

ESPRIT Additive for DED

Additive for Direct Energy Deposition (DED) is available within ESPRIT, the full-spectrum CAM system offering programming, optimization and simulation for additive and subtractive processes in one integrated solution.

ESPRIT provides powerful programming for multi-tasking, multi-function, multi-channel, mill-turn, additive and subtractive machine tools. Additive and subtractive processes are programmed, optimized and simulated together within a single user-friendly ESPRIT interface.

Additive for DED

Machine-Aware Direct Energy Deposition

ESPRIT provides a natural workflow for programming direct energy deposition machines. The machines may be dedicated additive machines or hybrid additive machines that also perform traditional subtractive machining.

Using ESPRIT's concept of Machine-Aware, a digital twin of the machine is used for programming, optimizing, and simulating additive and subtractive manufacturing processes. From large gantry machines to small part Swiss-style lathes, ESPRIT supports every conceivable configuration of CNC machine covering a full spectrum of market needs from medical to aerospace and beyond.

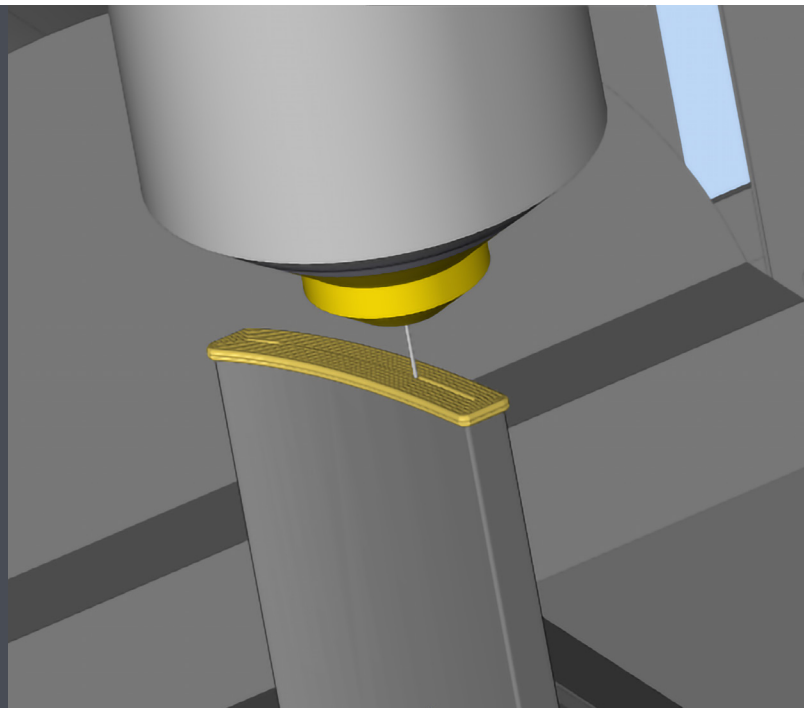
Within ESPRIT, an additive cycle is created and treated like all other machining cycles which may be combined in any order at any time. The automatic link generator provides efficient and safe positioning between additive, cutting and non-cutting operations, tool changes, and part handling, which are optimized for the machine and part setup.

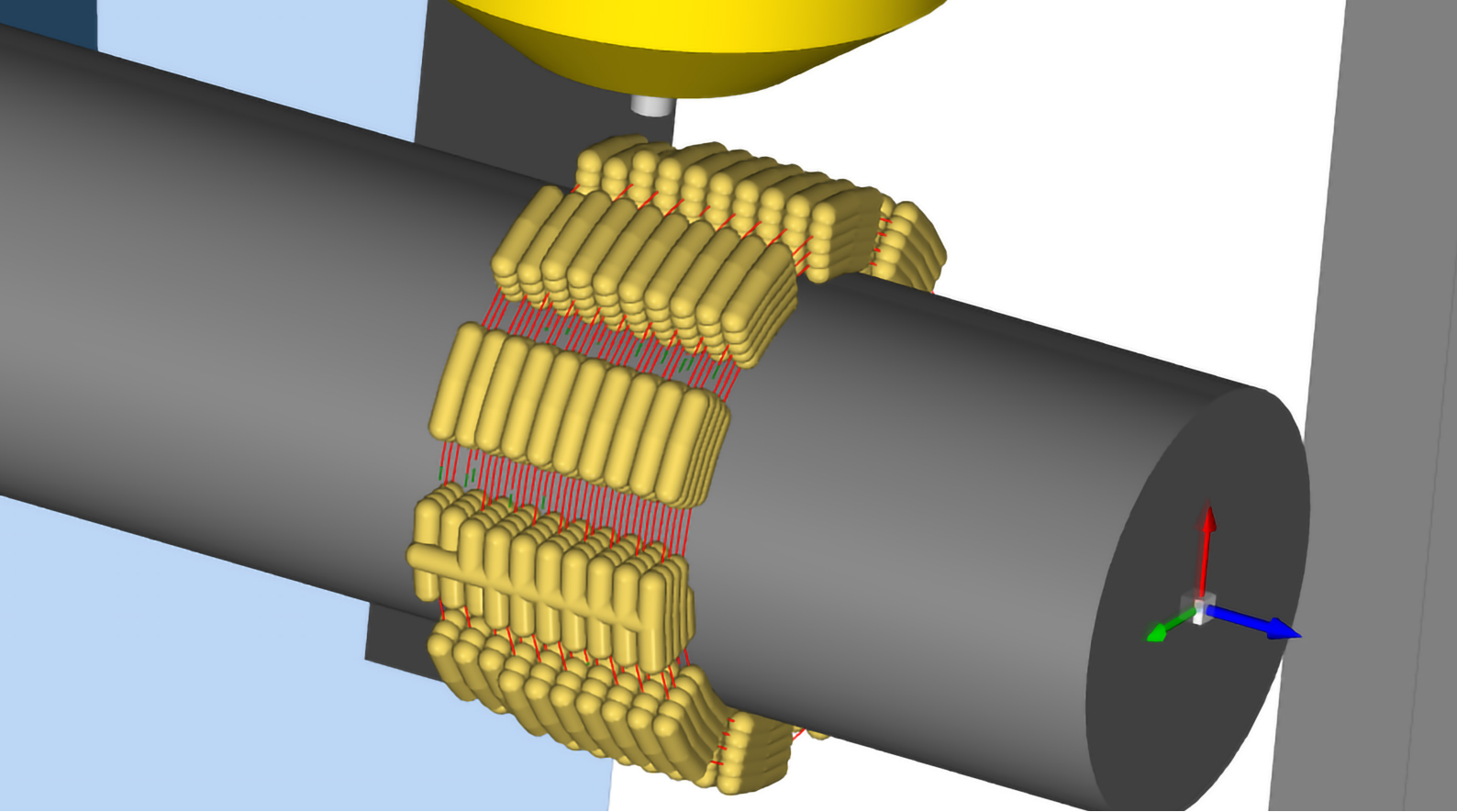
Both the links positioning moves as well as the additive and subtractive cycles take into consideration the remaining stock, including stock added by the additive processes, so all moves are collision-free and optimized for cycle time. Meanwhile, the simulation shows exactly what will happen at the machine, previewing the entire machining process.

- Full-spectrum CAM system
- For any class of CNC machine, from gantry to Swiss-style
- Side-by-side additive and subtractive programming
- Natural workflow for hybrid or dedicated additive machines
- Stock-aware cycles for both additive and subtractive
- Full simulation of both additive and subtractive processes

The Additive Advantage

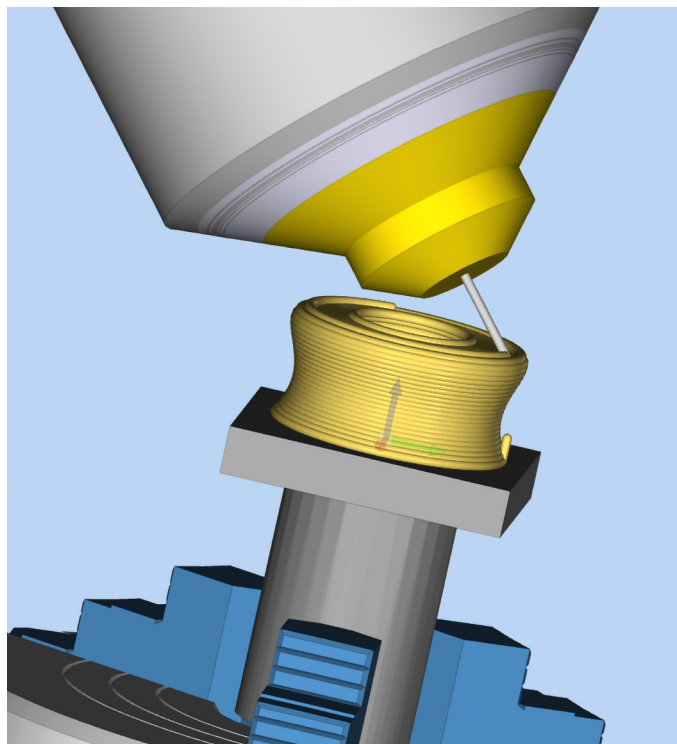
Additive and hybrid machines open new manufacturing possibilities. Part repair, weight savings, hollow parts and new shapes that are not easily created with traditional subtractive manufacturing processes are made into reality with additive manufacturing. Near net shape stock saves on lead time and the expense of custom stock sizes, especially helpful in expensive material with longer lead times such as titanium parts in the aerospace industry.





DED 4-axis, Rotary

Rotary DED has the same capabilities as 3+2 with the addition of allowing deposition while simultaneously rotating the workpiece around an axis. The trajectories for the build are made of circular offsets using a specializer slice to build the feature, layer-by-layer.



DED 3+2

This 3-axis DED cycle is used for builds where the workpiece may be oriented in 5-axis, then built layer-by-layer using a 3-axis process. Stock allowance may be added around the build for subsequent finishing operations using traditional subtractive processes. The user may choose between contouring and contouring with filling strategies including offset, raster and zig-zag to produce the desired result.

DED 5-axis

5-axis DED is used when the part must be tilted dynamically while material is being added. The cycle will automatically calculate simultaneous 5-axis motions to properly tilt the head whenever it is needed for proper material deposition, enabling a simultaneous 5-axis building process that can include timing for any required cooling.

Additive for DED

ESPRIT Additive for Direct Energy Deposition machines

- Specialized trajectories (toolpaths) for additive processes
- Full-spectrum toolpaths for subtractive processes
- Multi-tasking, multi-function, synchronized 3+2 and 5-axis programming
- Simulation and verification of both additive and subtractive processes
- Universal post-processing for any CNC machine tool
- Works with native 3D CAD files
- Integrated into ESPRIT CAM system
- Backed by world-class technical support

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High-Performance CNC Programming

Using the ESPRIT Digital Machine - Machine skin models, controller emulators, machine parameters, and post processors, ESPRIT delivers powerful programming, accurate simulation, and edit-free, machine-optimized G-code. The ESPRIT CAM system is backed by world-class technical support to get the job started quickly and to keep it running at top efficiency.



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