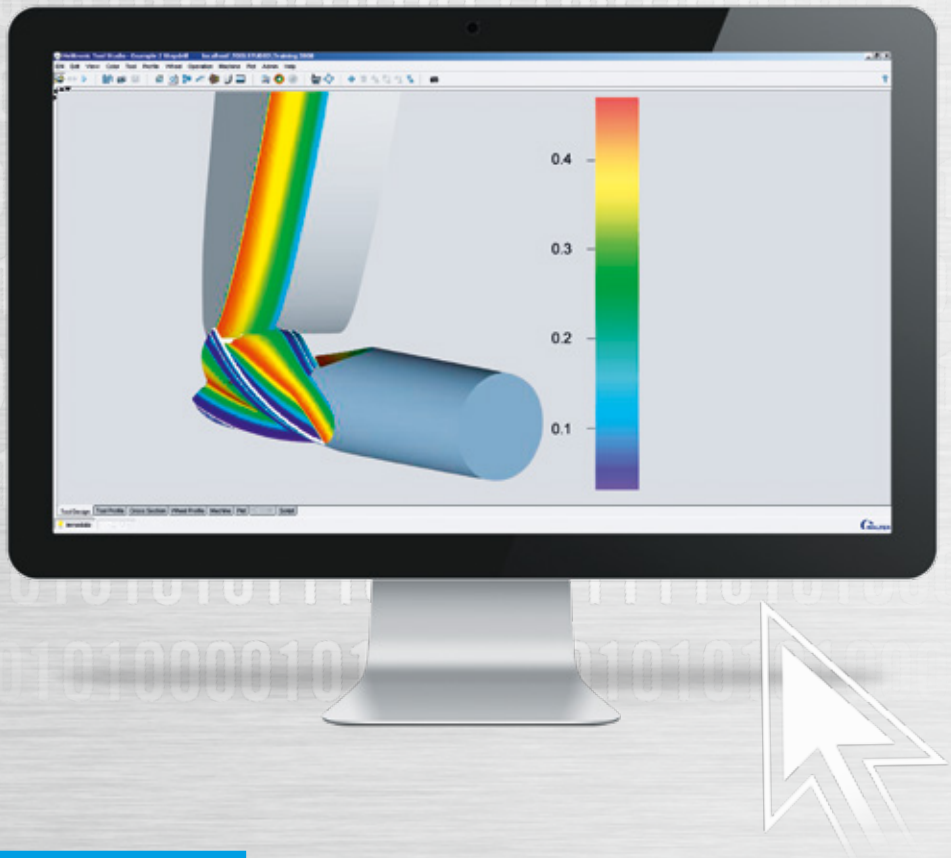
WALTER INFO 5/2018

FEEDRATE OPTIMIZER GRINDING SOFTWARE

Efficiency-enhancing solutions

Up to 30 % time saving by feedrate optimization



Benefits

The faster the feed rate, the higher the grinding performance. The Feedrate Optimizer sets the feed rate to a constant grinding wheel load. Time savings when grinding, optimum erosion rates and consistent durability of the grinding wheels are the result.

WALTER

Performance Enhancing Solutions: Feedrate Optimizer

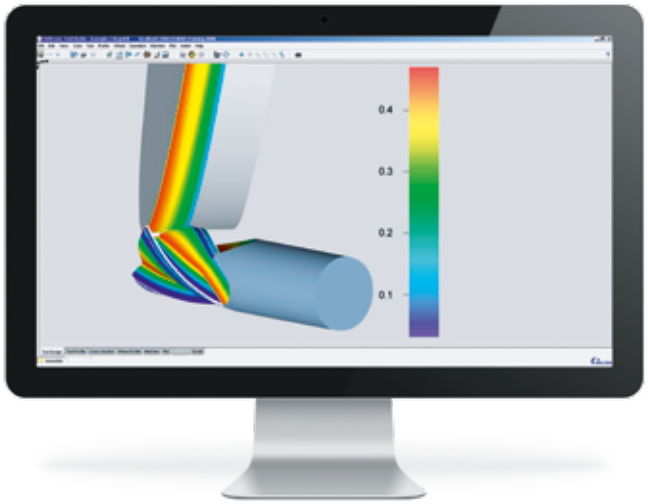
Background

This new extension to HELITRONIC TOOL STUDIO provides the ultimate means to manage feedrates and control wheel and machine loads. Feedrate optimization uses HELITRONIC TOOL STUDIO's intricate knowledge of grinding moves, wheel model and the tool simulation model to calculate the instantaneous wheel load and machine load, to precisely set the optimum feedrate at a given point in time. At every point, the feedrates are set based on user specified wheel load and the actual wheel load. Moves with low wheel load are speed up and moves that exceed the desired wheel load are slowed down.

Wheels are designed for use at certain feedrate, too fast or too slow causes wheels to not perform at optimum condition.

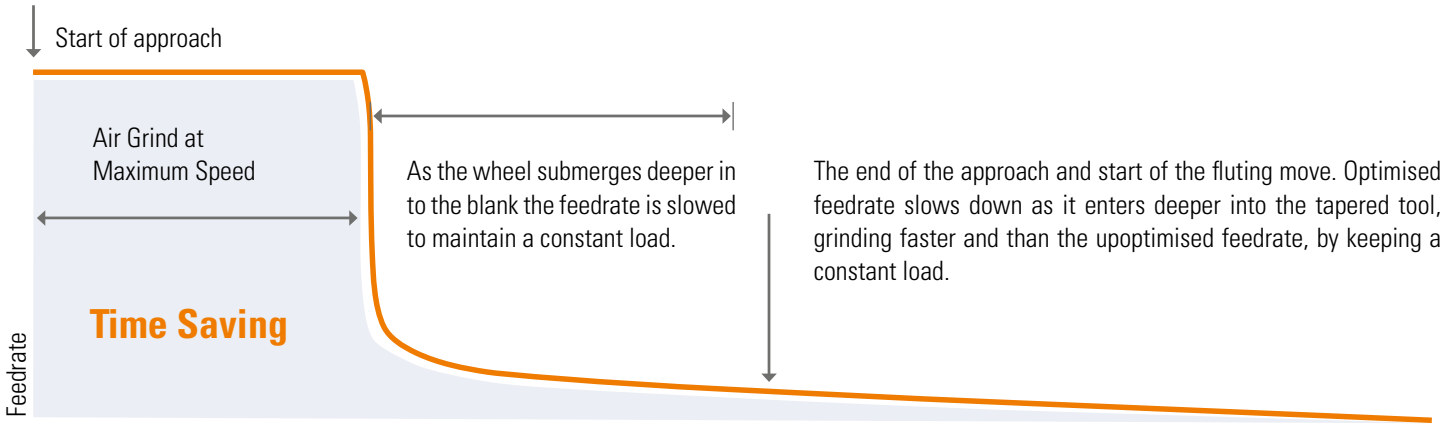
With feedrate optimization, the wheel is guaranteed to perform within a specified load.

- An existing standard 10 mm square end endmill can be optimised with a single click to save 13% grinding time
- More careful analysis will yield a saving of 19%
- For complicated tools, savings of 40% and more are possible



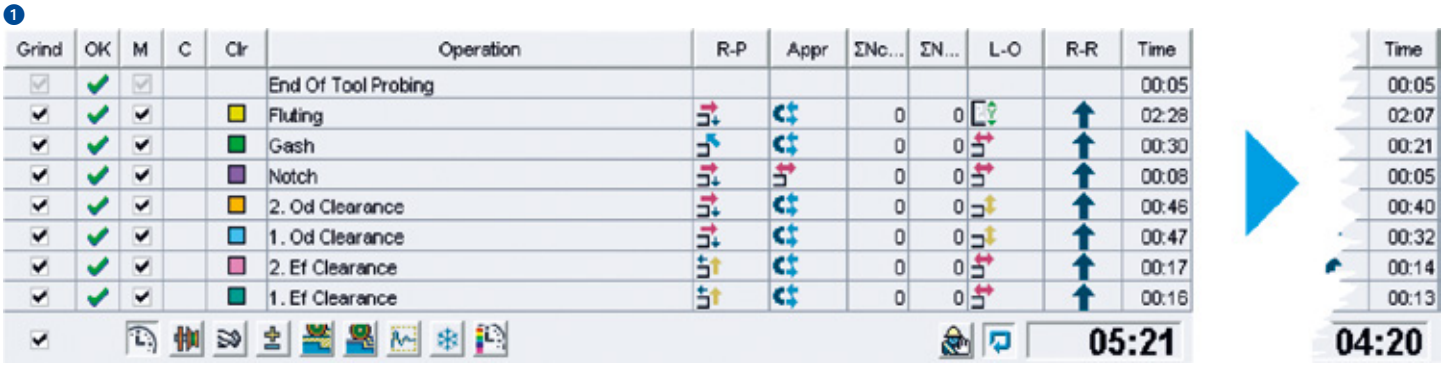
Wheel Load Management

- Load that each wheel is subjected to can be analysed and visually examined in a 3D simulation model or a 2D plot
- Inspect which parts of the tool are being ground under heavy load, spotting problems in surface quality before grinding the tool
- Examine and eliminate dangerous spikes in grinding load. The spikes in grinding load result in sudden wearing of wheel, leading to more dressing and inaccurate tools
- Estimate the pattern of wheel wear



The geometry of the tool is preserved as the axes positions remain untouched and only the feedrates are modified.
An example of a feedrate profiles that are generated for a fluting move in a tapered tool.
—— Optimised Feedrate —— Unoptimised Feedrate

1



Simple to use

Existing IDNs can be optimized with the ease of one click. Firstly, progressive simulation analysis determines the profile of the wheel load. After that, the feedrate is optimized to maintain constant wheel load throughout the move.

Using this simplified approach, a standard 10 mm square end mill, with a grinding time of 5:21 min can be reduced to 4:39 min – a saving of 13%.

A slightly more careful analysis which takes the wheels into account will result in a grinding time 4:20 min – a saving of 19%.

Advantages

Increase productivity
Grinding times and machine running costs are significantly reduced by setting optimal feedrates.

Control wheel wear
Use wheels at their optimum feedrates to extend wheel life and reduce dressing intervals.

Favourable grind direction
Recommendation to grind backwards or forwards will minimise wheel load and distribute it evenly.

Avoid collision with non-bond section of the wheel
Progressive simulation detects dangerous grinding condition.

Determine optimum sequence of operations
This advanced feature will rearrange operations order to minimise wheel load and to optimise grinding time.

Seamless intergration
With addition of few extra buttons, feedrate optimisation feature works with the existing installation of Tool Studio and for existing tools.

Simple to use
one click approach for existing IDNs.

Time saving

Detailed wheel load analysis at sampled points allows feedrate to be increased and decreased to according to a desired value.

Time saving is achieved through:

- Eliminating air grind conditions
- Setting optimum feedrates for grinding moves

That delivers a significant advantage over unoptimized feedrate where the point with the greatest wheel load governs the slowest feedrate, applying it to the entire move.

1 Grinding time saving for a standard 10 mm 4 flutes Square End Endmill

Walter Maschinenbau GmbH
Jopestr. 5 · 72072 Tübingen, Germany
Tel. +49 7071 9393-0
Fax +49 7071 9393-695
info@walter-machines.com

For worldwide contact details, please visit
www.walter-machines.com

FEEDRATE OPTIMIZER · Subject to alterations · Printed in Germany · 230 · V1 · 07/2018 · en