

## SANDVIK USES VEGETABLE OIL IN COMPUTER-CONTROLLED MACHINING

Sandvik has made vegetable oil standard for its computer-controlled manufacturing machines at an R&D center in Italy. Development Operator Andrea Azzolini enjoys the benefits from the vegetable oil.



Vegetable oils have many advantages as industrial lubricants, but their deficiencies often outweigh their benefits. At the R&D center in Rovereto, Italy, Sandvik has found a way to make vegetable oil standard for all its computer-controlled manufacturing machines.

Vegetable-oil lubricants, green and biodegradable, can be used both for moving components and as a base for lubro-refrigerant emulsions. They promote a healthier work environment, thanks to reduced risk of inhaled or contact contamination as well as reduced risk of falls and fires. Furthermore, vegetable oils have proved to have a greater lubricating

capacity than mineral oils, so that cutting tool wear is reduced, surface finish quality is better and machining cycle times are shorter.



*Maurizio Tardivo, project manager and responsible for the Sandvik Coromant R&D facility, put the vegetable oil to the test. It passed with flying colours.*

For many years, the research team at the Sandvik Coromant R&D Center in Rovereto, Italy, thought about replacing the mineral oil used in their computer-controlled manufacturing machines, so-called computer numerical control or, in short, CNC machines, with a vegetable alternative. The drawback was the discouraging results from previous tests where the vegetable oils performed poorly at high temperatures and pressures, oxidizing and undergoing changes to their chemical and physical composition. The oils tested also showed a very low smoking point, and their capacity to resist bacterial attack was weak.

## SANDVIK PUT NEW OIL BLEND TO THE TEST

In 2013 the Italian team saw an opportunity to pursue the use of vegetable oils, following a conversation between Sandvik and Bellini, a producer of industrial lubricants. Bellini was about to market a blend of vegetable oil made from seeds from three different continents. In addition to the inherent “greenness” of the seed-based oil, it needs no refinement, further augmenting its environmental benefit.

With the support of Bellini technicians, Sandvik Coromant put the product to the test. “We tested emulsifiable vegetable oil for two years, using it on the same CNC milling machine, as a basis for emulsion used with alloy steels, stainless steels, cast iron and aerospace-grade aluminium alloys as well as titanium and nickel alloys,” says Maurizio Tardivo, project manager and responsible for the Sandvik Coromant test facility. “We had no problems with emulsion stability in any of the materials we processed.”



*By using the Bellini vegetable oil for all its CNC milling, Sandro Maurelli and his co-workers can enjoy a healthier workplace.*

The oil also passed the most important test of chemical stability – summer and winter holidays, when the machines are inactive for two weeks at a time. The oil kept its characteristics over the downtime without loss of quality.

## VEGETABLE OIL IS THE NEW STANDARD

Vegetable oil has now been adopted for the two remaining CNC milling machines at the Rovereto R&D center. The only change the researchers made was to purchase a portable oil separator to be used every one to two weeks on each machine to avoid the eventuality of oil or grease contamination.

“We are glad that we gave the oil a try,” says Andrea Azzolini, Sandvik Coromant Development Operator. “It feels great to be able to use vegetable oil in our operations, as we are always looking for less polluting solutions and we like to work in such a clean workplace.”