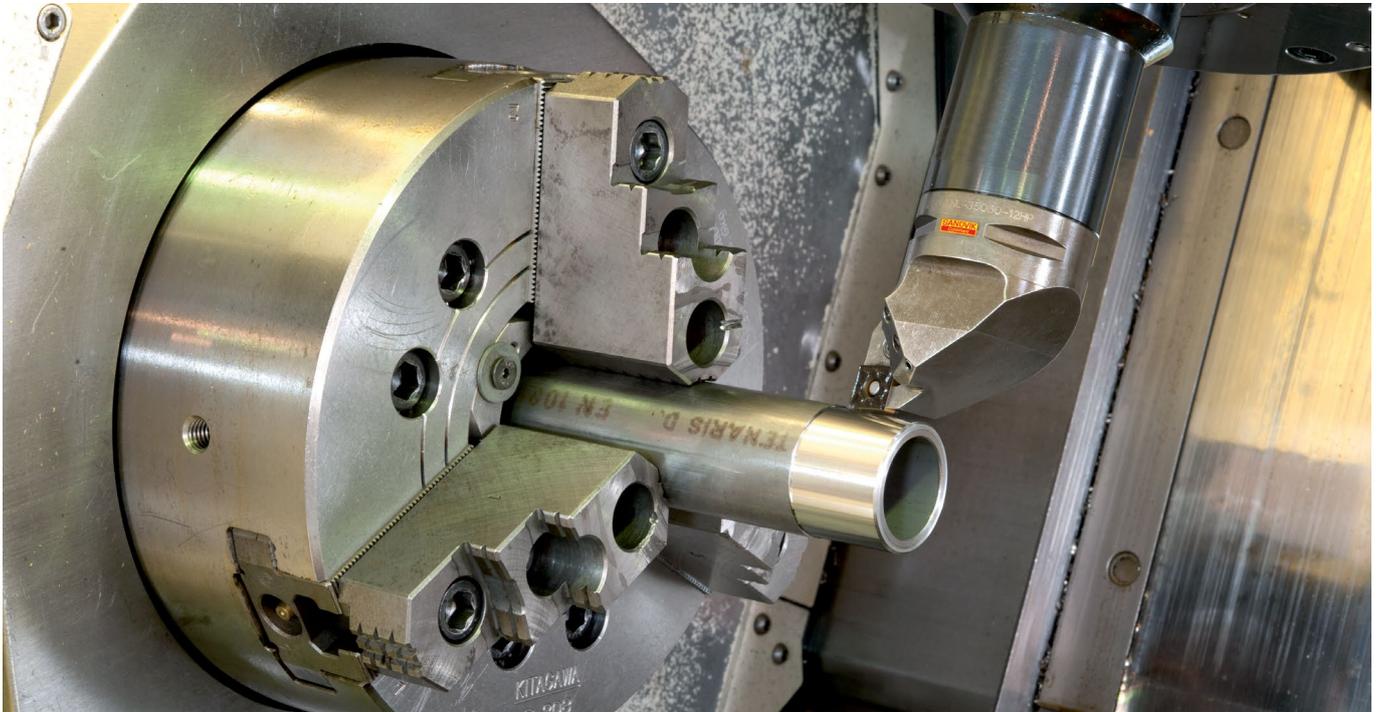




TAM® Plus: the solution for improved machinability in turning tools



PRODUCT CHARACTERISTICS

The range of TAM® Plus hot-rolled mechanical tubes has been created by the Tenaris plants in Italy to offer a product with superior characteristics in terms of machinability, straightness and concentricity.

TAM® Plus is produced using a fine grain alloy steel with guaranteed soluble aluminium and controlled sulphur levels (0.020÷0.035), and can be used in various applications. From the point of view of its

machinability in turning tools, the use of this product with re-sulphured steel makes it possible to guarantee high working speeds: the sulphur acts as a lubricant on the tool/chip interface, making the workability of the piece easier; while the high softening temperature for manganese sulphide makes these steels suitable for use at high cutting speeds.

In addition, the micro inclusions of manganese sulphide in the steel slow down the wear on the cutting edge, and ease crushing the chips.

CUSTOMER REQUIREMENTS

Luca Piscetta, workshop manager at Piscetta F.lli srl, a Company in Novara that has been operating in the turned metal hardware sector for more than fifty years, tells us his experience: "up until 2000 we had produced ring nuts from hot pre-pressed material, because there was less shaving stock to be removed compared to what would be generated by working a standard pipe. We were on the lookout for a product that could guarantee high performance by working on limited tolerances, and under conditions with low turn advances."

THE SOLUTION

Tenaris worked in conjunction with Sandvik Coromant, the world leader in the cutting tools market, to conduct tests that showed that the TAM® Plus product effectively offered improved performance in terms of:

- machinability
- restricted tolerances on the diameter and thickness
- straightness.

The tests were carried out at Sandvik Coromant's laboratories using sample materials provided by Tenaris's mill in Italy.

Specifically, a comparison needed to be drawn between the TAM® Plus E355 grade machine tools with improved machinability and the standard E355 grade.

The results of the tests showed that micro inclusions of manganese sulphide found in the steel of the E355 HL grade (high machinability) guaranteed:

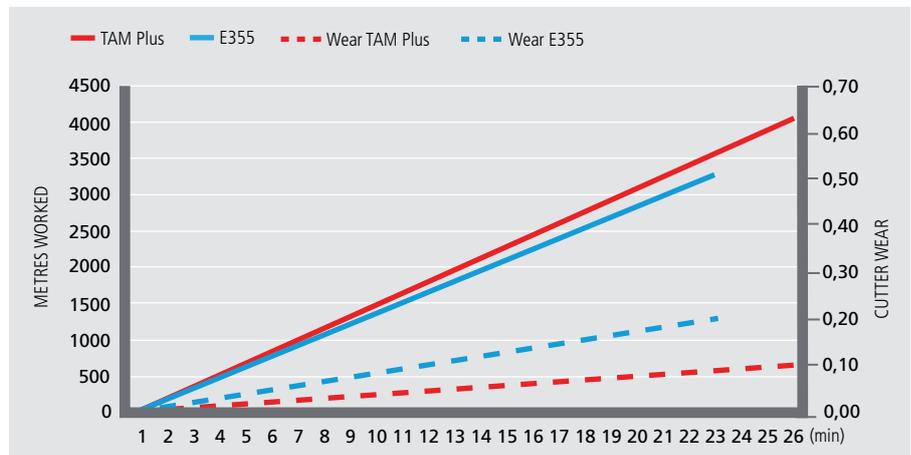
- **high working speed**, because the sulphur acted as a lubricant in the tool/chip interface, making machining the piece easier;
- **less wear on the cutting edge** of the machine, and consequently an increase in the tool's life span, thanks to the greater machinability of this steel compared to a standard one;
- **greater safety in the process**, because short, separate chips were created that did not need to be removed manually by the operator.

The high working speeds made possible by using a re-sulphured steel, and the reduced stoppage times on the machine, therefore guaranteed increased machine productivity.

The tests carried out are representative of the performance of all the re-sulphured steels in the

Sandvik insert CNMG 120408-PM 4235

	Speed	Total metres	Cut depth	Advance per turn	Component length
	m/min	m	mm	mm	mm
E355	270	3,24	2	0,2	270
E355 TAM Plus	300	4,05	2	0,2	270



TAM® Plus range.

The graphs above show how, by setting specific parameters and by using a certain type of insert, the cutting speed can be increased by 11% and productivity improved by 9%, with a reduction in stoppage time on the machine.

BENEFITS FOR THE CUSTOMER

Thanks to its better performance and reliability, the Piscetta workshop chose to use the TAM® Plus product by Tenaris. Luca Piscetta

explains that “the processing of this re-sulphured material actually generates a finer and separate chip, which has made it possible for us to set up an automated work shift, thanks to the drastic reduction in machine stoppages that had previously been necessary to manually remove the chip. The processing is therefore safer, and the reduced cutting effort means less wear on the cutting edge, with a consequent increase in its life span”.

TenarisDalmine

TenarisDalmine, the headquarters for Tenaris in Italy, is the top Italian manufacturer of seamless steel pipes for the energy, automobile and mechanical industries, with an annual production capacity of 950,000 tons of finished products, 2,535 employees, 5 manufacturing facilities (Dalmine, Arcore, Costa Volpino, Sabbio Bergamasco and Piombino), a steel plant and an electrical power station with a captive production of 120 MW, which in 2009 obtained ISO EN 14001 environmental certification.

Sandvik Coromant

Sandvik Coromant is a global leading supplier of cutting tools, tooling solutions and know-how to the metalworking industry. With extensive investments in research and development Coromant creates unique innovations and sets new productivity standards together with their customers. These include the world's major automotive, aerospace and energy industries.

Sandvik Coromant has 8000 employees and is represented in 130 countries. It is part of the business area Sandvik Machining Solutions within the global industrial group Sandvik.