

GENERAL TOOL CONDITIONS FOR GREEN MACHINING

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ABSTRACT

The development of "green" machine tools will require novel approaches for design, production and operation for energy savings and reduced environmental impact. Manufacturing processes carried out on machine tools are energy intensive. As machine tools have become more advanced, their degree of automation has risen by adding components such as tool change mechanisms or additional axes. Given the general trend of increasing power demand of machine tools the cost that companies have to expend on electrical energy will rise in the future. Furthermore, the external costs on the environment rise, since currently the majority of electrical power is obtained from burning fossil resources. A foreseeable shortage of fossil resources and a growing demand to include the external cost of environmental damage in product prices are likely to increase the cost of electrical energy for companies even further. Therefore, in order to maintain competitiveness and lower costs, companies have to identify ways to decrease the energy consumed during manufacturing for a given product.