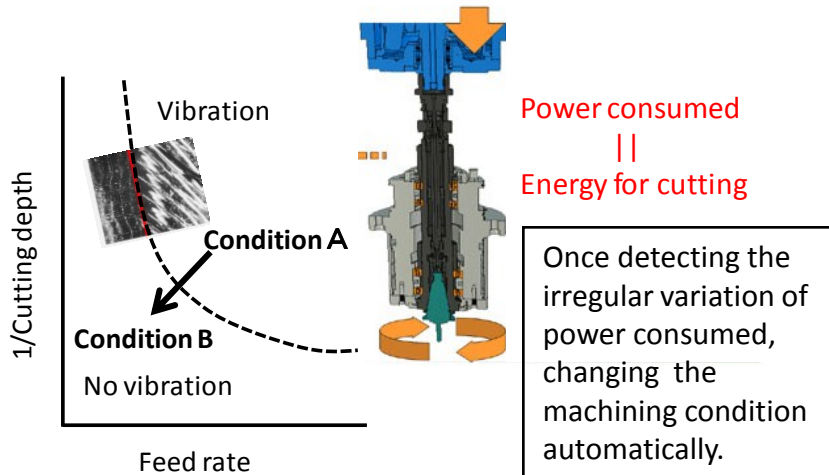
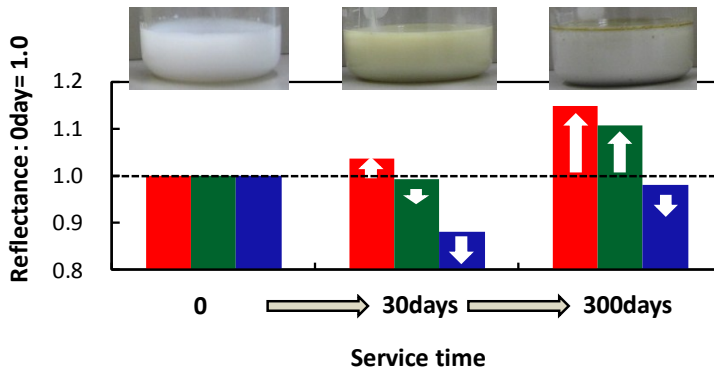


High-precision, High-efficiency, Low-environment load Machining

Professor Yasuo KONDO



Red, Green and Blue LED lights are focused onto the water-soluble coolant
↓
Each color shows a different reflectance
↓
We can monitor color change of coolant



The machining tools usually give no special consideration to accuracy and environment load because they are just operating according to the NC program codes. We have been trying to develop a “High-precision, High-efficiency, Low-environmental load machining system” by integrating interdisciplinary technologies.

○ **“The power consumed by spindle” is a meaningful factor to realize high-precision machining**

Real time measurement of power consumed by spindle can guarantee the “high-precision machining”, because the big cause to deteriorate the processing accuracy, such as chattering vibration and unusual heat generation, often gives an irregular variation to the power consumed. Once detecting the irregular variation of power consumed, machine tool change the machining condition automatically.

○ **Dynamic observation system to pretend aged degradation of water-soluble coolant**

The dynamic observation system can monitor the whole volume, 100 ~10000L, of water-soluble coolant on real time in coolant concentration, appearance, existence of dissolved substances by using a CCD microscope and various kinds of optical sensors.

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