



REALISTIC NC MACHINE SIMULATION

StarragHeckert relies on CENIT's FASTCONTROL for realistic machine simulation using Siemens VNCK.

StarragHeckert offers a comprehensive portfolio of high-tech precision milling machines, productivity-enhancing software packages, engineering and process optimization solutions, and a broad range of specialized tools. The company serves customers from around the world, chiefly from industries such as aerospace, energy, transportation and high-precision mechanical engineering. StarragHeckert relies on Siemens and FANUC control systems to operate its milling machines. To simulate an entire machine including its control system, the company previously had to resort to an external simulation solution – a process that wasn't just inconvenient, it also couldn't fully simulate the elaborate NC programs and all their sub-programs.

That's why StarragHeckert was on the lookout for a reliable, realistic machine simulation option within CATIA V5, a solution that could do without interfaces to external simulation systems. One of the most important requirements of the change was to obtain a highly precise

The Virtual NC Kernel (VNCK) by Siemens permits realistic simulations of NC machines based on IBN files. The IBN file is stored within the physical control system and contains that system's configuration, e.g. information on kinematics and sub-programs. Since the VNCK

“At last, we can simulate our complex NC programs within CATIA V5 – accurately and without having to switch to an external simulation system. The benefits of using VNCK within CATIA V5 became clear to us very quickly.”

Erhard Müggler, FASTCONTROL user

simulation of the NC programs with all their sub-programs. The solution had to be able to make precise forecasts on process times and offer improved collision recognition. To reduce run-in times for the physical facility, StarragHeckert also wanted to be able to run its optimization work on PC.

draws on the same movement generation algorithms as the 840D control system, the simulation faithfully reproduces the movement behavior resulting from the NC program and its sub-programs. The VNCK is simply hooked up to the CATIA V5 simulation environment via CENIT's FASTCONTROL VNCK Adapter.

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First off, CENIT conducted a detailed analysis of StarragHeckert's setup and requirements. On this basis, the partners developed the machine model and customized the components. Once these were fully harmonized, the system was rolled out to the physical machine and the customer ran a series of validation tests.

Before the NC programs are relayed to the physical machine, they are subjected to in-depth analysis using FASTCONTROL. Since the StarragHeckert machine was geometrically reproduced by CENIT, the ISO code could be simulated reliably. This verification offers security and guarantees a rapid transfer of the ISO code to the facility. Thus FASTCONTROL was up and running in next to no time.

By progressing one validated development step at a time, the goal of realistic, easily operable machine simulation under CATIA V5 could be achieved without encountering any nasty surprises. The solution was quickly implemented within the customer's specific environment.

Tests conducted by StarragHeckert showed that real processing times differ only marginally from those predicted by the simulation. FASTCONTROL's reporting function also permits highly precise statements on the operating times of individual tools, thus indicating when critical replacements will need to be made.

In sum, FASTCONTROL offers StarragHeckert the following benefits:

- 99.9% of all control functions are available (parameters, sub-programs, ...)
- Simulation times are based on control data, taking account of machine dynamics, feed rates, etc.
- Machine sub-programs are directly available at controller level, without customization
- Higher-precision simulation also improves simulation of tool wear
- Secure collision prevention
- The ISO code becomes even more reliable and can be rolled out to the machine more quickly

► PROFILE CENIT AG

CENIT AG has been a consultancy and software specialist for the optimization of business processes in Product Lifecycle Management, Enterprise Information Management, Application Management Services and Business Optimization & Analytics since 1988. CENIT currently has over 720 employees world-wide and its customers include Allianz, BMW, Daimler, EADS Airbus, LBS, Metro, AXA and VW. A large number of customers are medium-sized enterprises, particularly in the financial services, automotive and mechanical engineering sectors, such as Dürr, ISE and Emil Bucher.

CENIT is headquartered in Germany (Stuttgart), where it is present in all the major cities. It also has a branch near Detroit to cater for the American market. CENIT is also represented in Switzerland and since 2006 in Romania. With the foundation of another subsidiary in Toulouse CENIT stresses its reputation in the aerospace industry. The internationality of CENIT's business gains more importance with a further consistent expansion of these subsidiaries.



FASTCONTROL: Realistische Maschinensimulation

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