Today, around 90% of all threads in the dental and medical industries are whirled. This form of modern thread application has also become established in other sectors, such as precision parts turning and the horology industry. But let us stay with the machining of materials that are difficult to work, such as the INOX 1.4441 implant shown. Together with the parts manufacturer, Stuckenbrock Medizintechnik GmbH of Tuttlingen, Germany, MOTOREX tested the use of the high-speed MOTOREX ORTHO NF-X cutting oil.

Schwanog® special carbide tools
Modern whirling tools incorporate many years of know-how. The application technology, the complex alloys and the hardening processes for the tool cutting edges play their part in the success of whirling. The clever form tool exchange system from Schwanog®, Siegfried Güntert GmbH of Villingen, Germany, offers benefits such as:

1. High efficiency through rapid changing of the inserts.
2. Clear increase in tool life.
3. Cost reduction through not having to rework.

The Schwanog® WEP system offers the great advantage in that it works with replaceable inserts. This ensures not only the maximum precision required but also significantly reduces tool changing costs.

The external thread of the part shown can be whirled to its final dimension in one pass without reworking. This produces the entire depth of thread in one pass! In surgery the demand for high-quality implants is still increasing rapidly. However, the prices are only moving slightly sideways. As a result, production must be even more precise and more economical. This can only be achieved through the use of more precise technologies and by reducing unit production times.

Away with swarf and down with unit production times
Efficient metalworking is impossible in today’s manufacturing process without the use of the machining fluid that is ideally matched to the machining process.
Hence the machine operator prefers to choose a rate of production that will not cause him any problems whatsoever during series production. Process reliability certainly but with today’s technology reductions in unit production times that are not utilised, really have a huge impact. The implant shown was produced at Stuckenbrock using MOTOREX ORTHO NF-X. Attention was drawn to the whirling stage. Because of its outstanding high pressure characteristics and its flushing and cooling performance, the cutting oil was able to convince straight-off. It is also excellent for high cutting speeds because of the tough lubricating film and complete temperature stability over a very wide range. Without making sacrifices to dimensional stability and surface quality, the unit production times were measurably reduced in the test series runs.

More precise and reliable with MOTOREX ‘max technology’

Only if the potential of the influencing factors of machining centre, tool, material and machining fluid are fully utilised, will it be possible to play in the first efficiency league. It is a well-known fact that higher temperatures occur at a higher production speed. This is a fact that MOTOREX has specifically made use of with its ‘max technology’. A clearly defined high temperature can trigger desirable chemical synergies during the machining process running at maximum manufacturing rate, thereby making possible, at the appropriate time, an exponential increase in performance.

However, it is not only reducing unit production times that is at the forefront. Process reliability was also increased as a result of good cooling and lubrication and the number of machine downtimes is therefore drastically reduced. This is a particularly convincing argument for night and phantom shifts.

1.

The Schwanog whirling tool is set-up in front of the work-piece and turns at high speed. The spindle and work-piece turn at lower speed in the same direction.

2.

Thread whirling begins. The thread is manufactured by a rotating movement of the C-axis and a longitudinal movement of the Z-axis, and only one cutting edge of the whirling spindle is ever in use.

3.

The defined thread length is reached. The Schwanog whirling spindle initially moves radially and then back axially. End of the whirling process.

We would be pleased to provide you with further information:
www.motorex.com and
www.schwanog.com