OMIC R&D TECHNOLOGY BOARD
CONCEPTUAL ABSTRACT

TITLE: **OMIC-M32 MT vs CMM Inspection Accuracy**

RELATED ROAD-MAPPING DESIGNATION ID#: M32

SUPPORTIVE INDUSTRY: Heidenhein, Daimler

PROJECT TYPE: General Project - Machining

PROBLEM STATEMENT (What Are We Trying to Solve?): Current industry manufacturing workflow includes a step, or multiple steps, in a process where the part must be removed from a machining cell to be measured on a CMM. It has been known that a CMM is much more accurate than a CNC machine at measuring part features and because of this it creates a bottleneck of parts in any shop. The extent of this difference is not yet measured, and repeatability tests need to be done to ensure in process inspection and buyoff works properly.

PROJECT DESCRIPTION: An understanding of when to measure on a machine tool versus a CMM can be arrived at by way of the following data compilation:

- Determining the difference in accuracies between a CMM and CNC machine
- Having an inspection document similar to a CMM come from the CNC control
- Determining which features are better to be measured on a CNC or a CMM and if parts can be qualified as they are machined

   Identify Related OMIC R&D Resources: Proposing researchers should use their best judgment in deciding on the optimal resources for the research. To further aid in this decision, the OMIC staff has taken the initiative to best identify on-site resources (machines, equipment, and staff) that may relate to the scope of this research. Please recognize that researchers are not limited to these resources.

   - Mills - Doosan DVF5000, Okuma M560V, Axile G6
   - Lathes – WFL M50, Doosan TT2500SY, Doosan SMX2600ST
   - Wenzel CMM

PROJECT DELIVERABLES:

- Formal report, raw data collection template, and related presentation
- Standard part to be machined and measured
- Measurement documentation to be output by CNC control.

SPECIAL NOTE: It should be recognized that this Conceptual Abstract is written based on comments collected during OMIC R&D Road-mapping workshop and based on industries need

for applied research. However, researchers as SMEs, are encouraged to lend specific technical feedback to further refine the Project Description and or Project Outcomes. The proposing researcher may do so either directly to OMIC R&D, or in the submitting proposal.

UTILIZATION OF OMIC RESOURCES: Researchers are encouraged to utilize the capital and personnel resources available on the OMIC R&D campus in their proposals. Use of OMIC time and machines should be included in the Proposal funding request. If use of OMIC resources are not identified in a proposal and are requested during, the project sponsor will be responsible for requesting a costed project amendment from the Tech Board.

PROJECT UPDATE EXPECTATIONS: Researchers are required to have monthly update discussion with OMIC R&D to provide a summary update on project status. This is done by way of a user-friendly format known as the OMIC 6-Block update. Typically, these meetings are scheduled on the first Wednesday and Thursday of each month. Secondly, depending on the scope of the project, OMIC R&D's industry Tech Board representatives are often interested in periodic project updates, and even in project participation. Researchers are required to communicate with supportive industry and facilitate communications as required.

PROJECT DURATION: It is OMIC R&D's strong preference that duration of a General Project aligns with the academic calendar cycle (July 2022 to June 2023). It is preferred that the project be completed by June 2023. Researchers are encouraged to factor in variables such as contracting, student hiring (if needed), procurement, holidays, and travel. It has been OMIC R&D's experience that a projects useful working duration is typically 9 to 10 months. Researchers are also encouraged to lend feedback, and to adjust the scope of work to best fit this preferred timeframe. Additionally, it is reasonable to even recommend phasing breakdowns to the project. In some unique circumstances, if the project is to take significantly longer than the duration of the academic year, this reasoning should be explicitly explained in the proposal.

CONTACTS AT OMIC R&D:

Urmaze Naterwalla	**Craig Campbell**	**Jen Kammerman**
Head of R&D	Executive Director	Executive Assistant
Urmaze.Naterwalla@oit.edu	Craig.Campbell@oit.edu	Jen.Kammerman@oit.edu