Customer Interview: NC-Optimization

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tonasco SMART FACTORY

Tonasco is a precision machining company specializing in complex and small components for high-tech sectors such as Semicon, Optical, Medical and Diagnostics sectors. Tonasco Smart Factory is based in Malaysia and focus largely on export markets, including Europe and Japan. Since 2018, Tonasco has embarked on the Industry 4.0 journey and is one of the leading Smart Factories in high precision machining in Malaysia.
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**Interviewee:
Tonasco Programming Team**

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There are special software solutions that can analyse and optimize an NC program. What were your expectations of the hyperMILL® VIRTUAL Machining Optimizer?
Our main expectations of the optimizer software were to reduce the non-cutting toolpath movements of the machine. This will directly impact in production time of a part which will reduce the cost, improve lead time, and enable to produce more parts with saved time.

During NC code generation, the program is adapted to the kinematic properties of the machine. What impact does that have on your programming work and later when the machine is running?
The optimizer especially with table-table logic takes care of most the linking regardless of kinematic of the machine so removes programmer task to work on this matter.

Please compare NC programs with and without the Optimizer. What is the difference, and do you achieve runtime optimization with the Optimizer?
NC program without optimization will have a lot more non-cutting toolpath movement, and cycle time of the part will be longer.
MC program with optimization will be a lot less non-cutting toolpath movement, smoother linking movement and shorter cycle time to run the part.

The Optimizer has a special option for table- table kinematics. What does that mean in concrete terms, and what advantages does it give you on your machines?
Optimizer table-table logic means software will consider maximum space within the machine, machine components, work holding, tools, part and stock. The software will create shortest and optimized linking toolpath movement with the given clearance. The information in CAM and Virtual Machining Center should be same with very

minimal deviation. This creates an accurate Digital Twin.

How beneficial do you find the Optimizer? Which parts is it useful for?
It is quite beneficial to us where the optimizer saves both programming and machining time. In the past to optimize the non-cutting toolpath movement, the programmer will have to rely on using Linking Job function which programmer have to do it manually for each group of toolpaths. Linking Job has its limitation where one of example is it doesn't support for all the toolpath cycle. Optimizer eliminates this manual works and it doesn't have limitation like Linking Job.

The optimized NC code is of course also simulated in the hyperMILL® VIRTUAL Machining Center and checked for collisions. How has your experience been with this?
Initially we were quite anxious while running the machine where the non-cutting toolpath movement with optimizer was shorter and closer to work holding, material and other component compare to traditional non-cutting toolpath movement where it will always retract to maximum safety position. However, with practice we are quite familiar and confident with the optimizer.