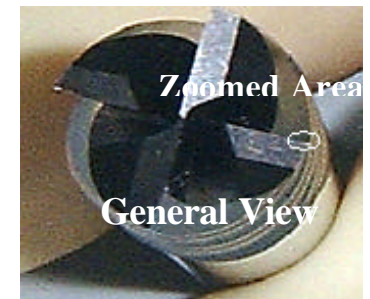


ta-C Coating Found to Prolong Lifespan of End Mill With Better Finished Milling Surface

Before Test

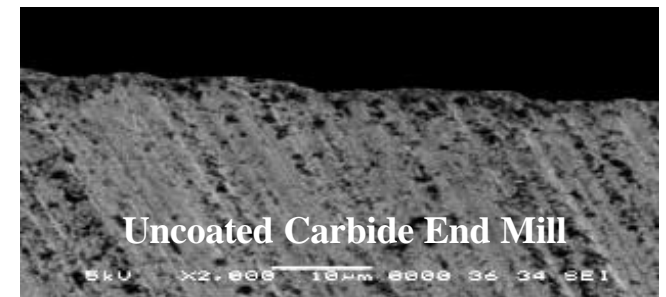
- Uneven edge of the top flute is observed



After Test

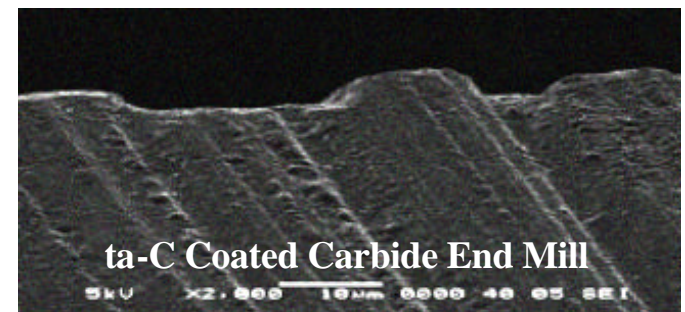
After 2 Hours of Milling with Uncoated Carbide End Mill

- Severe wear is observed on the top flute (the edge is flattened)
- Texture line on surface is damaged
- Surface becomes rough

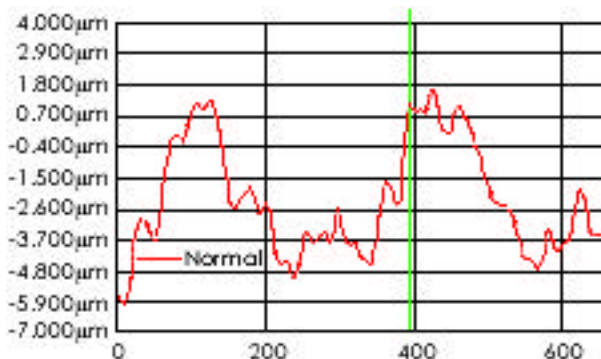


After 4 Hours of Milling with ta-C Coated Carbide End Mill

- Minimum wear is observed on the top flute (the edge remains about the same as the uncoated one before test)
- Texture line on surface remains intact
- Surface is still smooth

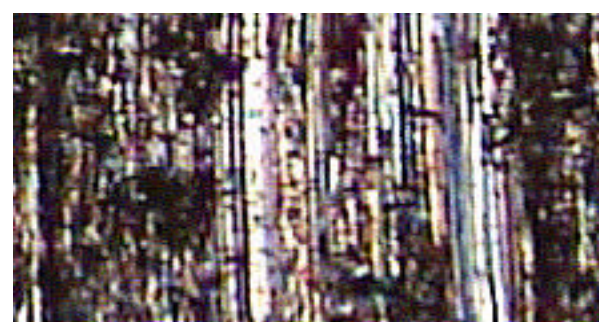
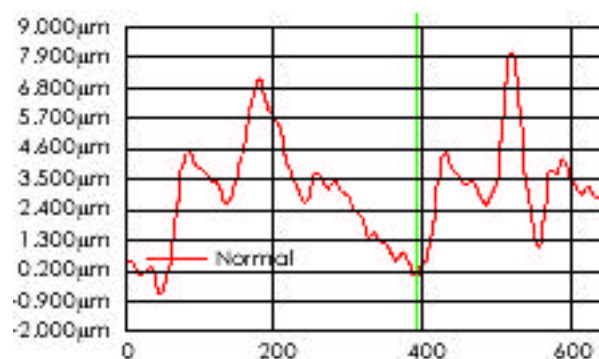


Surface Morphology of Al Block with Uncoated & Coated Carbide End Mills



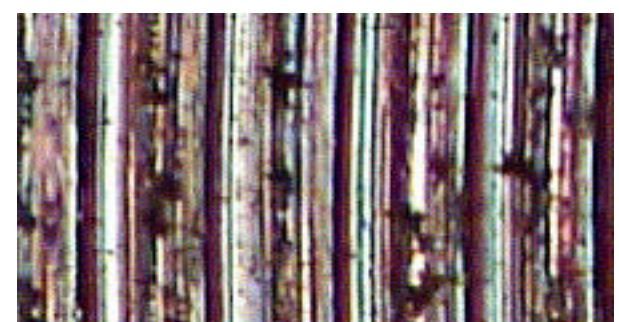
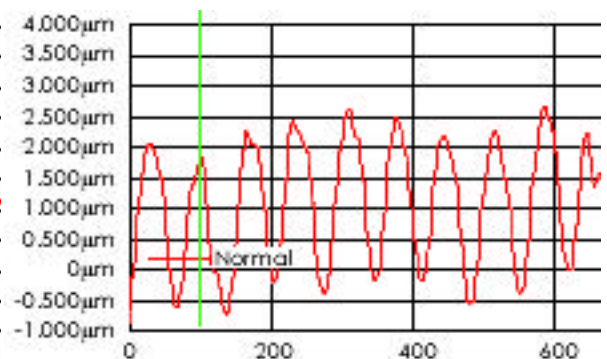
Milling with Uncoated End Mill

Peak to trough roughness: ~5µm
Distance between milling grooves: ~300µm



After 2 Hours of Milling with Uncoated End Mill

Peak to trough roughness: ~8µm
Distance between milling grooves: ~300µm



After 4 Hours of Milling with ta-C Coated End Mill

Peak to trough roughness: ~2.5µm
Distance between milling grooves: ~70µm

Under Our Testing Conditions:

Rotating speed: 1400rpm
Feeding speed: 100mm/min
Milling depth: 5mm



Nanofilm Technologies International Pte Ltd