

Project Title: Effect of Tool Coating and Edge Preparation on Milling Performance

Duration: 2022/2023 W1 (September – December, 2022)

Supervisor: Dr. Xiaoliang Jin

Project Description:

Machining is a critical operation in the manufacturing chain after casting, forging, or additive manufacturing, to achieve the stringent geometric tolerance and surface quality of the final aerospace components. There are two decisive factors influencing a cutting tool's performance: tool coating and edge geometry, that determine the tool wear rate, tool life, and machined surface quality. In this project, the undergraduate student is expected to collaborate with a graduate student in performing the milling experiments on aerospace aluminum materials, and systematically evaluate the effects of tool coating and edge preparation on the milling performance. The outcome of this project is to determine the milling condition in order to achieve the optimum tool life, part quality, and process efficiency.

Benefits to the Undergraduate Student:

- An experience in research experience on manufacturing process
- An opportunity in collaborating with local industry
- Improvement of hands on capability using manufacturing – related instruments
- Improvement of knowledge in machining technology
- Teamwork experience in collaborating with graduate student