Cutting Forces by Turning of Inconel 718 with Inserts from Different Materials

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This paper presents achieved results by measuring of force load tool by turning of nickel alloy Inconel 718 with sintered carbide with progressive chip breaker designed by Pramet Tools Ltd. Company and with cutting ceramics inserts produced by Greenleaf Company. Authors deal with studying of force load which is exposed the cutting tool by conditions, when are achieved limit values in view of tool wear. In the end it is carried out a comparison of intensity of components of cutting force for these limit conditions. Very interesting is finding that by machining with worst cutting conditions the force load on insert cutting edge is smaller than by machining with best cutting parameters. This fact can be reasoned by the fact that at higher cutting conditions we are getting into the area of HSC machining for Inconel 718 and therefore the cutting forces are smaller. There is more heat produced in cutting zone. This influence undesirably sintered carbide during cutting process. Vice versa, high temperature influences positive cutting with cutting ceramics, as show simultaneously carrying experiments.

Keywords: turning, Inconel 718, cutting ceramics, sintered carbide, force load

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