surfcam

: turning

Production turning for 2-Axis > MTM machines

Surfcam Turning provides functionality for a wide range of machine tools, including 2-Axis lathes, multi- turret configurations, sub-spindle turning centers and Mill/ Turn machines. On Mill/Turn machines with C, Y and B-Axis milling and drilling capability, a singleturning program can be produced for a fully integrated and associative programming solution.

Surfcam produces advanced rough and finish turning cycles, together with support for facing, boring and drilling in either canned cycle or longhand format. Toolpath calculation takes into consideration the complete tooling insert and tool holder including the “F” distance. Surfcam is fully aware of previously machined material to eliminate air cutting and avoid gouging.

Ease of use is paramount with Surfcam, along with an understanding that cycle times are critical, especially on complex multi- configuration Mill/Turn machines. Surfcam can take full advantage of your machines advanced functionality.

Surfcam offers support for Sandvik Coromant Wiper inserts for turning tools, allowing these productivity enhancing inserts to be used reliably in all aspects of production machining.

Update stock

Surfcam has the ability to keep the stock updated “live” within the sequence tree. The stock model is presented as rest material, or material that hasn’t been machined. Subsequent toolpaths will automatically detect the rest material, resulting in unmatched efficiency for any turning toolpath. Update stock is supported from the most basic 2-Axis turning center, right through to a C, Y, B multi turret sub spindle Mill / Turn.

When back turning into a recess or groove, Surfcam is aware of the current stock condition, thus avoiding air cutting and potential collisions on the approach into complex recessed areas.

On a sub spindle turning center, when a component is transferred from the main spindle to the sub-spindle, the live stock transfers with it. Subsequent machining on the sub-spindle will detect the stock in the state that it left the main spindle. Surfcam provides the most efficient machining sequence possible.

Collision Detection / Simulation

It is critical that not just the tool in contact with material is checked for collisions, but also that the tools in the turret are collision checked as well. Most turning centers offer a relatively small working envelope making collision avoidance critical. A good example of this is on static turrets, where tools such as boring bars can extend out further than the tool in cut.

Surfcam’s advanced collision detection is aware of the machine tool kinematics, and fully supports Mini Turrets, Capto tooling and programmable steady rests.

Increase machine tool utilization

Reduced programming time

Reduce component cycle time

Eliminate programming errors and reduce potential scrap

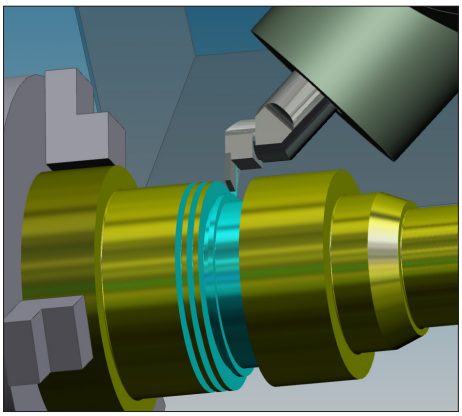
Reduce machine tool prove out by graphically simulating the toolpath

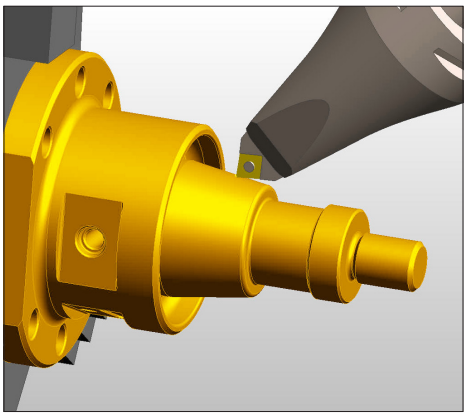
Avoid collisions and expensive damage to machine tool

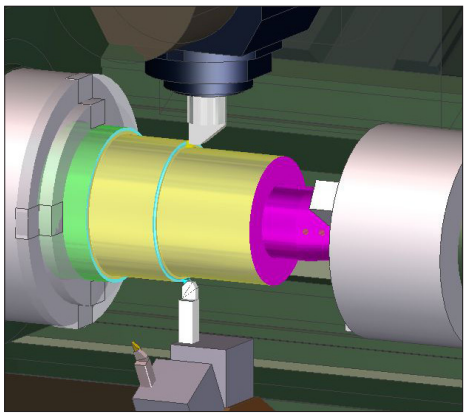
Full support for canned cycles

Reduce tooling inventory and stock

Surfcam fully supports all axis configurations from the most basic 2-Axis turning center, right through to a C, Y, B multi turret sub spindle Mill/Turn.







Swarf Clearance

When machining inside a bore, loose material can build up around the insert. This can either result in insert failure or severely decreased tool life. Surfcam will allow you to retract the tool out of a bore or away from a diameter after a set numbers of cuts. The user can retract the tool, mid- cycle, to a known position to clear any chips out of the bore.

Sub spindles

Surfcam fully supports turning centers with a sub spindle & twin turrets, including :

- Bar pull
- Bar feed
- Part pick and return
- Running in conjunction with the main spindle

Twin turret support for both single and twin spindle lathes including:

- Balanced turning
- Z lag options improving metal removal
- Mirrored turning
- Turret synchronization and simulation

Individual Element offsets

Surfcam's turning cycles offer the ability to specify offsets to individual turned diameters, bores, grooves and faces. This function is useful where a turned component needs some elements to be finished turned, and others to be left with a grinding allowance for subsequent machining or heat treatment.

Most systems on the market today only allow you to set a constant offset, whereas Surfcam gives the user full control over offsets for each element on the turn feature.

Break Edges

Machinists do not always have the ability to go back to the customer to ask for a revised model that include chamfers or break edges, even though they may be included on the engineering drawing. Surfcam's turning cycles offer the ability to specify a break edge where a chamfer has not been included on the model supplied to them by the customer.

Down Cutting

This function within the finish turning cycle alternates the cut direction on the finish turn profile so the tool is always down cutting or never drags up the face. This gives enhanced tool life and achieves a superior surface finish.

Sequential Castellation grooving

Traditional grooving cycles wear the tool on one side after the initial full width cut. With Sequential Castellation grooving, the tool starts at one groove edge and moves to the other edge, producing full width cuts.

It then goes back and removes the 'rings' left behind by the first cutting pass. This ensures that the load on the grooving tool is on the front of the tool, opposed to the sides. It also ensures even wear on the insert.

Rough Turn Sectioning

To keep the tool push-off on a long diameter to a minimum, Surfcam have developed a section strategy where the user can break the rough turn cycle into sections. The user sets a Z break distance and the roughing cuts are divided into short sections.

Rough turn Variable cut Depth

This function is to prevent notches wearing into the tool. Cuts are alternately 'ramped', then 'normal'. During the ramped cuts, the cut depth gradually reduces to zero. The next cut (which will be 'normal' and starts at the same cut advance) then removes the leftover ramp. If a ramped cut is interrupted by the profile, it follows the profile until it re- joins its ramped path.