

New releases of MachineWorks CAM and Polygonica AM software on display at EMO 2019

SHEFFIELD – 16 September 2019 - MachineWorks Ltd, leading supplier of **MachineWorks**® CNC Simulation and Verification Component Software and **Polygonica**® Polygon Mesh Modelling Software Toolkit will be exhibiting brand new features at the largest International Machine Tool Show, EMO Hannover this September, 16th – 21st in Hall 9 stand number D17.

What's New in MachineWorks 8.2?

Offsetting for Design Part Comparison

MachineWorks' customers can now take advantage of the advanced offsetting capabilities provided in Polygonica while doing design part comparison.

Within MachineWorks, Polygonica's offsetting will help to eliminate noise from the process of identifying gouges and undercut areas. This will allow more automation and will improve the speed and reliability of the entire verification process for end users. Customers can just drop Polygonica into their MachineWorks builds and MachineWorks will manage the offsetting process under the hood.

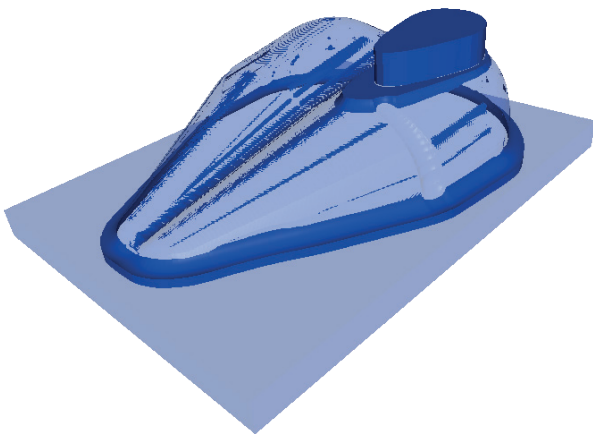
"The advanced polygon modelling technologies developed for Polygonica have been adopted in a range of industries from dentistry to mining. We are very pleased to start to offer our customers Polygonica functionality that directly enhances long-standing MachineWorks functions also," said Dr Fenqiang Lin, Managing Director of MachineWorks.

MachineWorks Parasolid Bridge

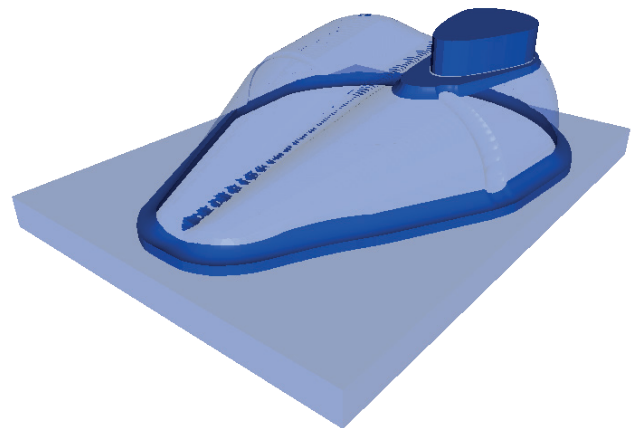
An innovative new library that uses the feature detection module to analyse the in-process stock then constructs a Siemens Parasolid model. Portions of surfaces that map onto planes, spheres, cylinders, cones and torus are recreated in Parasolid as analytic primitives whilst more complex freeform surfaces can be passed as polygon meshes.

Using Parasolid Communicator's APIs a fully compliant Parasolid model can be constructed suitable for accurate design of complex fixturing and even as input to CAM toolpath generation algorithms.

The combination of the excellent quality provided by the polygonal-BREP of MachineWorks' Visicut engine and the power of Siemens Parasolid's modelling delivers game changing results, particularly for prismatic machining.



Volume of rest material (dark blue) computed using Boolean subtraction of design part from in-process stock.



Volume of rest material (dark blue) after Polygonica offset applied. Noisy regions caused by small variations in floating point numerical representation are eliminated.

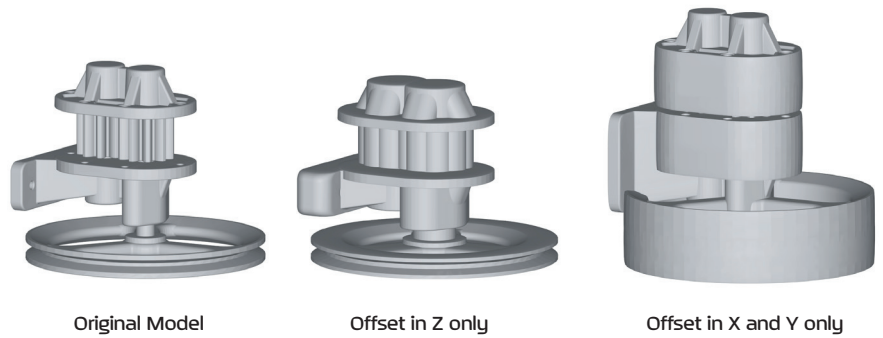
What's New in Polygonica 2.3 for Additive Manufacturing?

Slicing

Driven by increasing customer demand for fast, memory efficient slicing for large area print-beds, Polygonica's slicing has been completely overhauled during the 2.3 release cycle. The new slicer is dramatically more memory efficient whilst in many cases improving performance compared to the old slicer.

Anisotropic Offsetting

The new anisotropic offset capability allows applications to offset parts by different amounts along each axis, allowing more accurate compensation for material distortion for different print scenarios.



Gluing

Gluing allows parts that don't quite connect to be joined without gaps. This can overcome issues when unioning parts with surfaces that are intended to be coincident but aren't quite, either due to issues with modelling or because of differences in how each surface is tessellated.

Optimised function for creating support volumes

A new function dedicated to generating the 3D volumes of regions where support structures are required has been added. This function is optimised to this particular use-case and delivers considerable performance and quality improvements.

Preserve regions defined by different attributes in simplification

In order to facilitate faster download of models from the cloud to the client device Polygonica's simplification algorithms have been enhanced to preserve boundaries between faces with different sets of attributes e.g. colour and texture



Stanford Bunny split into two partially overlapping parts.



Result of Boolean union – thin slivers of internal geometry remain



Result of Boolean intersection (grey) plus material added by glue operation (gold)



Result of Glue operation – the two parts have been unioned together with no sliver geometry.