Software changes

easyGrind
SMP TECHNIK

VERSION 6.10

Machining 2
- Hob 2
- Drill 2
- Mill 3
- Also included 3

Probing 5

Miscellaneous 7
- General use 7
- Also included 7
- HG600 Machine, Steady rest with interchangeable bushings 8
- Dressing 8

Fixes 11

Machining

Hob

Customization of the Control Report

The software offers a "template" file that the user can modify and customize.
When the file "C:\Numaffut\Config\Hob_Control_Template.fr3" is present, it produces a PDF

Helix check probing (DIN 3968 criterion 11 fHN)

The checked helix appears on the control report.

Simplification of form wheels on helical hobs

- the calculated profile can adapt to the wheel blank (the profile can be widened),
- the W measurement is more intuitive (the reference point is on the large diameter)
- the file names are simpler

To activate this new feature, change the following entries in Numaffut.ini
[Diamantage_Helisurf]
Format_Nom_Fichier=1
Ignorer_DIR_Helisurf_TAILLANTE=1
Point_REF_sur_grand_diametre=1
Profil_pour_Simulation=1
NOTE: if the old configuration is kept, the "Left Helix + Reverse B" case no longer works

Drill

"End Flute" job, type S (as in mills)

This job has been finalized.
NOTE: to edit the end flute point by point in the machine (as in eSim), the option in numaffut.ini [TEST SMP] Goujure_S_NEW=1 must be enabled

"Ref.1 Flute" job, blend at the end of the flute

Clearance mode = 3-X-Y+Blend: this clearance makes it possible to correct a land that widens at the end of the flute. The helix and offset can be cheated over a certain distance in X

Clearance mode = 2-X-Y: this clearance makes a radius over a given travel in G1 while following the helix, then retracts in Y (as before)

Flute slope dimensioning

It is now possible to give the "Shank core diameter" rather than the "Flute slope"
change the entry in numaffut.Ini
[Config_Outils]
Foret : Cotation Pente.Gouj.=1

"Spiro-conical tip" job

Fix: the tip was incorrect as soon as the tool had at least one step

In method D, it is now possible to **reverse the toolpath**.

"Type B Thinning" job

It is now possible to **lengthen the clearance travel** of the thinning

"Shortening" job

Fix, in uneven division, when this job is first in the list, it machined all the teeth on top of each other

"Back-off" job

Added a square 'C' cycle **without the angular rotation** at the end of the forward pass
Removal of the "Wheel too wide" message in the back-off job
Enable the option in numaffut.Ini [Supprimer_Messages] Foret_Tout = 1

Simulation of a stepped drill

Fix: The blank of a stepped drill depends on the selected jobs. In some cases, the drill tip was offset.

Mill

"Continuous relief" job

Fix: in Reversed cycle, machining finishes at the tip of the mill. The clearance has been improved.

Mill with arbitrary helix

Fix: when selecting "**Use probed helix = N-No**", EasyGrind refused to start the probing cycle.

When creating a tool, a message may appear when starting probing, but it is no longer blocking.

"Sphere BACK-OFF" job

Ability to **reverse the toolpath** (work from the periphery toward the tip)

CNC error "Block number exceeded" on multi-tooth mill

This error should no longer occur.
The jobs that can generate a large number of points are "Peripheral Flute", "Peripheral Relief", "Curvilinear Relief", "Peripheral Back" and "Continuous relief".

Taper correction

It is possible to modify the taper correction in the "Peripheral Relief" and "Peripheral Flute" jobs.
Fixes:
"Peripheral Relief" in Rolling / Tangent with reversed direction = the wheel touched during the approach, which was not being done on the correct axis
"Continuous Relief" - taper missing if radiused clearance
"Peripheral Relief" & Multi-tooth (discretized toolpath) = the taper is not applied, but INCORRECTLY affects the machined diameter

"Peripheral Flute" job

The **slowdown at the bottom of the flute** can now be modified directly in the job

Also included

TAP, Entry relief: Fix: the job was not retracting enough in Y, which caused a collision with the transfer system's gripper

Pointed TAP: Some jobs were poorly positioned

Tip point ROUGHING: Added facing passes after the plunges

FORM GRINDING: Added Method R "Rolling"

Probing

Blade probe

New knife-shaped probe.

Allows easier probing of small-diameter tools

Allows faster probing than other probe shapes. Examples:

Tool	Stylus probe	Blade probe	Time saved
Cross-helix mill	1min 12s	46s	37%
Multi-tooth mill	2min 26s	1min 33s	37%

Many parameters now have a default value allowing faster setup.

BEFORE 6.10

Palper la Longueur		
Méthode de palpage		P-Plaque
Pos.X Palp. Longueur	mm	175
Positionnement Y		5
Positionnement Z		0
Décalage Longueur Totale	mm	0
Palper le Calage		
Méthode de palpage		1-Simple
Distance /Bout	mm	-10
Rechercher 1ère dent		N-Non
Choix diamètre palpage		A-Automatiqu
Pos.Palpeur sur face	mm	0.5
Incrément scan.palpage	mm	1
Décalage A - palpage	d°	0
Palper le Diamètre		
Méthode de palpage		A-Automatiqu
Direction de palpage		Y-Axe Y
Palper l'Hélice		
Méthode de palpage		C-Pas Consta
Choix diamètre palpage		A-Automatiqu
Pos.Palpeur sur face	mm	0.5
Distance 2/1	mm	0
Dist.recherche Hélice	mm	0
Palper l'Excentration		
Méthode de palpage		B-Brut
Distance /Bout	mm	-10
Diamètre de palpage	mm	10
Choix calage palpage		A-Automatiqu
Direction de palpage		Y-Axe Y
Excentration maxi	µ	10
Dist. plan 2/1	mm	0

AFTER 6.10

Palper la Longueur		
Méthode de palpage		P-Plaque
Pos.X Palp. Longueur	mm	175
Positionnement Y		0
Positionnement Z		0
Décalage Longueur Totale	mm	0
Palper le Calage		
Méthode de palpage		1-Simple
Distance /Bout	mm	-10
Choix diamètre palpage		A-Automatiqu
Pos.Palpeur sur face	mm	0
Incrément scan.palpage	mm	0
Décalage A - palpage	d°	0
Palper le Diamètre		
Méthode de palpage		A-Automatiqu
Palper l'Hélice		
Méthode de palpage		C-Pas Consta
Choix diamètre palpage		A-Automatiqu
Distance 2/1	mm	0
Hélice apparente	d°	0
Dist.recherche Hélice	mm	0
Palper l'Excentration		
Méthode de palpage		B-Brut
Distance /Bout	mm	-10
Diamètre de palpage	mm	10
Choix calage palpage		A-Automatiqu
Excentration maxi	µ	10
Dist. plan 2/1	mm	0

Probe the length	
Y positioning	If left at 0, an offset in Y is still applied based on the diameter if the diameter is greater than 14 (default). Probe option – Edit Valeurs_Palpage.ini [Length Module] - Plate_YOffset_Diam = 14 (default). To disable, set to 0
Probe the setup	
Search 1st tooth	Hidden except for Crest-Kut mills

Probe pos on face	Leave at 0. Calculates a value between 0.1 and 1 based on the flute depth
Probing scan increment	Tooth search does not work well on small diameters. A value of 0 in the parameter triggers an automatic calculation based on a number of attempts per tooth. Probe option – Edit Valeurs_Palpage.ini [Setup Module] - Tooth_Search_Number (4 by default) - Tooth_Search_MaxA (30 by default)
Probe selection	Automatic based on cutting direction
Probe the diameter	
Probing direction	Necessarily in Z (side thrust)
Probe selection	Automatic. Favors the left blade if installed
Probe the helix	
Probe pos on face	Takes the value from the setup probing
Distance 2/1	Leave at 0. Calculates a distance based on the flute length
Helix search distance	Leave at 0. The cycle has been improved to probe large helices with narrow flutes
Probe the eccentricity	
Probing direction	Necessarily in Z (side thrust)

Probing of an arbitrary-helix mill

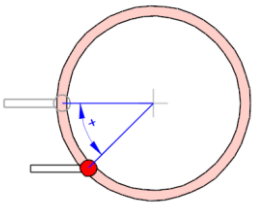
Improvement in how the average helix is taken into account during probing when the mill has already been probed.

New specification for the number of probing points:

- If left at 0, EasyGrind calculates an ideal number of points based on an increment (=3 by default) and the probed length. Minimum = 8
- If a value is specified, that value is used. Minimum = 3

Wheel probing

W probing on Flexium machine: when the probe orientation follows the X axis, the contact point on the wheel periphery can be chosen.



Multi-point probing: the default maximum runout in W and R goes from 10 mm to 0.1 mm.

Helisurf wheels can be probed in manual mode.

Form and Helisurf wheels can be probed in automatic loading mode.

Up/down mill probing

Removal of the T-Full option in setup probing.

Removal of the option to probe all teeth in helix probing

Miscellaneous

General use

eSim

The hub of small wheels (diameter 30) is better suited to the wheel size

It is now possible to fix the angular orientation of the tool for the simulation

Confirm global depths of cut

Reactivation of the "Confirm/Unconfirm depth of cut" option (this feature was available under Numaffut+, and had been removed in 2012)

The "Global depths of cut can be disabled" option must be checked in the config screen describing global depth-of-cut options

Translation

Added the Slovak language

Wheel modeling

For 4BT9 and 4BTF9 dish wheels, the wheel's inner angle can now be set (5° by default)

```
Numaffut.Ini
[Meules]
FEPA_4BT9_Angle_A5 = 5
FEPA_4BTF9_Angle_A5 = 5
```

SMOOTH THE PROFILE:

Added the "Inflection" and "Alignment" options: these 2 options should be tested checked or unchecked depending on the part of the profile being worked on. The [Apply] button confirms the smoothing without leaving the screen.

SELECTED JOBS SCREEN:

It is now possible to specifically widen the wheel column (for wheels with 8 digits)

numaffut.ini [Ecran Travaux] Coeff_Largeur_Col_Meule = 1, set to 1.2 or 1.4

VALUE TOLERANCE:

Setup of tolerances on values:

Also included

ZOLLER Pilot 4 bench & RS232 Link:
- the "Zoller Pilot" bench is now called "Zoller Pilot (ini)" (communicates by exchanging XML or ini files).
- Creation of the "Zoller Pilot (RS232)" case, which communicates via RS232 cable.

CA5 wheel changer: management of the changer with onboard nozzles

CA7U Machine:
- Removal of the max Y170 limitation on the 1st machining block
- Removal of the X position error during the approach block

HG600 Machine, Steady rest with interchangeable bushings

ability to select in the machine configuration which bushing mounted on the steady rest to track. When the bushing is changed, this corrects the steady rest's minimum P17 values to avoid a collision with the chuck, as well as a correction of the points based on the controlled point.

bushing probing

probing is positioned relative to the bushing diameter. It also starts with an empty spindle

1 mm offset of the tip-side probing Y

display of a message before probing edits when the position requested by the operator is out of travel

-Improved: probing returns the bushing length, which is then written to 'Application.'+K_GVL_ROBOT+'.LCANON_LONGUEUR' so that the robot loads correctly

Steady rest cycle with the robot

ability to customize the U position for robot loading from within the bushing screen. By default it is set at 1mm from the minimum position, but it can be customized further.

The bushing length value sent to the robot is adjusted by this offset.

-Fixed: steady rest positioning before robot loading. It is set at 1 mm from the minimum travel (safety)

-New: setup before probing. If in Machine1.ini, [Lunette] PosXPalpage=1, the tip distance for probing can be specified in the tool. This works whether probing at the start of %1 or not.

-New: Ability to request a movable steady rest whose U travel is indexed to the X travel

-New: verification of min/max U travel during editing

U Axis: P16 and P17

-Fixed: reading values from the CNC did not work

Dressing

DRESSING:

for dressing wheels with a radius greater than 1 mm, an enlarged profile of the dressing wheel radius is drawn on the dressing parameters screen

HELISURF DRESSING:

- Blocking message on editing if the xxx.shh file is missing from the Helisurf wheel

MACHINING AND DRESSING:

-A routine checks that there are no duplicates in the use of E80010 numbers or dressing program numbers. If this is the case, editing is blocked

Cylindrical wheel DRESSING:

approach travel reduced from 3 to 1 mm

HELISURF WHEEL:

The profile used for simulation can be the profile used for dressing (see option [Diamantage_Helisurf] Profil_pour_Simulation=1

DRESSING AND HELISURF WHEEL CALCULATION ==========

HELISURF WHEEL CALCULATION:

- Changed the names of profiles and how they are stored:

[Diamantage_Helisurf] Format_Nom_Fichier

= 0: all profiles are stored in the same folder, and the name looks like "FamilyName_ToolName_No.507_Diam_150.smp"

= 1: the profiles are organized into folders bearing the same name as the family. The files bear the same name as the tool. "FamilyName\ToolName.shp"

[Diamantage_Helisurf] Ignorer_DIR_Helisurf_TAILLANTE:

= 0: helisurf profiles and dressing profiles are stored in separate folders:

helisurf profile in C:\Numaffut\HELISURF\TAILLANT

dressing profile in C:\Numaffut\Meules\Formes\Helisurf

= 1: the C:\Numaffut\HELISURF\TAILLANT folder structure is abandoned. Helisurf and dressing profiles are stored in the same folder.

They can still be distinguished by their extension:

*.shp for a dressing profile,

*.shh for a helisurf profile

-Fixed: the characteristic's points were offset by 1 (following conversions/reversals between TabPtMeule & Coform). This has a slight effect

on the wheel position during machining (W slightly different). However, if B is reversed, the position is likely much more incorrect.

Indeed, by offsetting the characteristic by 1, the value of the first point (which is point P) is lost. This point is only used when reversing B, or when cutting left-hand.

-New: Ability to place the reference point on the large diameter

[Diamantage_Helisurf] Point_REF_sur_grand_diametre:

= 0: as before, it is always the first point of the profile

= 1: Ref. point on large diameter (as with special wheels)

ISO DRESSING PROGRAM:

- Fixed: Dressing direction:

since 6.08, the following bug could occur with the "Profile start" dressing parameter:

when opening the wheel, it displays "Forward"... but it dresses "backward"

when changing the parameter to "backward", it dresses "backward"

when changing the parameter back to "forward", it dresses "forward", and this removes the bug.

- Diameter approach:

it is now possible to configure the approach distance and speed

[Diamantage] ISO-Degagement Diametre=10: indicates the clearance travel (measured relative to the profile's largest diameter)

[Diamantage] ISO-Vitesse Degagement=200: approach speed (200 means G1 F200, set to 0 to approach in rapid G0)

- Side approach/clearance:

it is now possible to choose whether or not to add approaches and clearances on the side of the profile:

[Diamantage] ISO-Accostage W = 0 (set a value to enable)

[Diamantage] ISO-Degagement W = 0 (set a value to enable)

If the "profile start" is reversed, the approach remains an approach.

- profile overrun:

The Helisurf profile is automatically extended by 3 mm on each side

- Approach / clearance movements:

With a large dressing wheel radius (3 mm), if approaching along a single axis, the actual movement occurs on 2 axes because the tool compensation is applied.

Visually, it looks as though the wheel is plunging into the profile. These movements have been improved to reduce this effect.

2D SIMULATION SCREEN:

- The "Show DXF" checkbox was checked, but the DXF was not visible

- Incorrect theoretical core thickness

* FLUTE MACHINING (with Helisurf)

-Fixed: the taper was not taken into account

-Fixed: the Y approach was far too large (was equal to wheel diameter/2)

DRESSING:

When calculating a Helisurf wheel shape (from the Flute shape), the calculated profile can now be widened very simply.

DRESSING:

- Configure a new dressing counting method

creation of the entry in numaffut.ini

"K_ENTREE_Diamantage_Critere"

[Diamantage] Critere = 0, 1, 2

{ '2' = Counts passes or teeth (internal to a job) == the only possible case before this version }

{ '0' = Counts jobs before Dressing }

{ '1' = Counts tools before Dressing }

Fixes

Form inserts

Better handling of angles at the start and end of the toolpath if machining is partial.

Parking positions

When entering a parking position numerically, regardless of the axis, the value was checked against the X P17 values

eSim

If there is a default tool holder and a tool is opened using the EasyGrind screen, an error message appeared.

Unable to simulate a dressing (or wheel truing) job.

Miscellaneous

Since version 6.08, the robot screen loading time could become extremely long.