

# Automating on-machine measurement using the digital thread

DMDII, Goose Island, Chicago, Illinois

May 23, 2017

On May 23, 2017, OMAC will give a demonstration of on-machine measurement at the DMDII in Chicago Illinois. The demonstration will show how the digital thread enables more accurate, more timely and more automated on-machine measurement.

In the demonstration, a product model with embedded tolerances will be machined and measured in multiple phases. At the end of each phase, coordinates on the part will be communicated in real time to CMM software. Standardized reports will describe how well the tolerances are being met. Future demonstrations will use the data for closed loop applications.

The demonstration will use STEP to define a product model, MTConnect to communicate on-machine touch points, and QIF to report metrology results. STEP is supported by nearly every CAD system, and has recently been updated to include tolerances that can be reasoned with by intelligent software. MTConnect is available for nearly every type of machine tool and for this demonstration has been extended to include touch probe results. QIF has been developed by the team responsible for DMIS as a next generation standard for metrology planning and reporting.

New digital twin software will be used to coordinate the machining and measurement. At the start of the demonstration the twin will be loaded with the product model. During the demonstration, it will virtually machine the product model from the data sent by MTConnect. The twin will transform measurements on the machine into part coordinates that can be evaluated by CMM software. The twin will enable remote visualization in smart phones and browsers, and in future demonstrations it will correct and optimize the machining operations.