Evaluation of Cutting Fluids in Multiple Reaming of Stainless Steel

An investigation on the effect of different cutting fluids in reaming is presented. The performance of three water based cutting fluids and one cutting oil was compared to that of a reference water based commercial product by measurement of cutting forces, surface roughness and part accuracy. Three subsequent reaming operations were carried out on austenitic stainless steel using high-speed-steel and solid carbide tools. The tested fluids were all significantly different from the reference fluid in at least some of the tested conditions. Significant differences down to 2 percent in cutting forces and 6 percent in roughness parameters were detected at 95% confidence level.