NCL NEWSLETTER

The ***NCL*** Programmer's Guide To Increased Productivity

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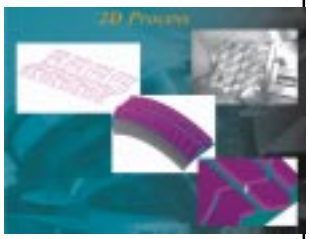
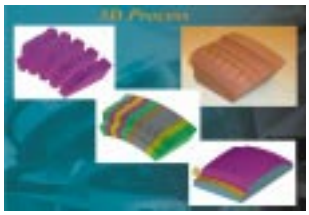
IN THIS ISSUE



NCL's Tire Mold Applications Library (TMAL) automates the creation of 3D models from 2D data and applies 5-axis associative tool paths.

NCCS Goes After New Market

NCCS is rolling into a new market segment with the release of its *Tire Mold Applications Library* (*TMAL*). The *TMAL* is being released with ***NCL*** V9.2 and provides features and processes that facilitate the modeling, assembly and 5-axis machining of tire mold patterns.



NCL's Tire Mold Applications Library automates the assembly of 3D IGES data into multiple pitch segment patterns and applies 5-axis associative tool paths.

Special Features

- Allows wrapping of 2D geometry onto 3D surfaces.
- Automatically applies draft angles to entities being wrapped.
- Provides a process to automate the creation of 3D models from 2D data.
- Provides a process for automatically applying multi-axis tool paths to multiple pitches and tire sizes.
- Provides a process for automatically assembling 3D IGES data into multiple pitch segments.
- Provides special functions for tread groove machining.
- Provides a process for automatically copying tool path data to produce multiple orientations of the same pitch.

- Provides the ability to apply multiple shrink factors to NC tool paths via the universal postprocessor, ***PostWorks***®.

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NCCS Announces the Release of *NCL* Version 9.2

NCL V9.2 will soon begin shipping. Check our web page for beta release versions. ***NCL*** V9.2 incorporates some of the most significant changes of any release of ***NCL*** to date. The following are some of the new enhancements included in ***NCL*** V9.2:

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TECHNICAL TIPS

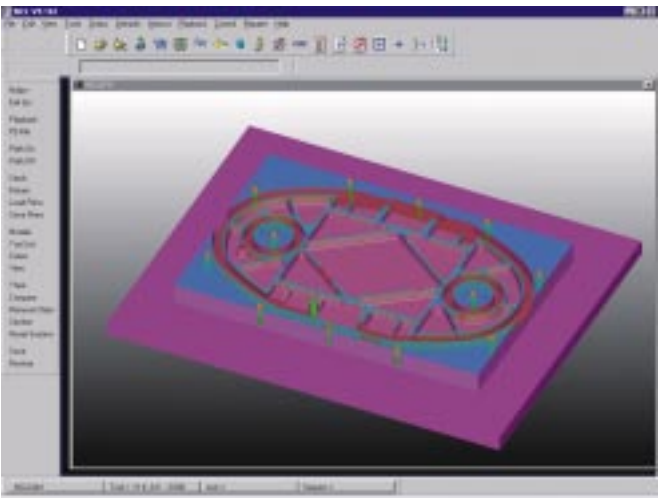
NCL Hotkeys

Included with the latest patch of ***NCL*** V9.1 (9.108) are some new hotkey definitions. The lowercase-d key will activate ***NCL***'s dynamic mouse viewing function. The lowercase-c key will prompt you for the center of dynamic rotation. The lowercase-w key will activate the window zoom function. See the file changes.txt that accompanies the patch for a complete list of changes.

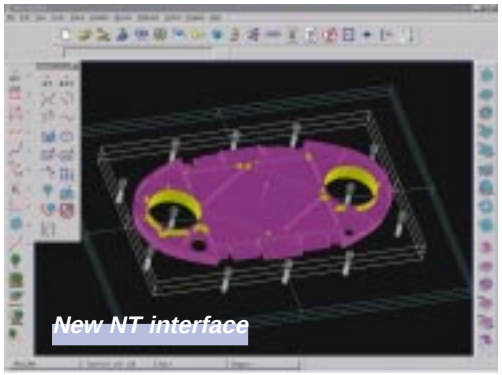
Did you know that any hotkey will work while in pick mode when using the Dynamic Macro Call feature? With the new hotkey definitions it is easy to change the view of the model while in the middle of a Dynamic Macro Call.

PRODUCT ANNOUNCEMENT

All new *NCL/IPV*



Announced in the previous issue of the ***NCL*** NewsLetter, our partnership with LightWork Design has produced an all new version of ***NCL/IPV***. The new version uses true solid modeling technology to simulate the material removal process. Users can rotate and zoom the cut part at any time during the verification session. The new ***NCL/IPV*** is built into ***NCL*** and thus shares a common interface with ***NCL***, making it much easier to use and access than previous versions. Simulation and dynamic viewing speeds are very impressive. In fact, we have benchmarked it against competitive products and have found it to be substantially faster. Other features include the ability to compare the cut part with ***NCL*** surfaces and to model multiple stock and fixture types directly in ***NCL***. The all new ***NCL/IPV*** will be shipping in the 4Q of 2001 for the Windows NT platform.

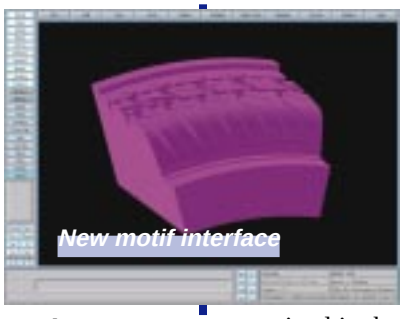


New NT interface

NCL Version 9.2 - ...Continued from page 1

Trimmed surfaces

NCL supports the trimming of surfaces. Closed curves are used to define the outer and inner boundaries of the trimmed surfaces. Surfaces trimmed within ***NCL*** act exactly like surfaces imported from other CADD systems.



New motif interface

True offset curve

A true offset curve can now be created from an existing curve, spline, or composite curve. Unlike the translated curve supported in previous versions of ***NCL***, this new definition creates a true offset of the original curve, utilizing the normals of the original curve to generate the offset curve. Smoothing logic is incorporated to remove any loops generated in the offset curve.

New GOFWDA command

A new GOFWDA (GOFWD-Auto) command and interface has been added which accepts a part profile (list of drive surfaces) to the machine. Unlike the singular motion commands (GOFWD, GOLFT, etc.), ***NCL*** will automatically calculate the tool condition for each surface (TO, ON, PAST, etc.) contained in the profile based on the boundaries of the geometry. Also included is the ability to ignore surface extensions and look ahead in the profile for areas where the cutter will not fit. A composite curve may also be driven from start to end using the GOFWDA command.

Entity projection

Point, pattern, and curve geometry may now be projected onto a surface. Several projection options are available, including the ability to project down a vector, project normal to the surface, wrap or revolve while projecting, and projecting at an angle to the surface.

Advanced pocket enhancements

When processing an advanced pocket statement, the system will now check whether the entry path violates the perimeter or island geometry. If it is determined that the geometry will be violated, ***NCL*** can be made to alter the

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New Market -
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The following is a brief profile of a few of the companies that have recently purchased ***NCL*** for the purpose of manufacturing tire molds.

shorter time frame. When the new facility was finished, ***NCL*** multi-axis machining software was acquired to enhance their 5-axis programming capability:

Engraved mold courtesy of Cooper Tire & Rubber Conpany

Cooper Tire & Rubber Co

Cooper Tire & Rubber Company, founded in 1914, specializes in the manufacturing and marketing of rubber products for consumers. Products include automobile, truck and motorcycle tires, inner tubes, NVH control systems, automotive sealing, and fluid delivery systems.

A recent addition is the new mold manufacturing facility for production of tire molds in the Findlay, Ohio area. Cooper's overall objective in making the decision to build their own mold facility is to improve customer service by being able to produce critical molds in a significantly

"We currently use *NCL* for both our tread and engraving. We use it for our 5X swarf and drill cycles. *NCL*'s macros are used for increased automation of toolpath generation. We also utilize *NCL*'s parametric toolpath generation capabilities."

~ Ted Cains

Tennecast Company

Tennecast Company, located in Barberton, Ohio, is a market leader in the manufacture of precision cast aluminum tread inserts for tire molds. The company produces tire mold castings

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Engraved mold courtesy of Cooper Tire & Rubber Conpany

NCL Version 9.2 -
...Continued from page 2

entry method so that geometry is respected, or a warning message can be output to notify the user that a violation occurred.

Analytical properties

Cylinders, cones, planes, and spheres, created in ***NCL*** or imported via IGES, are now automatically assigned analytical properties. The *SHOW and Entity Data commands will display the properties of primitive surfaces, such as the center point of cones, spheres and cylinders; the radii of cylinders; and the canonical form of planer surfaces. Circular interpolation records are output when cylindrical surfaces are driven and planer surfaces are treated exactly like ***NCL*** planes.

New tool axis modes

A control surface option has been added to several of ***NCL***'s tool axis commands. A control surface can be specified with the TLAXIS/NORMAL..., TLAXIS/AA..., TLAXIS/TT, DS..., and TLAXIS/COMBIN ...statements. When a control surface is specified, the tool axis orientation will be based on the control surface rather than the current part surface.

WHY

Why don't you ever see the headline "Psychic Wins Lottery"?

Why is it that rain drops, but snow falls?

Why is a boxing ring square?

Why is it that doctors call what they do "practice"?

Why is it that to stop Windows 95 or 98, you have to click on "Start"?

Why is it that when you're driving and looking for an address, you turn down the volume on the radio?

Why is the man who invests all your money called a broker?

Why is the third hand on the watch called a second hand?

Why is the time of day with the slowest traffic called rush hour?

These are just some of the changes included in ***NCL*** V9.2. A complete list of the new features and enhancements added to ***NCL*** V9.2, can be found at www.nccs.com. ■

New Market -
...Continued from page 3

for every major North American tire manufacturer.

"We use *NCL* to produce the highly accurate and detailed models required for the casting process. The models are a geodesic shape, resembling a tire tread pattern, and require the highest level of 5-Axis toolpath generation. Beginning with the tire manufacturer's specifications, we apply foundry shrink values and define machined surface geometry for continuous 5-axis tool paths. Our company chose *NCL* for its broad 5-axis toolpath capability, customization, flexibility, machine adaptability, and associative features."

~ Art Borgeson

Courtesy of Quality Mold Company

Quality Mold, Inc.

Quality Mold, Inc., located in Akron, Ohio, is another company that specializes in tread design. From its inception in 1978, Quality Mold has grown through investment in capital equipment and acquisitions to become a premier supplier of tire molds. Quality Mold has the capability to produce thousands of molds per year to service virtually every tire manufacturer in the world. From design engineering through final finishing, all facets of mold building are carried out at their new 80,000 square foot facility.

Quality Mold's Engineering Group translates numerical tire design specifications into computer programs. Experienced in drawing development and programming services, their staff of professionals employ state-of-the-art software. This group is unique among non-captive tire mold manufacturers.

"Having acquired *NCL*, we have the capability to produce aluminum castings for virtually any size two-piece or segmented tire mold. We offer both cut and qualified and full-circle E.D.M. segments. We also have the ability to produce full steel engraved molds for light truck, medium truck, and bus tires." ■

2001 Class Schedule

***NCL* General Class---**	**Applications Specific Class---**
September 10 ~ 14	September 17, 18
October 22 ~ 26	October 29, 30
November 26 ~ 30	December 3, 4
***NCL* Advanced Class---**	***PostWorks* Class---**
September 24 ~ 26	September 19 ~ 21
November 5 ~ 7	October 31 ~ November 2
December 10 ~ 12	December 5 ~ 7

EDITOR'S ROOM

Raquelle D. Sprague

New on the web...

NCCS has implemented new technology that allows us to directly access your Windows NT workstation. Using the new technology, we can share our screen with you or have you share your screen with us. We can take control of your workstation and solve problems or give instruction while you watch! We can also give you live demos of new products and features directly over the web. Contact our support or sales departments to schedule a session. It's like...being there!

■

The latest *NCL* patch...

Visit the support area of our website to download the latest ***NCL*** patch, V9.108. If you are not able to download the patch, contact us and we will gladly send you a CD. The new patch contains a number of corrections and enhancements to ***NCL*** and ***NCL/IGES***. See the changes.txt file that accompanies that patch for a complete list of changes.

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***NCL* News...**

The ***NCL*** NewsLetter is published quarterly by NCCS. Edited by David Schultz & Raquelle Sprague. Reader contributions are welcomed and encouraged.