



Making Sense of Measurement

A decorative banner with a dark blue background. The text "Season's Greetings" is written in a white, elegant cursive font. To the right of the text are several white, stylized snowflake graphics of varying sizes, set against a background of small white dots, suggesting a snowy or starry night sky.

Season's Greetings

December 2020

Hi Janet,

This has been a most challenging year for all of us. We got off to a good start then CO-VID came and everything changed. For Origin however, we have been working remotely for the last 15 years as this is our normal.

In review, the whole team has been working very hard at maintaining direct support remotely, conducting pilot projects, validating MBD workflows and developing advanced software for the CheckMate suite of products.

Coming in the second quarter, will be introducing a **new analysis tool**. (*see more details below*).

We look forward to 2021, mostly to put CO-VID behind us and to travel and meet with customers and associates in person.

Stay safe and Happy Holidays to all. May 2021 be the best year for you.

Murray Desnoyer C.E.O.

Coming Soon

(Free for ASP Maintenance Customers)

"Geo Tol Manager"

Why it was developed, how it works, benefits

Origin developed the Geo Tol Manager for CheckMate in direct response to customer complaints about manual manipulation of results data. This includes reporting – of course –

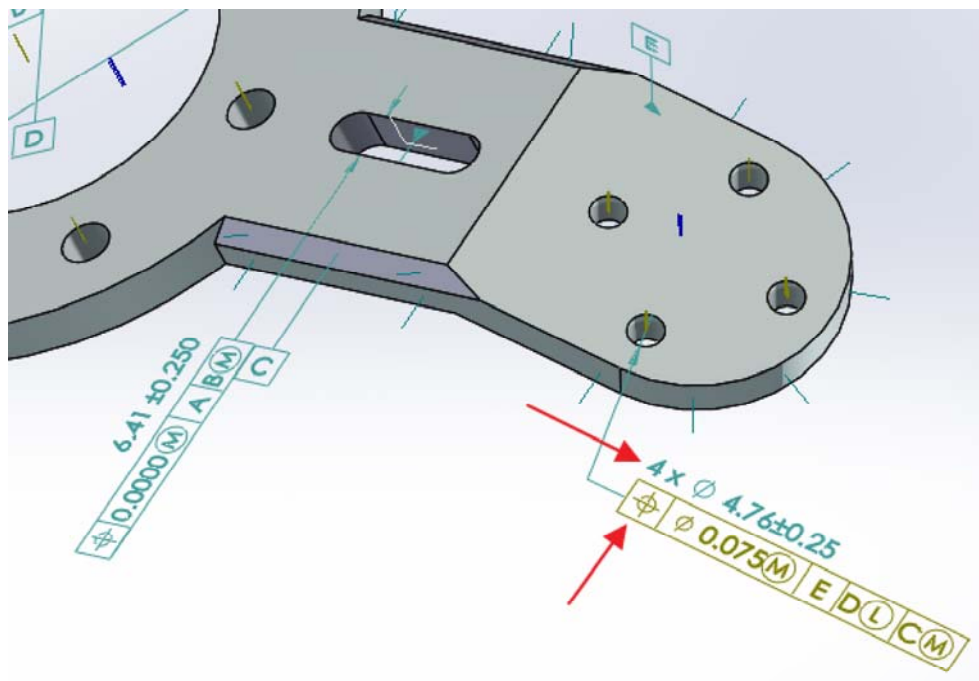
and even more so, process statistics.

The Geo Tol Manager (GTM) re-uses either MBD or CMM programs. GTM automatically builds all the datum reference frames and feature control frames for all characteristics. It analyzes all characteristics simultaneously for bonus tolerance and GTM re-allocates bonus according to the ASME standard for feature control frame types. I.e. or orientation, location and profile, form, orientation and runout.

This **enables Quality to provide instant and much richer feedback to its manufacturing** and design customers. Processes that will benefit include: die development, machined parts, and cast/forged parts with finished machining.

HOW IT WORKS EXAMPLE: PATTERN CALLOUT WITH BONUS

The red arrows pointing to the tolerance characteristic on the part below show a pattern of 4 holes on the plane that can gain bonus from their diameters, and Datums C and D. All 4 holes must be calculated simultaneously.



Geo Tol Manager used the characteristic specification to automatically build a software gage that performs the analysis by functional GD&T Datum Reference Frame for each Feature Control Frame. Unlike a hard gage, GTM creates the soft gage instantly, and if a characteristic changes the cost to update the soft gage is zero. Each feature characteristic is evaluated against the Feature Control Frame and back to the relevant Datum Reference

Frame and results are displayed in the GTM window of CheckMate:

GD&T	Size Tol	Deviation	Graphic	Bonus	As Meas	Xbar
Datums						
A (PL001)						
B (CI002)						
C (SL006)						
D (CO007)						
E (PL021)						
Form						
F _{CF} 0.050						
PL001		0.007 (13%)		0.007 (13%)		
F _{CF} 0.025						
CO007		0.033 (6%)		0.033 (6%)		
Location/Profile						
D _{PF} A						
F _{CF} $\varnothing 0.000$ A		0.000		0.000		
CI002	$\varnothing \pm 0.050$	0.000 (0%)		0.033	0.000 (0%)	
D _{PF} A B						
F _{CF} $\varnothing 0.000$ A B		0.000		0.000		
SL006	W ± 0.250	0.000 (0%)		0.254	0.000 (0%)	
D _{PF} A B C						
F _{CF} 0.200 A B C		0.077		0.115		
F _{CF} $\varnothing 0.050$ A B C		0.090		0.088		
CO007	$\varnothing \pm 0.500$	0.090 (17%)		0.489	0.088 (16%)	
F _{CF} $\varnothing 0.060$ A B C		0.086		0.084		
CI009	$\varnothing \pm 0.050$	0.086 (80%)		0.047	0.084 (78%)	
CI010	$\varnothing \pm 0.050$	0.065 (57%)		0.054	0.066 (58%)	
CI011	$\varnothing \pm 0.050$	0.057 (57%)		0.040	0.057 (57%)	
CI012	$\varnothing \pm 0.050$	0.061 (69%)		0.028	0.060 (68%)	
CI013	$\varnothing \pm 0.050$	0.051 (44%)		0.056	0.050 (43%)	
CI014	$\varnothing \pm 0.050$	0.076 (69%)		0.051	0.079 (71%)	
CI015	$\varnothing \pm 0.050$	0.073 (56%)		0.071	0.071 (55%)	
CI016	$\varnothing \pm 0.050$	0.055 (52%)		0.046	0.053 (50%)	
D _{PF} E						
F _{CF} 0.150 E		0.051		-0.103		
Feature Control Frame						
F _{CF} $\varnothing 0.075$ E D L C M		0.139		0.247		
CI017	$\varnothing \pm 0.050$	0.122 (94%)		0.054	0.247 (191%)	
CI018	$\varnothing \pm 0.050$	0.136 (103%)		0.057	0.169 (128%)	
CI019	$\varnothing \pm 0.050$	0.139 (109%)		0.053	0.157 (122%)	
CI020	$\varnothing \pm 0.050$	0.111 (71%)		0.082	0.128 (82%)	
Orientation						
D _{PF} A						
F _{CF} 0.075 A						
PL021		0.074 (99%)		0.074 (99%)		

The results in green show feature characteristics that are good; red indicates out of tolerance. So we see right away that most of the feature characteristics are good, except for the 4 holes in the RED rectangle.

The 4 holes are simultaneously fit using the MMC and LMC specifications in the Feature Control Frame $\varnothing 0.075$ E D L C M and the Datum Reference Frame (DRF) E D L C M.

The functional fit shows two circle measurements out of specification, and therefore the overall 4x tolerance is out. Geo Tol Manager shows the worst of the four circle measurements in relation to the Feature Control Frame. Below that GTM shows the individual deviations as well.

The results columns show that two of these four holes are still out even after all the available

bonuses have been re-allocated. We see that evaluation according to the DRF reduces the number of out-of-tolerance holes from 3 out to 2 compared to As-Measured results, which is the raw CMM measurements. Geo Tol Manager leaves no doubt about which two holes are out and by how much. We can determine the direction of the deviations by using a CheckMate target plot.

INTEGRATED WITH CHECKMATE'S SUITE OF TOOLS

The *Geo Tol Manager eliminates the manual set up that used to be required for the Root Cause Browser.*

GTM is 100% integrated with CheckMate Point Cloud Metrology (PCM), Origin's tool to process touchless measurement STL files. PCM also includes tools to use legacy CMM programs to extract measurement features from STL scans.

IN SUMMARY:

- It is included with CheckMate updates for customers on ASP
- Improves process insight from legacy CMM programs as well getting more value from MBD
- Constructs DRF-FCF frameworks and evaluates results automatically in seconds
- Integrated with CheckMate Root Cause Browser and Point Cloud Metrology

For more details, contact sales@originintl.com

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WHAT OUR CUSTOMERS HAVE TO SAY

Just so you know...YOU'RE THE BEST!!! In all my years in this industry (like 30+) , I've NEVER had or heard of this level of response and support with software!! And I've been

around. *John C. Morin III/G.P.R. Co.*

WEBINAR

January 28, 2021

Stay Tuned !



It is not too late to view previous webinars -

[CheckMate Labels: The New Look](#) [CheckMate for SOLIDWORKS](#)
[New MEASALL Function](#)

11:00 am | Eastern Standard Time (New York, GMT-05:00) | 1 hr

TECH TIPS

TT90- Feature Replacement

Reviewing how to perform Feature Replacement in CheckMate for SOLIDWORKS®.
Works on Surface points, lines and planes. Requires CheckMate 14.0.01139 or newer.



[Check out our video series about CheckMate Coordinate Systems. Tech Tip 79 to 83](#)

[Review Workplane Enhancements](#)



[How to access the ShortKey list in CheckMate for SOLIDWORKS®](#)

[CheckMate Updated Training Manual Link](#)

[Origin's New Software Unlocking Policy](#)

Stay Current

CheckMate for SOLIDWORKS® ... new version 1073 now available

CheckMate APPS ...new version 1073 now available

CheckMate Training Videos "Check for Update" link now available

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