



## ADAPTIVE DYNAMIC MACHINING

Despite the best predictive analysis, chatter vibration during machining can arise suddenly. Industry involved in machining need a system that can recognize chatter live in-the-cut and immediately adjust parameters to eliminate it from causing damage.

OMIC R&D developed real-time chatter detection procedure, and validated them with baseline data of traditional tap-testing and acoustic signature techniques. OMIC R&D conducted experimentation to show validation of improved performance.

This helps manufacturers achieve the required part surface finish & tolerance, avoid catastrophic tool or machine failure, and reduce total cost.



Figure 1 - an example of Chip Curl.



Figure 2 - Cutting tool being balanced with a laser.

Weigh the Cutting Tool & Holder Assembly (Kg)

$$U (g \text{ mm}) = \frac{G \times 9549 \times Kg}{RPM}$$

Use RPMs:

- Either use RPM at which the cutter runs
- OR use max RPM of the machine.

The 10% Rule  
when  
 $F_u < 10\%$  of  $F_T$   
Balancing is not required

Research for this project was conducted by Dr. Burak Sencer of Oregon State University .

Industry participants include:  
BOEING  
VIGOR  
SANDVIK CORMAT

