Comara iCut

Optimising machining processes in real time

WALTER
Engineering Kompetenz

comara
icut

Challenges in manufacturing

The defined cutting parameters in a CNC program are kept unchanged during machining. The assumption is, that the cutting conditions remain constant during the manufacturing process.

The following changes in the cutting conditions can interfere with this constant:
- The material surface of rods and cast components is uneven
- The material is not homogeneous
- The material hardness varies depending on the workpiece or batch
- The dimensions of the workpieces may differ/machining allowance variations
- The cooling parameters can change over time
- The sharpness of the tool decreases during machining
- The stability of the clamping changes due to dynamic stress
- A CNC program may have errors

Problem: Determination of the feed rate
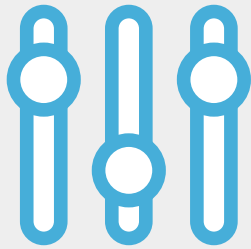
Factors such as wear, machine performance and material fluctuations force the programmers to adopt a conservative approach. Target is to prevent overstressing of the tool.

Cutting conditions are defined in such a way, that wear losses and cycle time are reduced to a minimum.

The CNC machines are programmed to safe feed rates with the cutting conditions in mind.

Comara iCut: The intelligent Software

Comara iCut is smart and intervenes in the machining process in real time. The entire machining process is carried out at the best possible feed rate.

Comara iCut measures the spindle power up to 500 times a second and automatically adjusts the feed to the current cutting conditions.

As quickly as possible, as slowly as necessary. In every situation. With unique response time

Why Comara iCut?

Comara iCut offers the following advantages:

- Manufacturing times reduced by an average of 10%
- Process reliability increased
- supports unmanned manufacturing
- Multi-machine operation
- Better/longer use of the tools
- Can in some cases prevent tool breakage or overstressing
- Better average chip thickness
- For each tool, a maximum power value is learned and not exceeded
- Protection of tools and spindles against overload
- Smoother deflection of the tool during roughing
- Better contour parallelism during finishing
- Fewer vibrations

Before

With Comara iCut

Ø 10%
Savings

Finishing

Finishing
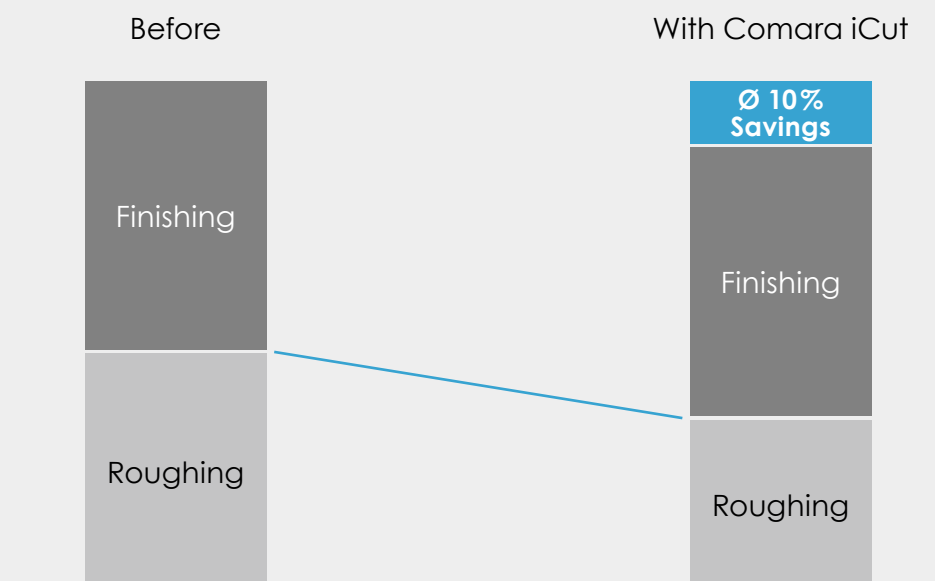
Roughing

Roughing

Examples of typical applications

Comara iCut is ideal for the following applications:

- Roughing
- Milling
- Interrupted cuts / varying cutting conditions

Further specific applications

Rough and semi-finished machining of geometries with constantly varying material removal.

Examples:

- Surface milling
- Groove, ramp and contour milling
- Milling and drilling operations where the material hardness varies significantly
- Milling operations where workpiece surfaces vary significantly
- Milling and drilling of cast irons, titanium, steel and stainless steel
- Machining of large machine parts or moulds with many pockets and high material removal
- Production of cast parts
- Milling and drilling operations whose raw material varies depending on the machining

System requirements
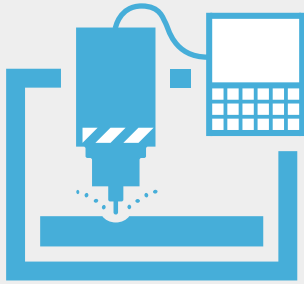
The following CNC controls are currently supported by Comara iCut (02/2018):

Siemens SINUMERIK:

- 810D
- 840D powerline
  (HMI from 05/03; NC from 06; 37 SA; 52 RP; 18 AC-Timer)
- 840Di solutionline
- 840D solutionline (NC from 02/06 37 SA; 52 RP; 18 AC-Timer)
  One spindle or multiple spindles

Solution Partner
Automation

SIEMENS

Brief info on Comara

- Founded in 2004
- Software company with in-depth experience in machine connectivity, machine interfaces, visualization, analysis and optimization of process data
- Product portfolio includes Comara appCom, Comara iCut, Comara syscut, Comara dataGrabber, software development
- Comara products are installed on more than **10,000 machines** worldwide (as of 2018)

comara