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Round Robin Gage Update Inter-Agency Manufacturing Operations Group, Measurements Trades Subcommittee

Presented by

Robert Jones - Mechanical Calibration

Sandia National Laboratories, Albuquerque

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Conception of Effort

Project was realized and implementation was pioneered in Fall of 2017 by:

Tony Bryce SNL ABQ (retired)

Margie Baca SNL ABQ (transferred from Mechanical Calibration)

Monico Lucero, SNL ABQ

Ryan Wierzba, Marten Machining

Alan Marten, Marten Machining

Greg Hetland, Kotem/Smart Profile

Motivation of Effort

- To utilize a gage in a round-robin effort to evaluate measurement methods from various labs and determine potential biases between results and implications to each labs ability to optimally consider applicable error consideration when developing their uncertainty analysis.
- The magnitude of these measurement biases will determine each labs ability to have a high-degree of confidence in measuring parts for conformance to specification requirements with a known magnitude of measurement uncertainty.
- Failure to ensure confidence in these results could have a technical & business impact to IMOG participants as it will result in potentially rejecting parts that truly conform to specification requirements, or at a higher risk, accepting parts that truly do not conform to specification requirements.

Progress in testing

Sites which have returned results for analysis:

Lawrence Livermore National Laboratory

Nevada National Security Site

Sandia National Laboratories, Livermore

Los Alamos National Laboratory

Kansas City National Security Campus, FM&T

Sandia National Laboratories, Albuquerque, Manufacturing Liaison

Sandia National Laboratories, Albuquerque, Mechanical Calibration

Progress in testing

Sites that are still awaiting this gage:

Y-12 National Security Complex

Savannah River National Laboratory

Atomic Weapons Establishment

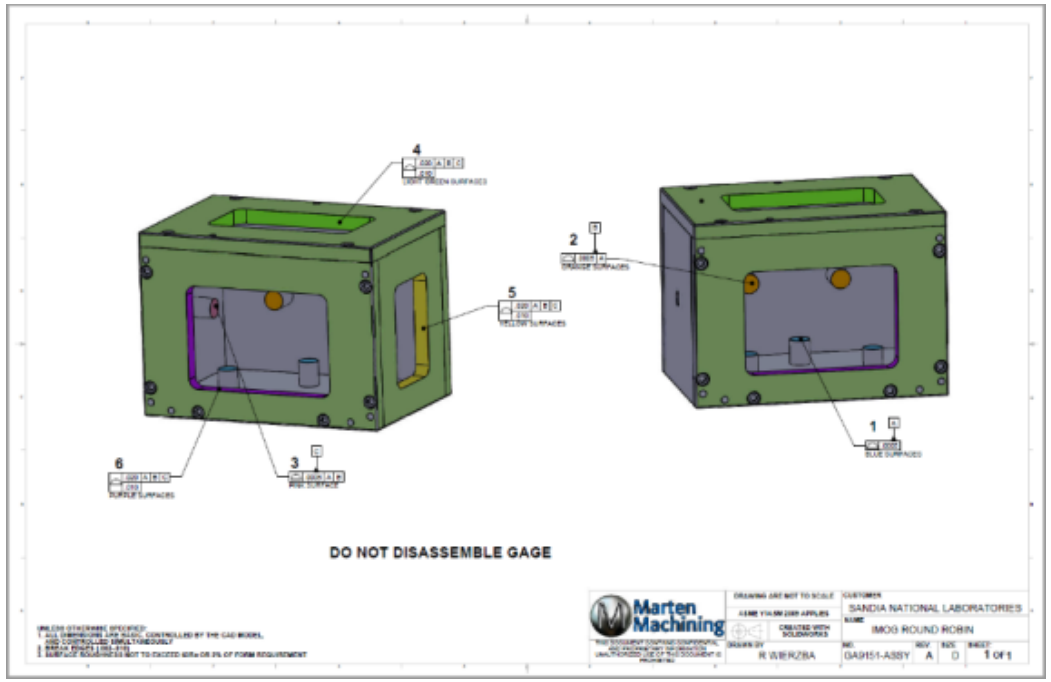
Brief review of project

DIMENSION	DESCRIPTION	ON CMM AS MEASURED	UNIT OF MEASURE	EFFECTIVE PROBE DIAMETER & MATERIAL	BALL CENTER or SURFACE POINTS	SCAN POINTS or SINGLE POINTS	MACHINE MODEL and SOFTWARE	CMM Specification	METROLOGIST/ FACILITY	EXPORTED POINTS
1	Profle Datum A	.0001	INCH	5mm / Silicone Nitrite	Surface	Scan	Zeiss Contura G2 Calypso	1.9 +L/300µm	Jesse Sanchez / SNL-NM	Metric &Inch
2	Profile Datum B	.0000	INCH	5mm / Silicon Nitrite	Surface	Scan	Please send all the point files for all the datums along with all the window features and include the units of the exported points. Please also include the stylus size diameter and if the exported points are surface or ball center data.			
3	Profile Datum C	.0005	INCH	5mm / Silicon Nitrite	Surface	Scan				
4	Composite Profile Top Window	-.0034	INCH	3mm / Ruby	Surface	Scan				
		.0050	INCH	3mm / Ruby	Surface	Scan				
		.0096	INCH	3mm / Ruby	Surface	Scan				
5	Composite Profile Right Window	-.0083	INCH	3mm / Ruby	Surface	Scan				
		.0083	INCH	3mm / Ruby	Surface	Scan				
		.0209	INCH	3mm / Ruby	Surface	Scan				
6	Composite Profile Front Window	-.0086	INCH	3mm / Ruby	Surface	Scan				
		.0083	INCH	3mm / Ruby	Surface	Scan				
		.0169	INCH	3mm / Ruby	Surface	Scan				

Contained in the kit, are the drawing with requirements and requested formats for reporting.

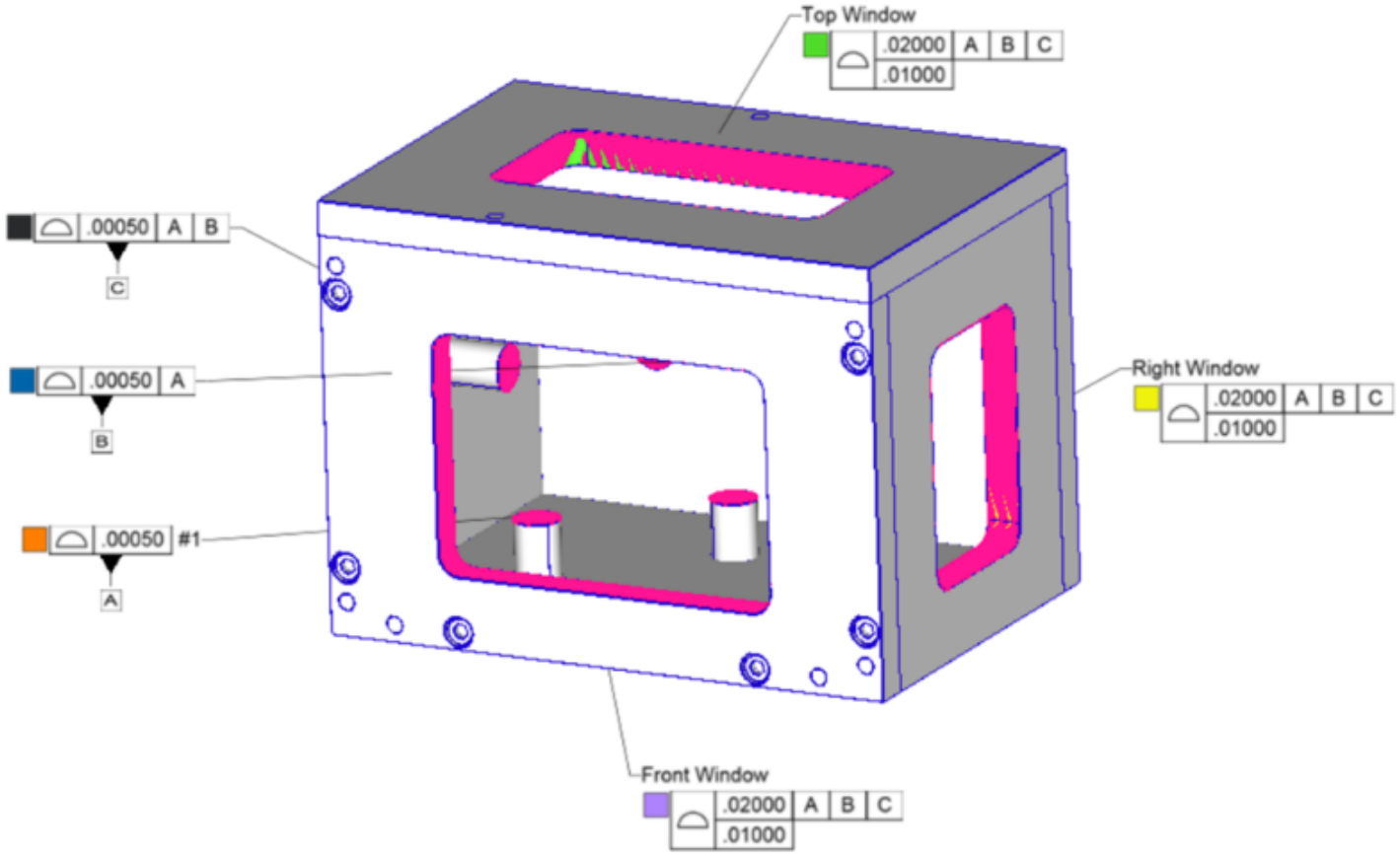
DOE funding is not provided for shipping of project kit to participants and shipping is cost is absorbed by participants.

Don’t lay the gage on the gaging faces, as a reminder.



Work that lies ahead for the project

Upon receiving results and point clouds we'll use Smart Profile to determine the comparability of the data sets in compliance with Y14.5-1994.



Questions???

Thanks for your participation, commentary and assistance!