

Siemens PLM Solutions

## NX morphing solutions

Providing top quality surface morphing capabilities

### Benefits

- Realize up to 50 percent cost savings
- Achieve up to 75 percent productivity increase by morphing in a fraction of the time
- Achieve perfect quality with morphed part by maintaining key geometrical characteristics

### Features

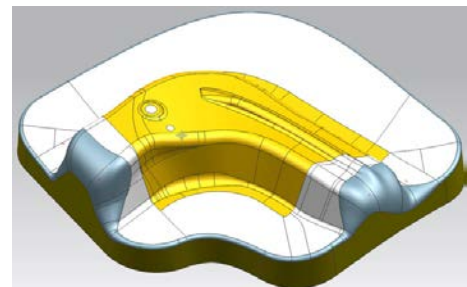
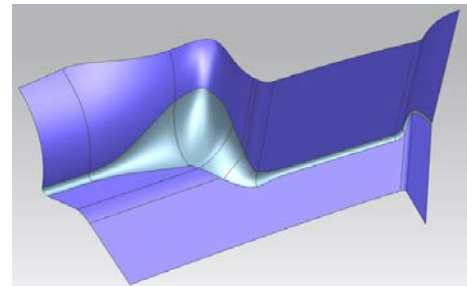
- Fully embedded in NX
- Powerful, convenient and reduces time spent morphing
- Minimal number of mouse clicks to perform functions
- Suitable for any type of surfaces (Class A, Class B, etc.)

### Summary

Product and associated manufacturing tooling geometry undergo many changes during product development to accommodate functional, aesthetic, manufacturability and other lifecycle considerations. OmniCAD for NX™ software delivers the ability to morph and update geometric models while maintaining the quality of the original geometries.

Morphing can be conveniently applied and used across all industries, such as aerospace, consumer goods and medical prosthetic devices, to quickly update models to any desired shape. You can gain the same continuity of the original surfaces that go through this morphing process. Morphing can be used to satisfy both functional and aesthetic requirements by modifying the overall shape and/or specific areas of the products.

OmniCAD for NX morphing solutions combine technologies from Siemens PLM Software and OmniCAD srl, a company focused exclusively on providing cutting edge software solutions for the toughest automotive die engineering and design challenges.



### Flow Blend for NX

Flow Blend for NX offers capabilities to create robust blends in which a larger blend rolls over an area with smaller curvature. The blends can be constant or variable blends. These types of blends are needed for accommodating formability issues that occur during the stamping process. With Flow Blend for NX, designers select two

# NX morphing solutions

## Features *(continued)*

- Maintains original topology and quality of the surfaces
- Addresses the needs of industries such as automotive, aerospace, medical, consumer goods and electronics

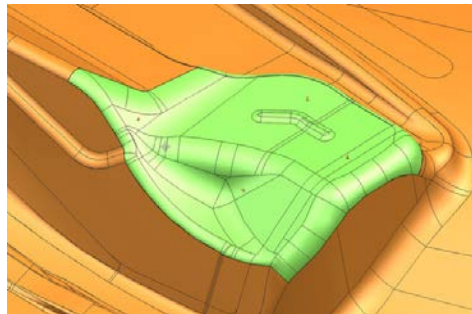
sets of faces, a spine curve for blend orientation and blend values to create the blends. With these easy-to-use functions, you can very quickly build blends on any complex model and realize high-quality results.

## OmniFree Transformer for NX

OmniFree Transformer for NX offers capabilities to morph surfaces based on points or curves. The points or curves represent the amount to be modified for new designs or compensated for spring back, which is typically a case for stamping. Morphing works equally well, whether surfaces need to be shrunk or extended. Surface quality is always maintained.

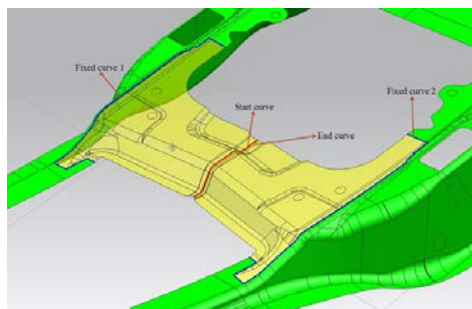
## Point-to-point morphing

Surfaces are morphed by imposing points "A" on surfaces to coincide with points "B" outside while respecting surface quality and tangency relationships with adjacent surfaces.



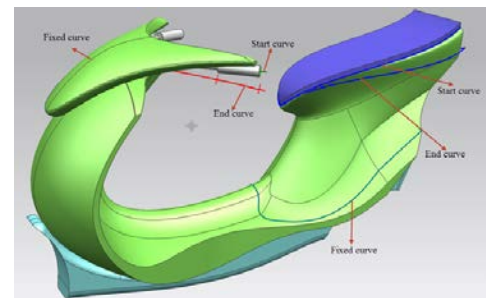
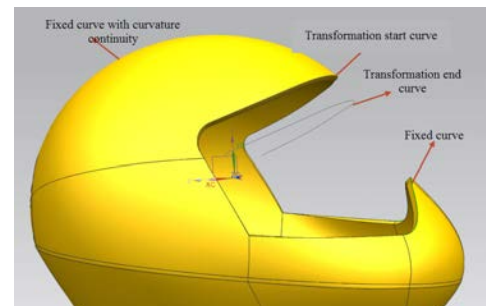
## Curve-to-curve morphing

Surfaces are morphed using start and end curves as reference points. Either complete surfaces or portions of surfaces can be transformed.



## Style morphing

You can morph aesthetic surfaces while respecting quality characteristics of the original surface. The morphing operation automatically maintains G0 to G4 curvature continuity. Product concepts can easily be used as the starting point for developing the final design by adding or refining key feature elements with morphing. Designers can easily create drastic shape changes to develop a completely different product "look and feel" by specifying the right set of transformation constraints.

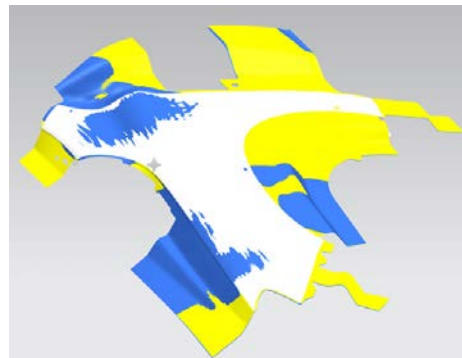
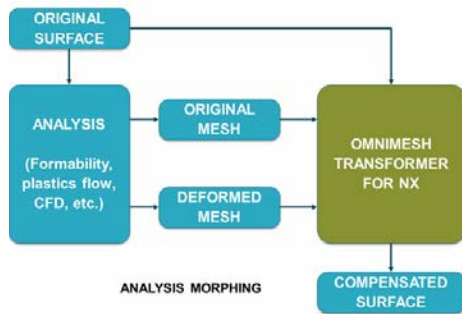


## OmniMesh Transformer for NX

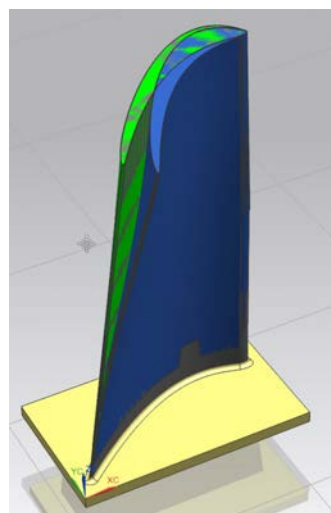
OmniMesh Transformer for NX offers capabilities for morphing surfaces based on the STL file format in the NX environment. The STL surface represents the amount to be modified for new designs or compensated for spring back, which is typically a case for stamping. Continuity up to G4 can be obtained using geometries that go through this morphing process.

### Analysis morphing

Transform the original surface and generate a new morphed surface that captures the deviations seen between the original mesh and the deformed mesh.



White surfaces need to be morphed according to the changes seen in the original mesh (shown in yellow) and morphed mesh (shown in blue).



### Turbine blades

Turbine blades are morphed to reduce stress or for other process needs, such as adaptive machining for turbine blade repair.

Example: Gray surfaces have to be morphed according to the changes seen in the original mesh (shown in green) and the morphed mesh (shown in blue).

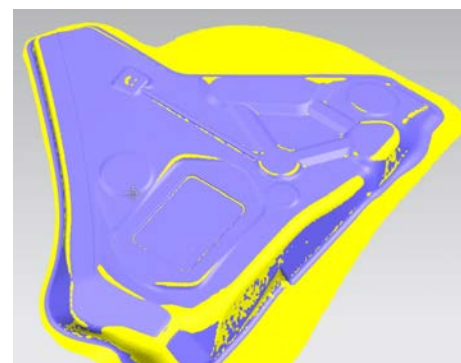
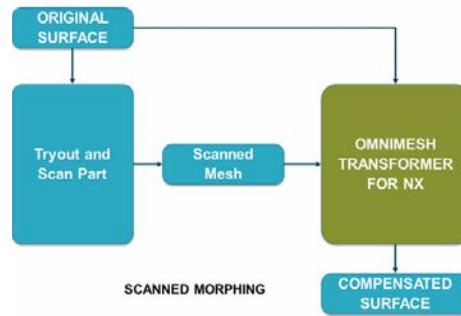
Additional capabilities included with all of the OmniCAD for NX morphing solutions include opening and saving of OmniCAD files and transferring geometry between NX and OmniCAD.

OmniCAD for NX products are available with NX 8.5.2, maintenance pack 3, and starting from NX 9.0.1 releases at:

<https://download.industrysoftware.automation.siemens.com/unigraphics/die-design/nx9>

### Scanned morphing

Transform the original surface and generate a new morphed surface that captures the deviations seen in the scanned mesh.



Example: Purple surfaces have to be morphed, according to the deviations seen in the yellow scanned mesh.

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