

From The President

NCL - Industry Leader

With the Dassault announcement, we feel secure in stating what we have believed all along, that *NCL* is the industry's best 5-axis NC software, and that it will continue getting better.

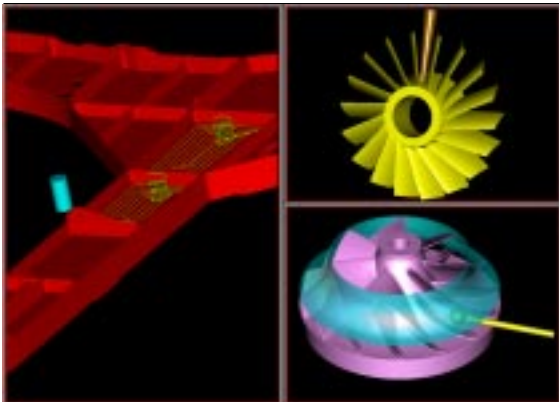
At Autofact '96 we displayed the latest release of *NCL* as well as made the Dassault announcement. Needless-to-say, enthusiasm among CATIA users was most high as the integrated version will provide their users with the multi-axis machining capability and tool control that is required in the 5-axis world. It puts proven industrial tools for aerospace and turbo machinery applications in the grasp of many of the largest manufacturing companies in the world.

This all comes about because NCCS is dedicated to providing world-class multi-axis solutions to the manufacturing community. Our *NCL* product will continue to be enhanced to provide the ultimate flexibility and user controlled tool path generation. Our open *NCL* library will provide companies such as Dassault Systems the opportunity to integrate selected *NCL* capabilities.

Thus regardless of a company's size or requirements they can benefit from the many years that have gone into the development of *NCL* and related products.

We acknowledge and thank our many loyal customers whose expertise and requirements have enabled us to create a true industry leading product.

Truly yours,
Donald F. Schultz
President



CATIA users can now experience the multi-axis capability that is the hallmark of NCL.

NCCS/Dassault Technology Agreement

NCCS announced at the Autofact show in November '96 that we have entered into a technology agreement and strategic alliance with Dassault Systems (Paris, France), which will enable Dassault to integrate multi-axis machining technology developed by NCCS into their CATIA™ manufacturing product line.

The following are answers to a number of questions from our customers regarding the Dassault agreement.

Q - What does the agreement mean to the NCCS customer?

A - In general, it means business as usual for you and NCCS. We are not changing our focus and will continue to market, sell, and support *NCL* and VARIMETRIX.

Q - Will the integrated product have all the capabilities of our current version of NCL?

A - It is important to note that the *NCL* language (i.e. macros, loops, etc.) is not being integrated into CATIA. Rather, a subset (including *NCL*'s many tool axis modes) of *NCL*'s motion generation routines are being integrated and will be accessible through the standard CATIA interface.

Q - When will the NCL technology be available in CATIA?

A - The integrated version will be incorporated into CATIA V4.1.8 scheduled for release in the second quarter of 1997.

Q - We have both NCL and CATIA at our facility. Will we receive an upgrade of the new product at no charge?

A - Decisions regarding the pricing of the new module will be made by IBM, who market and sell CATIA. However, it is our understanding that this component will be treated as a separate 5-axis module and there will probably be a charge for it.

Q - We currently have VARIMETRIX (VX) and NCL. Does this agreement with Dassault Systems have any effect on us?

A - NCCS will continue the integration of VX and *NCL* and will continue to market VX as a stand-alone CAD/CAM/CAE solution.

Finally, if anyone has further questions regarding this agreement, please contact me at our Corporate office.

Robert W. Conway
Vice President
Sales & Marketing

NCL at L&S Machine Co. Machining Complex Aircraft Parts



Production at L&S is accomplished through the latest and best 3 to 5-axis machine tools available (such as this NIGATA HN80C mill shown left). NC programs are created using NCL multi-axis machining software (shown below with Evert Weinhold).



The aircraft and aerospace industry require a variety of complex structural parts. Building a quality part at a competitive price and delivering it on time are prerequisites. Behind this statement is a host of other requirements necessary for a company to remain viable in this market.

The aerospace market requires experienced personnel, state-of-the-art equipment and leading edge programming capabilities and L&S Machine Co., Inc. has them all. Production is accomplished through the latest and best computer controlled 3 to 5-axis machine tools available, and programming is developed with the *NCL* multi-axis machining software.

Located in Wichita, Kansas, L&S began business in 1951. Since that time it has specialized in precision machining and assembly of "Built-To-Print" aerospace components and systems; welded assemblies, including bent tubes, sheet metal and machined parts; and aluminum dip brazed assemblies. The company has a 140,000 square foot facility and 150 employees. Its primary customer list includes Boeing and the U.S. Government.

L&S competes aggressively in the commercial aviation market and is one of the first aerospace subcontractors approved under D1-9000. Also, it has earned an

envious reputation as a predominant supplier in producing products for the military aviation market. L&S has produced quality components for virtually every U.S. warplane since the B-52 and has built one of the most complete military specification libraries in the Midwest.

Investing Now For Present As Well As Future Business

In order to meet the strict quality control and delivery requirements of aircraft manufacturers, L&S has made a large investment in its in-house NC programming capabilities. With six programmers, the company selected *NCL* because of its multi-axis programming reputation in the aerospace market.

According to Evert Weinhold, L&S' Systems Programming Manager, *NCL* was selected because of its multi-axis programming capability, especially in aircraft parts machining. Evert stated, "Three to five-axis machining is required on 50% of the parts we make. *NCL* has over 20 four and five-axis control modes, many of which are found in no other system. Full parametric programming allows design and manufacturing data to be represented as variables, which are easily modified to produce new

designs and NC programs. This allows the inclusion of numbers and formulas in the programming process, which in turn simplifies the creation of part families. We have been using *NCL* for over seven years and find that it excels in a production environment where machine time is critical.”

CAD Is Also Required In Machine Shops

L&S also uses another NCCS product - VARIMETRIX. VARIMETRIX (VX) is a NURBS based parametric solid and surface modeler. The unique VX Unified Parametric Geometry (UPG) engine incorporates wireframe, surface and solids modeling capabilities, as well as drafting, Computer-Aided Manufacturing, assembly modeling, change management, and utility functions in a unified database with a Graphical User Interface (GUI). Models originating in VX are immediately available for multi-axis machining in *NCL*, and models and tool paths are fully associative. A change in the VX model results in changes to the *NCL* tool path.

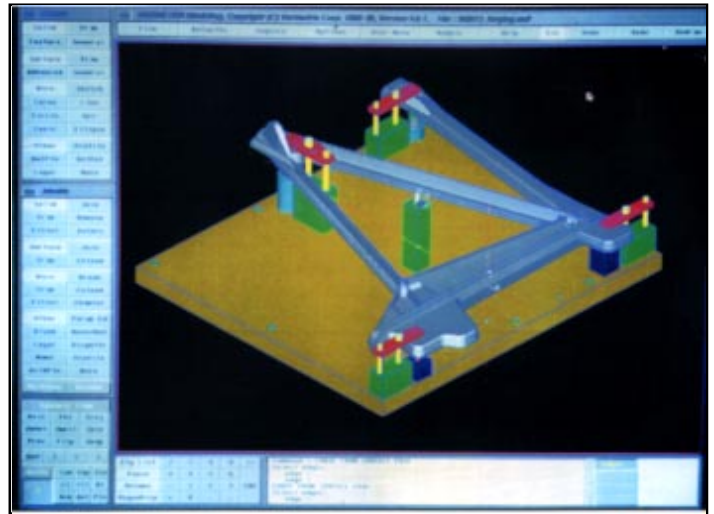
VARIMETRIX comes in handy since some of L&S’ customers don’t have solid modeling capabilities, especially when machining repair parts using old blueprints or actual parts as a reference. Others, have sophisticated CAD programs and VX allows the programmer to enhance data imported from systems such as CATIA. Or L&S may receive just a drawing of the part. As Evert Weinhold explains it, “Almost 35% of our business is manufacturing repair parts. By building a solid model of the part in VX, we can develop tooling and add surfacing required for machining. Since *NCL* is integrated with VX, we can take that data and develop our tool paths. We can then verify the NC program, and if necessary, we can show the customer their part on a monitor before we even make a cut.”

A Post Program That Works

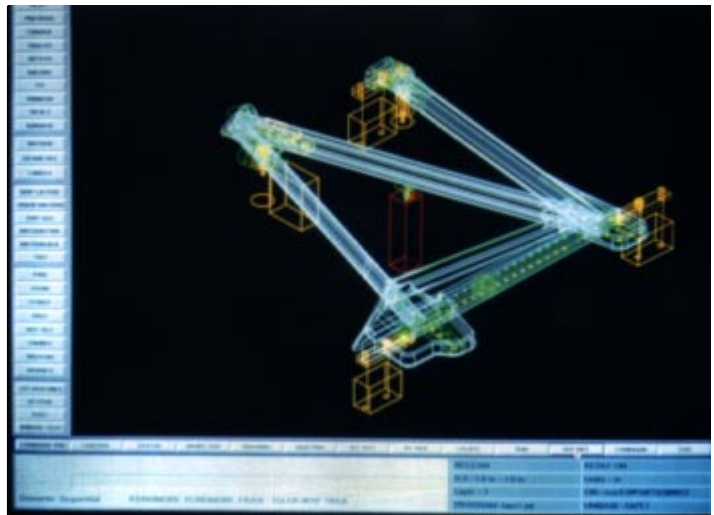
In addition to *NCL* and VX, L&S also uses *PostWorks* from NCCS. L&S has a variety of multi-axis machining centers as well as multi-spindle machines including various models from Cincinnati, SNK, Niigata, and Hitachi Seiki. *PostWorks* is a universal 2 through 10-axis postprocessor and postprocessor generator. *PostWorks* converts output from most major CAM systems into NC data files which can be used to run virtually any NC device including mills, lathes, EDMs, and CMMs. A simple Motif-style interface enables the user to easily establish machine configurations, control unit features, and output file formats.

To verify a new postprocessor, *PostWorks* automatically creates a solid model of the machine and

Continued on Page 4



VARIMETRIX is a Parametric solid modeler that comes in handy for customers that don't have solid modeling capabilities, especially machining repair parts from old blueprints.



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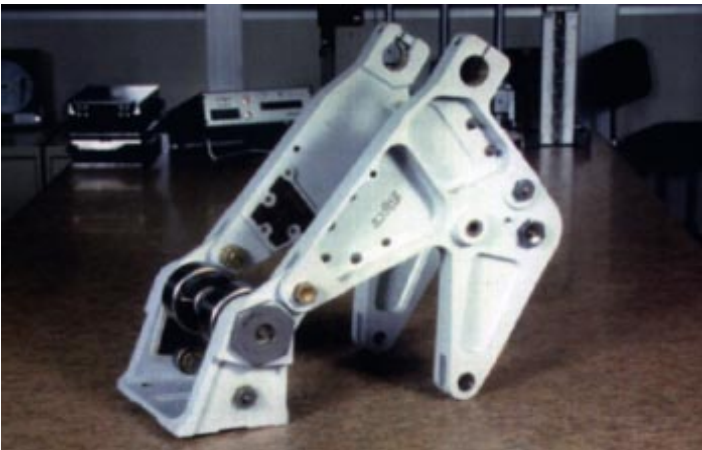
A complex aircraft part that required multi-axis machining was programmed using NCL.

L&S Machine - Continued from page 3

dynamically simulates the machine's movement. **PostWorks** also provides a comprehensive macro language for easy customization.

Summary

"By using high level CAD and CAM programs, we can effectively compete against anyone. The aerospace industry almost universally is moving to using IGES files instead of blueprints. This eliminates many quality problems because with a solid model there is little chance of making mistakes in the interpretation of data. By eliminating data problems right at the beginning, many quality problems are resolved before a part is machined. In the old days, there was much head scratching when looking at blueprints, with quality problems inherent from the beginning. Today, data comes in, can be analyzed in CAD, NC program developed, program verified, and then sent directly to the machine, all operations taking place with original customer data. Even if we do receive blueprints for older parts, by having the VX/NCL combination, data can be developed that is equal to today's aerospace standards," said Mr. Weinhold. **NCL**



In addition to machining, L&S also specializes in complex subassemblies.



NCCS' PostWorks product can easily be configured to produce code for the complex machines used at L&S, such as this multi-spindle Pratt & Whitney mill.

Duffy Joins NCCS

Mike Duffy has joined NCCS as a Senior Applications Engineer. He brings with him nearly 30 years of manufacturing expertise. Mike will be involved in our educational programs, our strategic alliance with Dassault, and customer service. **NCL**

Class Schedule

Unfortunately, in today's cost conscious business environment, many users receive much of their training "by-the-seat-of-their-pants". While this may have been adequate in the past, in today's world this approach can leave a user frustrated and unappreciative of the productive capabilities of the software.

Benefits from training include decreased costs and an improved rate of learning, the key fundamentals that lead to increased profitability in your NC programming operation. Easy to learn, formal training courses can show the user how to get much more out of the program and install a confidence level that cannot be obtained from manuals alone. This year don't make training an unfulfilled resolution ... just make it happen.

The following training sessions are scheduled for the first part of 1997 at NCCS headquarters in Irvine, California. The cost of training is \$250.00 per day and includes class materials. Please contact Raquelle Sprague to register. Also, she will gladly make transportation and room reservations (she bargains for the best rates in town).

Phone 714-553-1077

NCL General Class

February 3-7
March 24 - 28
May 12 - 16
June 23 - 27

VX Class

March 10 - 14
April 28 - May 2
June 9 - 13

PostWorks Class

March 19-21
May 7 - 9
June 18 -20

VX CAM Class

March 17 - 18
May 5 - 6
June 16 - 17



NEWSLETTER

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