

Here, we introduce the knowledge and various knowledge about the product TAKAMAZ a variety of machine tools. I hope you will help the daily work of customers

The 8th SEMI-DRY CUTTING INTRODUCTION CHAPTER 2



Cutting fluid is indispensable, but if we didn't need to use it, what merits may we find? This article explains the advantages provided by semi-dry cutting in which only a very small quantity of coolant is used, using Bluebe's technology as an example.

Role of Cutting Fluid

The most widely believed role of coolant is as the term itself implies cooling. However, recent technological advancement has improved tool heat resistance, and changed the nature of cutting due to the use of near-net-shape technology which allows the use of cold forged material with small stock removal and small heat generation during cutting. As a result, necessity of cooling became less important. In addition, higher speed cutting and faster feed rate are made possible thanks to advancement of machine tools and cutting tools, which inevitably increases stock removal amount per unit time. Accordingly, the major role of the coolant has changed from cooling to chip removal from the point of cutting, and chip flushing away from the table surface and fixtures.

Advantages of Semi-dry Cutting

Machine tools are required to be precise, power saving and corrosion preventive but the fact that the inside of a machine tool is like a shower room imposes burden to the machine itself. In addition, circulating large amount of coolant consumes a large amount of power. Cutting without coolant can eliminate washing and wiping processes and allows collection of chips of valuable metals such as copper without drying them. Among the advantages the semi-dry cutting has, the most notable advantage will be it can keep the shop environment clean to improve workability.



In the aluminum piston casting factory, chips and scraps can be put into the re-melting equipment without drying them.



Clean shop floor without oil spills thanks to semi-dry cutting. Shop floor soling is significantly reduced and workability is improved.

Paying Attention to Chip Disposal

The studies above draw one key factor for successful introduction of semi-dry cutting: to use the machine with good chip disposal. NC lathes in which chips naturally fall into a chip bucket are examples of such machines. To perform cutting with less heat generation on such machines, adoption of semi-dry cutting is recommended. Since only a small amount of oil is required, high-performance oil like synthetic ester can be used, which extends tool life and improves cutting accuracy. For cutting that requires cooling due to large heat generation, a coolant mist system that supplies mist of water-soluble coolant to the point of cutting is suitable. Moderate cooling effect can prevent thermal cracking often taking place with the conventional cooling method.

Oil-bases coolant mist supply equipment Bluebe EB7



Generates atomized mist and supplies it to the tool nose through the line in the machine.

Bluebe coolant mist equipment



Generates and sprays mist of water-soluble coolant.

Tools for Mist Coolant "EB-TOOL" (Bluebe)

Compared with cutting using conventional coolant systems, supplying large amount of coolant like a shower, semi-dry cutting is far more delicate. In semi-dry cutting, invisibly small quantity of coolant must be positively sprayed onto the tool nose. In the past, a spray nozzle was set very close to the tool nose requiring tedious setup procedure. However, appearance of a tool with a mist hole, EB-TOOL, made this setup a simple matter. An EB-TOOL is a turning tool holder with mist supply at the rear end and bottom to spray mist from the spray nozzle to the minor flank and face.



Bluebe is the product of Fuji BC Engineering Co., Ltd.