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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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### **3.1 Introduction**

Grinding is the final stage of most of machining products but grinding is time consuming process. The best alternative for grinding is by hard turning. Hard turning has emerged since modern cutting tools such as ceramics were available to reduce the time needed to finish hardened parts those with hardness ranging from 45 to 70 HRC. The secret to successful hard turning is by higher cutting speed because hard turning processes are usually associated with high temperatures. In high speeds, heat goes out with the chip and not into the tool or the work piece, so the wet cutting becomes useless.

The term high speed may not be the same for different materials, high speed for one material may be a low speed for another (for example, the high speed for titanium is a low speed for aluminum). Another sign for the high speed is the chip shape. The chips produced under various cutting speeds have different shapes. At low cutting speeds the chip is a continuous type but when the speed is increased, it is changed to saw-tooth type (Lin et. al., 2008; Sharma, 2001).

Many researchers studied the effects of the cutting parameters on surface roughness in hard turning.

Benga and Abrao (2003) found that feed rate was the most significant factor affecting surface finish while cutting speed has very little influence on surface finish for both ceramic and CBN cutting tools when machining hardened 100Cr6 bearing steel 62–64 HRC.