

# **Applications**

## **Computer Aided Modeling**

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## Machine Simulator

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Machine Simulator product uses the latest CAD/CAM, graphics and object-oriented software technologies to animate and bring to life the complete NC machine tool and its environment on the computer. It will detect all possible collisions between stationary and moving components. The software will feature complete emulation of controllers. It has smooth animation and complete presentation and reporting capabilities to aid marketing, sales and project presentations and demonstrations. The software aims to realistically simulate any machine tool and its controller with unlimited axes, reproduce the complete machining environment and make the machine tools easier to program and safer to use by detecting all problems.

Machining Simulator can simulate milling, mill-turn, grinding, boring, laser cutting, punching and metal forming machine tools with unlimited number of axes. The software has built-in machine libraries and users can create more machines using external CAD models and assembly abilities. Sirius' universal reverse post processor will handle most of the NC controllers. Simple and flexible tool libraries with parametrized tool assemblies and general purpose form tools can be used. The system will allow the user to setup stock and fixtures and detect collision between any machine components. The software has unique continuous collision detection capability, which uses swept solids approach in addition to the common discrete collision detection. The software also reports other errors like travel limits, feed range and other NC tape errors.

IRIX version compatibility: 5.3

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## NC Verify

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NC Verify product graphically simulates the material removal process by updating the stock shape as the cutter moves along the toolpath and produces the final part. The software accepts all standard NC programs as input to simulate the machining process. The user can reproduce the complete machining environment by interactively setting up stocks and fixtures via built in solids or by importing complex shapes from any CAD/CAM system. NC Verify is an extremely valuable tool for all NC programmers and operators. It will significantly reduce the time and cost to produce quality parts.

NC Verify will accept all machine NC G code, APT-CL and other proprietary CAM format files. The user can run the NC programs and watch the material removal process as on the real machine. The "as manufactured" part can be compared with "as designed" part model. The toolpaths can be displayed in different colors for easy verification. At any time during the simulation, the user can measure point, thickness and distance information on the current work-in-process model. The verification system supports powerful and dynamic graphics and multiple views. It highlights gouges and undercuts, allows dynamic rotation of the final solid and sectioning the work-in-process models.

NC Verify & Machine Simulator software will be integrated and synchronized. They can also be used independently.

IRIX version compatibility: 5.3

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## Virtual Controller

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Virtual Controller/Universal Reverse Post is a software product that emulates all CNC controllers. It is available as an optional module that works with Sirius Systems' NC Verify and Machine Simulator products. The software will reverse post process all NC G code files into a neutral format like APT-CL, ISO G Codes or events, that can be used by any application. It can be used both as an integrated or independent product. The product can also be very useful to transfer NC jobs between various machine tools with different NC controllers.

The Universal Reverse Post will accept as input all NC G & M code files for any CNC controller. It will initially output APT-CL or neutral machine events. In the future it will also output ISO/EIA standard G code format. This capability can be used to convert NC programs between different machines.

The software will have standard libraries for popular CNC controllers like: Fanuc, Acramatic, Haas, Fadal, Siemens, Anilam, Mazak, Mitsubishi, Yasnac, etc. Users can simply pick their controller and use them. Sirius plans to provide about 15 standard controllers in the first release and about 100 standard controllers next year. The product will also provide an ability to customize any NC controller. Creation and customization of controllers can be accomplished by simple & easy menu driven user interface. Users can also copy from a similar controller and modify its parameters.

This product will cover 30- axis milling, 2-4 axis turning, 2-5 axis Mill Turn, 2-4 axis Wire EDM.

IRIX version compatibility: 5.3

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