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## **HIGH SPEED CUTTING**

**An Approach towards Improved Machining Performance**



**Manufacturing and Materials Department**

Kulliyyah of Engineering  
International Islamic University Malaysia

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# **HIGH SPEED CUTTING**

An Approach towards Improved Machining Performance

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## **Influence of Backcutting Phenomena to Surface Roughness of Hardened AISI H13 during High Speed End Milling Process**

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### **6.1 Introduction**

In industrial machining processes, milling is a fundamental machining operation and end milling is the most common metal removal operation encountered. It is widely used in a variety of manufacturing industries, including the aerospace and automotive sectors, where quality is an important factor in the production of slots, pockets, precision molds and dies. The quality of the surface plays a very important role in the performance of milling as a good-quality milled surface significantly improves fatigue strength, corrosion resistance, and creep life (Lou, 1999). Recently, high speed end milling has been studied actively to obtain a precise surface and high productivity (Lee, 2001).

From the previous researches performed to predict the surface roughness, four categories of methodology and approaches have been summarised. The approaches are (i) Machining theory based approaches, (ii) Experimental investigation approaches, (iii) Designed experiments approaches, and (iv) Artificial intelligent (AI) approaches (Benardos, 2003). Therefore, one of the approaches will be applied in this research which is designed experiments approaches to obtain the desired result.

Among many contributors to surface quality problem, backcutting is one of the influential factors to the surface roughness. Therefore, this research will concentrate on the study of backcutting phenomena and their influence to surface roughness and the prediction of surface roughness.