

OMIC R&D TECHNOLOGY BOARD
Evaluation of Optimized Radial Engagement with High Efficiency
Roughing Toolpath Algorithms for Hard Metals Machining
Request for Proposals

1.0 Project Information

- **Project Title:** Evaluation of Optimized Radial Engagement with High Efficiency Roughing Toolpath Algorithms for Hard Metals Machining
- **Project Type: Joint General Project**
- **Project Description:** The objective of this project is to evaluate machine runtime and cutting tool performance with effects of radial engagement to high efficiency roughing toolpath algorithms for hard metals machining. This project would be a continuation of the evaluation of alternate high efficiency machining toolpaths methods and performance testing for hard metals machining optimization. Today cutting tool vendors and CAM systems recommend cutting tools and processes for light, medium and heavy radial engagement.

The project proposes to test a spectrum of radial engagement (6%, 10% and 30%) at or above three times the diameters (3XD) of industry leading cutting tools. The study will document performance relative to machine, part geometry and CAM systems toolpath trajectory. The project will establish a benchmark to the industry linking CAM systems high efficiency roughing toolpath algorithms, leading cutting tool geometries and radial engagement.

- **Project Outcomes:** The project will document performance and results of the radial engagement, feedrate, metal removal rate, angle of engagement, actual chip thickness, consumed horsepower, actual machine run time and tool life for each of CAM systems solutions.

The project will develop the optimal radial engagement to high efficiency roughing toolpath algorithms for hard metals machining. The study will demonstrate the most optimal radial engagement with cutting tool and toolpath.

The project will enhance the hard metals machining capability of OMIC and show case it's contribution to a larger manufacturing community. The new capabilities will directly impact the industry methods and further CAM solutions of high efficiency roughing toolpath algorithms for hard metals machining.

- **Project Duration:** 3-6 months

2.0 General Information for All Proposals

- **Eligibility:** *All faculty at OMIC R&D Research institutions and OMIC R&D technical staff.*
- **Performance Period:** The Performance Period of the proposed work must be appropriate for the content given above in the Project Information sections. Requests

for excessive or unjustified performance periods can be reason for proposal rejection by the OMIC Technology Board.

- **Award Amounts:** The funding requested must be appropriate for the content given above in the Project Information sections and consistent with any limitations given there. In all cases requested funds must be fully justified. Requests for excessive or unjustified funding can be reason for proposal rejection by the OMIC Technology Board.
- **Proposal Format, Content and Details:** All proposals must strictly follow the template given below and include all required sections
- **Submission Deadlines: Monday June 3, 2019**
- **How to Submit:** Send proposals by email to the OMIC R&D Project Manager, Ally Imbody <alicia.imbody@oit.edu>
- **Proposal Review Process:** Proposals will be reviewed and award decisions made by the OMIC Technical Advisory Board. The Board encourages collaboration between OMIC's university research partners in response to this RFP when collaboration will provide the best value for achieving the desired Project Outcomes. Evaluations will be based on the following criteria:
 - Soundness of the proposed methodology
 - Demonstrated subject-matter expertise of proposed staff
 - Cost/reasonableness of proposed budget
 - Timeline/adherence to proposed schedule
 - Past performance (if applicable)

Technology Board members will evaluate each eligible proposal submitted using a five-point scale where: 1- poor, 2-deficient, 3-acceptable, 4-superior, 5-outstanding. Evaluators will assign a default score of 3 for Past Performance if no information is available. All scores will be averaged by the Tech Board chair and a decision made based on the highest overall score.

- **Informational Contact:** Questions are to be directed to the OMIC Project Manager, Ally Imbody <alicia.imbody@oit.edu> by **Monday, April 29, 2019**. Consolidated questions will be sent to the Technology Board Chair and responses will be provided to all research partners by **Monday, May 6, 2019**.
- **Performance Requirements:** The PI and institution awarded the project will be expected to progress the work expeditiously to meet all of the progress milestones shown in their proposed schedule (see section two below).
- **Project Termination:** The Tech Board reserves the right to cancel the project at any time.