data from the Robinca system or other measurement tools. GBMS compiles management data from measurement data and displays the data for decision making. GBMS provides interface to other military records.

This is to support the Armed Forces service organization and weapon experts in their assessment and evaluation of condition and quality of the individual weapon system or the global fleet. Safety and operational availability will improve and maintained in the best possible way by not exceeding tolerances. Wear and damage can be detected before they cause accidents or provide poor performance during a mission.

Database

Every gun barrel measurement tool generates a lot of measurement data. To be able to save measurement data and analyze the information, the Gun Barrel Management System database is vital.

In an informative and well-arranged way GBMS makes measurement data from the Robinca system available. It is possible to import data from other measurement tools as well, but this must be adapted. GBMS combines the measurement data with Defence organization data and material to support the service organization of the Armed Forces and weapon experts in their assessment and evaluation of the quality and condition of the individual tubes or of the total fleet.

By detection of exceeding safety limits, wear and damage before they cause accidents or provide poor quality results under sharp assignments, will improve safety and operational availability and maintained in the best possible way. GBMS has also focus on supporting the measurement process and the subsequent evaluation of the barrel quality, wear pattern and operational status, as well as documentation of the measurement data, images and remarks from the experts.

The GBMS contributes to optimal management and service efficiency, provides an overview of the status of the Armed Forces material, budgeting, preservation and distribution of competence and experience across the Armed Forces organizations.
GBMS imports the data from the inspection and provides functionality to read, analyses and enrich the inspections with more data and comments. It also provides functionality to compare inspections over time for the same barrel – including pictures – and compare inspections from different barrels. It stores all the inspections in the database and allows the users to see details develop over time.

GBMS organizes the barrels and weapon systems into groups and hierarchies that can be changed and defined by the Administrator user. For each weapon system you can register shots, ammo used, in order for the officers to keep track of the usage of the weapon and the time to next inspection according to the limits recommended by the producer and the authorities. It is also possible to register other useful information like hit rate and temperature influencing the wear and tear for the barrel.

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Operational status
Fleet management
Benefits

Safety
- Detect wear, bulges, burnup and other damages inside a gun barrel that may expose personnel to shooting accidents.
- Discover shooting and hit deviations that could put a combatant at risk during sharp mission.
- Keep a proactive overview that no gun barrels which have exceeded the tolerances, are used.
- Notify officer in charge if any gun barrels have exceeded any tolerances and is still used in active service.
- Discover deviation in quality that can be attached to a batch/lot, and be able to carry out new measurements and new evaluations.

Operational availability
- Provide forecast for the next service to be able to coordinate with other service needs. This will improve better operational availability and lower maintenance costs.
- Show gun barrel quality and lifetime status per operational unit for assessment with product requirements and planned activities.
- Fleet management.

Use optimization
- Rearrange the gun barrels according to remaining lifetime and quality to make sure to deploy personnel in sharp mission with the very best equipment available.

Maintenance/ Service optimization
- Support the workshops with measurement data, gun barrel history, reports and visualization that provide better implementation and quality of the measurements.
- Give the workshops ongoing access to the weaponry to be able to determine the optimal time for measurements on gun barrels approaching their tolerances or showing abnormal shot results.

Lifetime calculation/ Budget support
- Calculate residual lifetime, value and expected replacement either by stock withdrawal or new purchases based on remaining shots and wear according to the tolerances.
Purchase & negotiation support

- Use actively under test of new weapon systems to verify that the supplier’s measurement data are correct.
- Calculate operating and procurement costs based on measurements results.
- Use the knowledge to adjust the quality and design of gun barrels and related equipment.
- Take advantage of knowledge to adjust price and/or delivery requirements.
- Use lifetime calculations based up on existing weapon systems versus material on stock as input to operating and investment budget.

Interaction with executive systems

- Provide calculated key figures and statuses of individuals to surrounding systems such as maintenance, purchasing, economy, budget etc.

Ensure the organization’s expertise

- Provide storage and processing of existing variants of measurement data, images and comments.
- Support to several levels and functional areas in the organization.
- An updated database to ensure the unique information and competence the organization hold.
- Be a means of involvement and training of younger resources so that the skills that the many, ever older, weapon experts have built up over years are not lost.
Condition monitoring by use of the measurement tool ROBINCA, the status of gun barrels can be evaluated. ROBINCA is a portable and versatile measurement system for assessment of pitting, erosion and general wear of gun barrels. It combines visual inspection with highly accurate non-contact measurement technology.

The system ranges from 4.6mm rifle barrel to 155mm howitzer. Software user-interface is uniform through the complete range. The ROBINCA system automatically generates reports for statistics and analyses instantly after a measurement procedure.

All measurement data can be imported into GBMS for further analysis. Based upon the given tolerances the gun barrel is given a status.

If the measurement data is within the limits, the status is good with or without remarks. Based upon this information a new inspection date will be set.

If some of the values exceed the limits, the status will be red; shooting prohibition. A decision must be made according to internal procedures.

After evaluating the measurement data, added all relevant information, combining details, then it is possible to take benefits from the wide spectre of possibilities GBMS has to offer.
GBMS combines the measurement data with organization data and material.

Notify officer in charge if any gun barrels have exceeded any tolerances.

An updated database to ensure the unique information and competence the organization hold.

Detect wear, bulges, burnup and other damages inside a gun barrel that may expose personnel to shooting accidents.

Rearrange the gun barrels according to remaining lifetime and quality.

Show gun barrel quality and lifetime status per operational unit for assessment with product requirements and planned activities.
Dacon can offer an adapted solution for every need. Like a minimum configuration based upon a stand alone pc up to a server configuration accessible for users on the network.

The minimum configuration is a stand alone system. There is no communication between other systems. No common database for analytics. The system is suitable for small independent operation. This is not an optimal solution for fleet management.

Server configuration is the ultimate system. It is designed to give a full view of a fleet and supports all bases and competent authority. GBMS is an extremely powerful, yet very user friendly and simple to understand, analysis tool that helps an organization to keep total control.

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