

## Enhancement of Material Removal Rate of Complex Featured Surfaces in Vibratory Finishing

**Authors :** Kunal Ahluwalia, Ampara Aramcharoen, Chan Wai Luen, Swee Hock Yeo

**Abstract :** The different process engineering applications of vibratory finishing technology have led to its versatile use in the development of aviation components. The most noteworthy applications of vibratory finishing include deburring and imparting the required surface finish. In this paper, vibratory finishing has been used to study its effectiveness in removal of laser shock peened (LSP) layers from Titanium workpieces. A vibratory trough operating at a frequency of 25 Hz, amplitude 3.5 mm and titanium specimens (Ti-6Al-4V, Grade 5) of dimensions 50 x 50 x 10 mm<sup>3</sup> were utilized for the experiments. A vibrating fixture operating at 200 Hz was used to provide vibration to the test piece and was immersed in the vibratory trough. It was evident that there is an increase in efficiency of removal of the complex featured layer and smoother surface finish with the introduction of the vibrating fixture in the vibratory finishing setup as compared to the conventional vibratory finishing setup wherein the fixture is not vibrating.

**Keywords :** laser shock peening, material removal, surface roughness, vibrating fixture, vibratory finishing

**Conference Title :** ICDMM 2017 : International Conference on Design, Manufacturing and Mechatronics

**Conference Location :** San Diego, United States

**Conference Dates :** December 18-19, 2017