Neugart Calculation Program

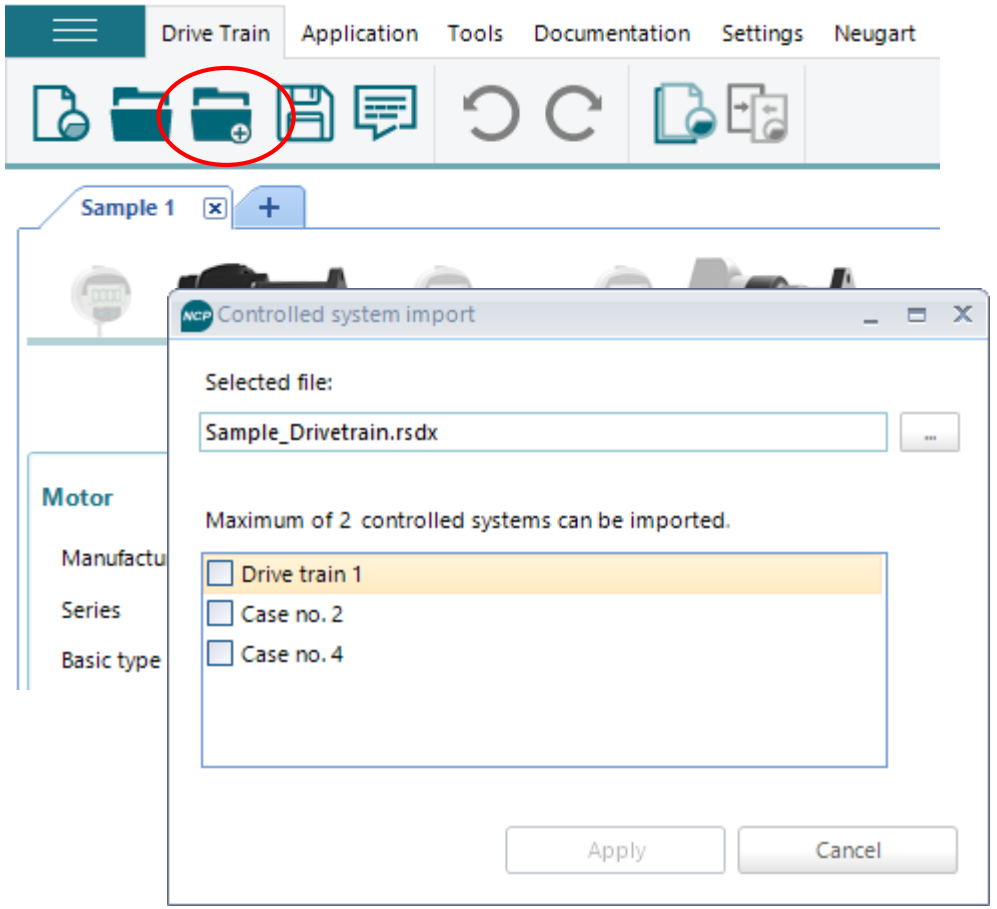
NCP® 4.2

NCP ® 4.2 Features in detail

D

Drive train – adding existing ones

- Add drive trains of NCP 3.x (.rsd) or NCP 4.x to the exisiting project
- Ideal for comparison of new and old dimensionings

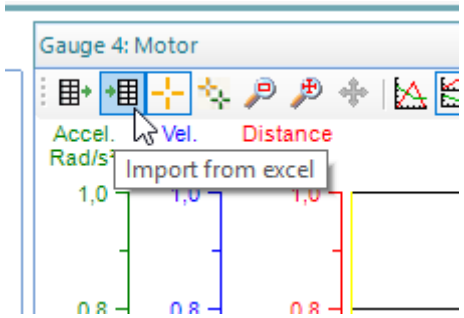


NCP ® 4.2 Features in detail

CL

Custom load input – data import

- Import motor trace files at the motor gauge directly
  - Choose „General load case“
  - Choose gearbox
  - Click on gauge 4
  - In the diagramm you can select „Import from Excel“



NCP ® 4.2 Features in detail

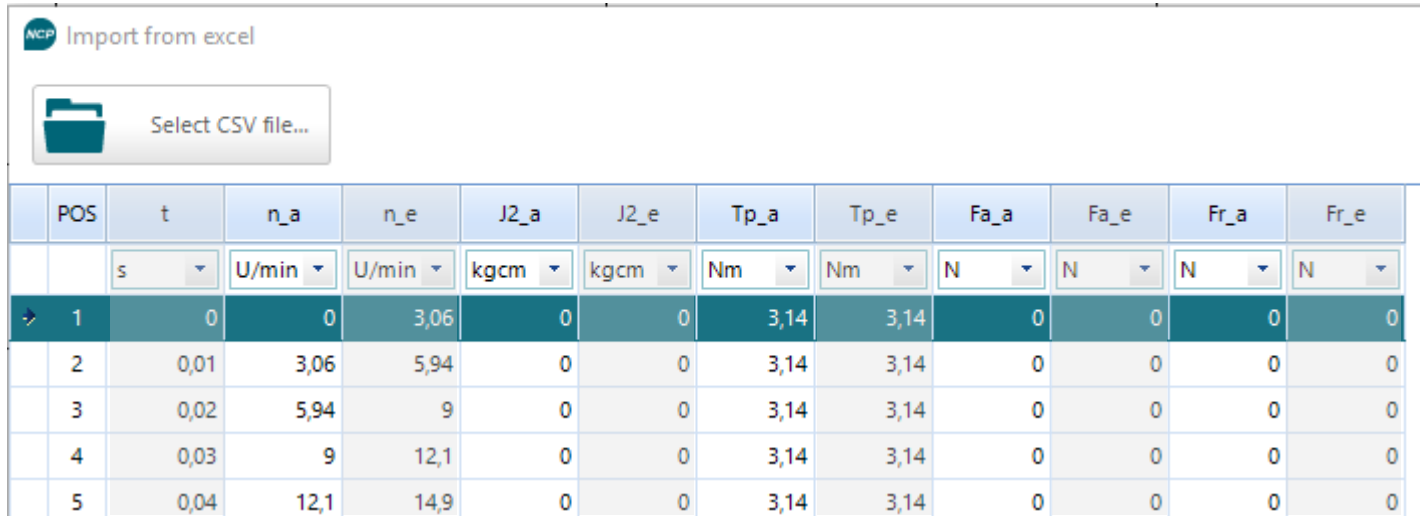
CL

Custom load input – data import

NCP 4.1

Data structure must be adhered to.

	A	B	C	D	E	F	G	H	I	J	K	L
1	POS	t	n_a	n_e	J2_a	J2_e	Tp_a	Tp_e	Fa_a	Fa_e	Fr_a	Fr_e
2		s	U/min	U/min	kgcm²	kgcm²	Nm	Nm	N	N	N	N
3	1	0	0	3,06	0	0	3,142	3,142	0	0	0	0
4	2	0,01	3,06	5,94	0	0	3,142	3,142	0	0	0	0
5	3	0,02	5,94	9	0	0	3,142	3,142	0	0	0	0
6	4	0,03	9	12,06	0	0	3,142	3,142	0	0	0	0
7	5	0,04	12,06	14,94	0	0	3,142	3,142	0	0	0	0
8	6	0,05	14,94	18	0	0	3,142	3,142	0	0	0	0



	POS	t	n_a	n_e	J2_a	J2_e	Tp_a	Tp_e	Fa_a	Fa_e	Fr_a	Fr_e
		s	U/min	U/min	kgcm	kgcm	Nm	Nm	N	N	N	N
▶	1	0	0	3,06	0	0	3,14	3,14	0	0	0	0
	2	0,01	3,06	5,94	0	0	3,14	3,14	0	0	0	0
	3	0,02	5,94	9	0	0	3,14	3,14	0	0	0	0
	4	0,03	9	12,1	0	0	3,14	3,14	0	0	0	0
	5	0,04	12,1	14,9	0	0	3,14	3,14	0	0	0	0

NCP ® 4.2 Features in detail

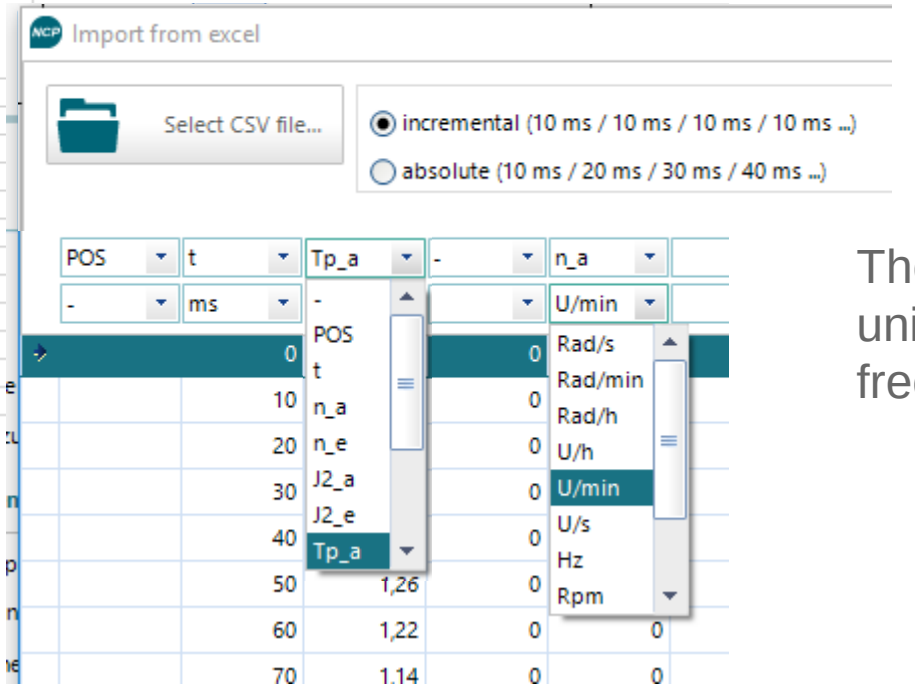
CL

Custom load input – data import

NCP 4.2

No complex preparation of the data is necessary.

	A	B	C	D	E	F	G
1	Messung am Motor mit Last 65 kg						
2							
3		Zeit [ms]	Drehmoment [Nm]	Speed Messwert Signal	Drehzahl Motor [rpm]		
4		0	1,136304	0	0		
5		10	1,19808	0	0		
6		20	1,257984	0	0		
7		30	1,257984	0	0		
8		40	1,257984	0	0		
9		50	1,262664	0	0		
10		60	1,223352	0	0		
11		70	1,136304	0	0		
12		80	1,0764	0	0		
13		90	1,026792	0	0		
14		100	0,981864	2	145		
15		110	0,96408	2	145		



The columns and units can be freely assigned.

NCP ® 4.2 Features in detail

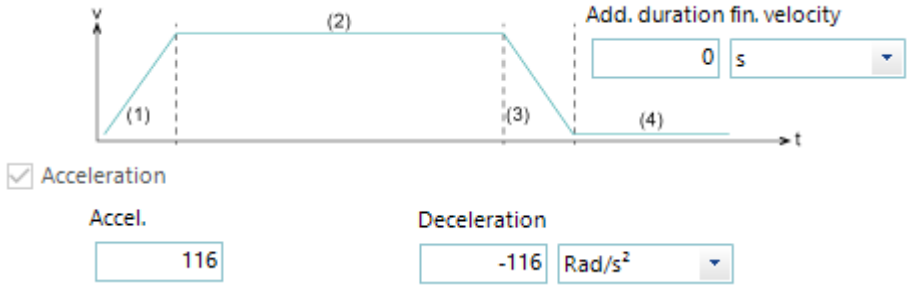
CL

Custom load input – define duration of acceleration

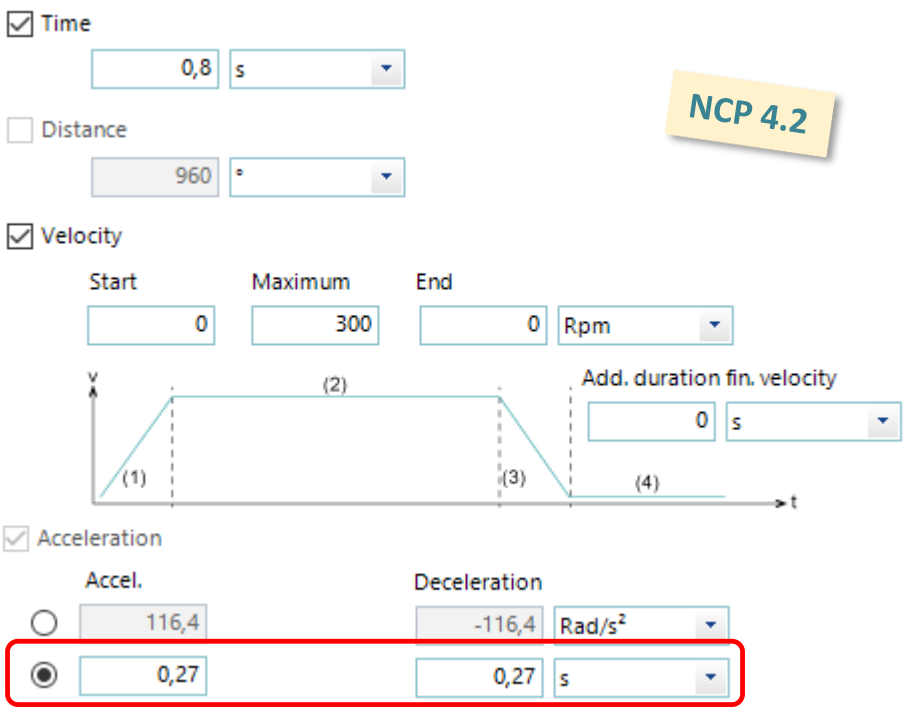
In a movement you can now specify the time in which acceleration is to take place.

Until now, the acceleration value had to be specified concretely.

NCP 4.1



NCP 4.2



NCP ® 4.2 Features in detail

CL

Custom load input: showing cumulated time

Showing the cumulated time of the complete cycle

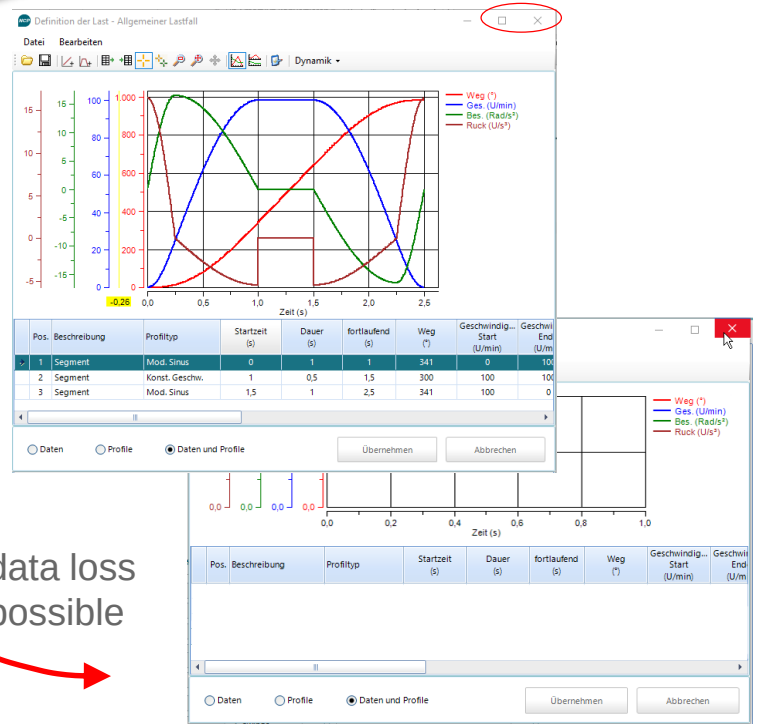
	Pos.	Description	Profile type	Start time (s)	Period (s)	cumulated (s)
→	1	Motion control	Linear	0	0,5	0,5
				0,5	0,5	1
				1	0,5	1,5
				1,5	0	1,5
	2	Motion control	Linear	1,5	0,5	2
				2	0,5	2,5
				2,5	0,5	3

NCP ® 4.2 Features in detail

CL

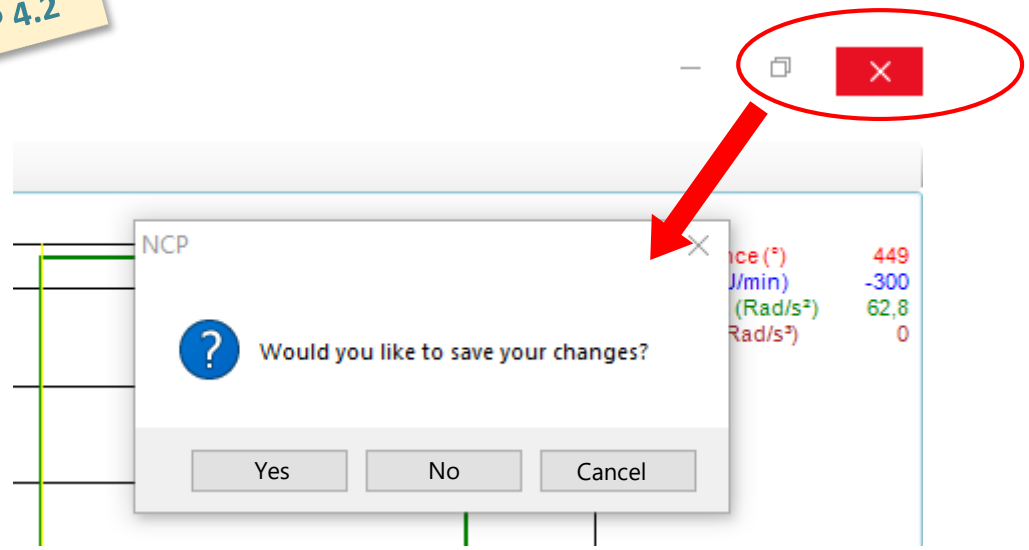
Custom load input – message concerning saving

NCP 4.1



data loss possible

NCP 4.2

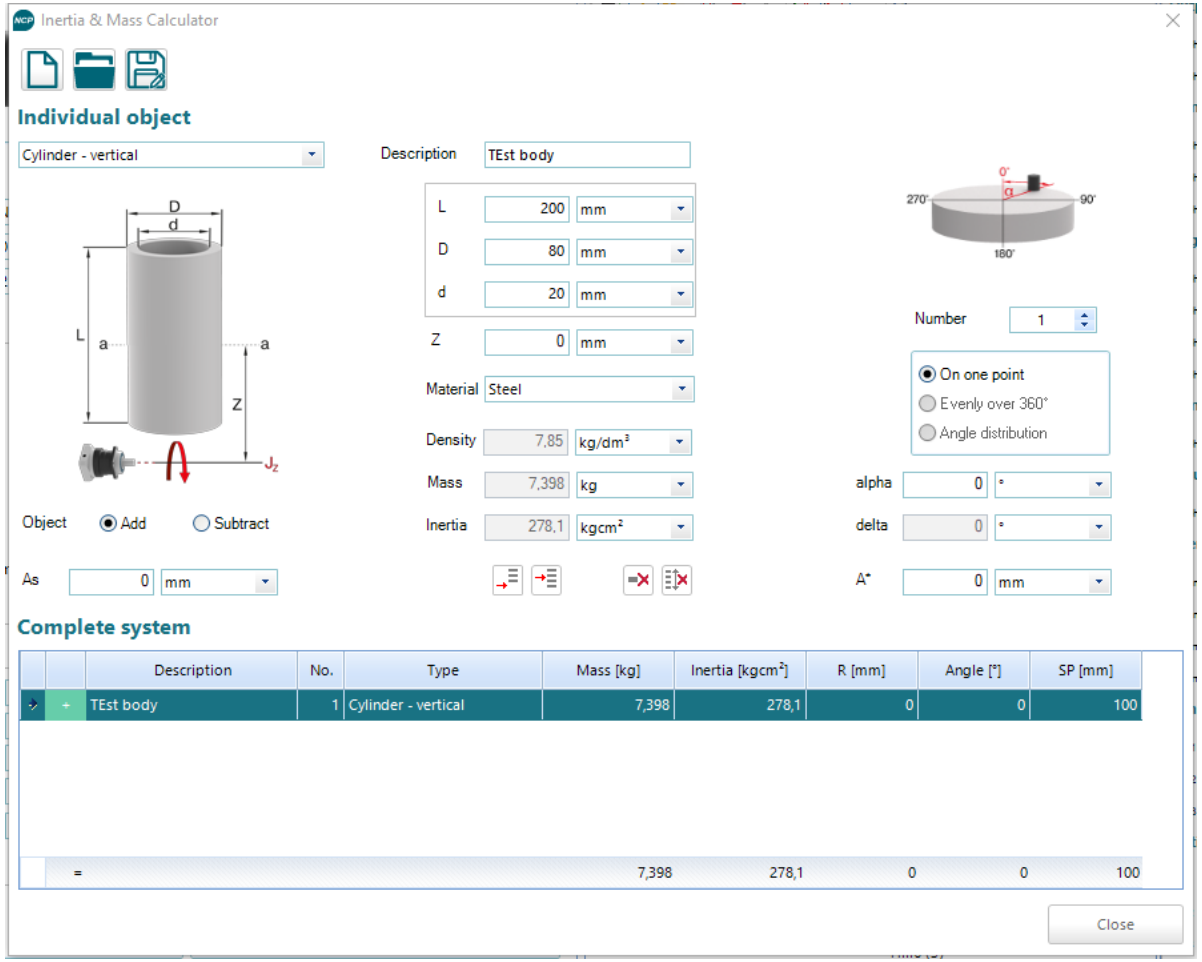


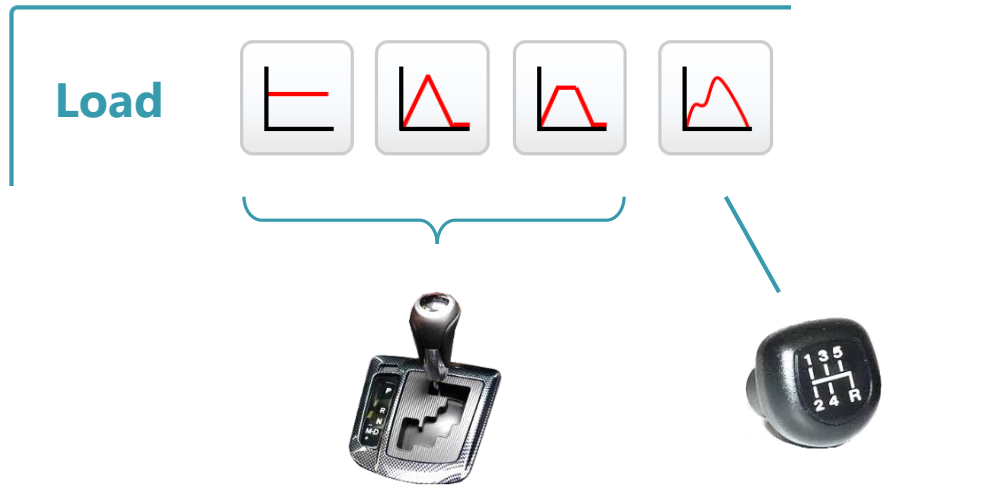
Closing the custom load input editor gives a message concerning saving the changes.

NCP ® 4.2 Features in detail

MC

Mass inertia calculator – saving body in drive train





Previously, only the result was saved in NCP. Now the corresponding body is also stored, so that it can be traced how the mass inertia was calculated. In custom load, the body must still be saved manually.

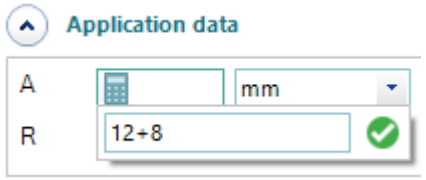
NCP ® 4.2 Features in detail

I Overall improvements

Calculator in input fields

It‘ s possible to do calculations within the input fields.

This can be done by clicking on the calculator icon or with the key F2.



Operations which can be done

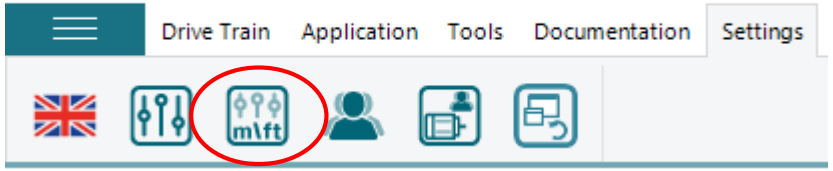
operation	character to use	example
addition	+	5 + 32
subtraction	-	120 – 23
multiplication	*	5 * 23
division	/	120 / 23
brackets	()	(3 + 2) / 2
Power	Pow(x;y) *	Pow(3;2) ≙ 3^2

* Note: it‘ s case-sensitive

NCP ® 4.2 Features in detail

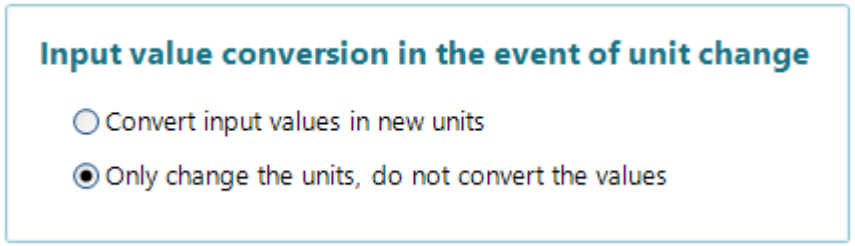
I Overall Improvemments

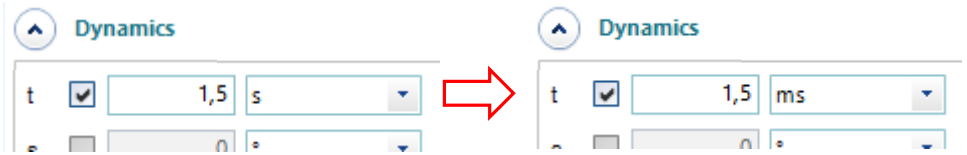
Conversion of input data



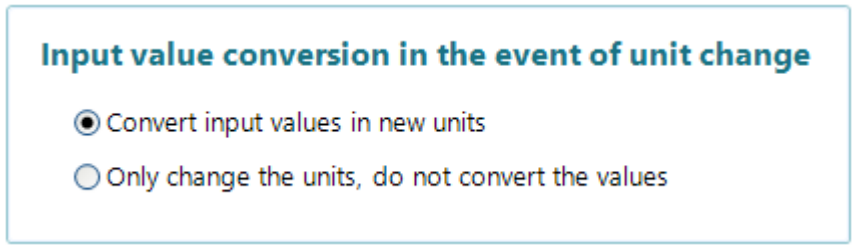
You can set whether the input values are to be converted to the new unit after changing the unit or whether they are to remain unchanged.

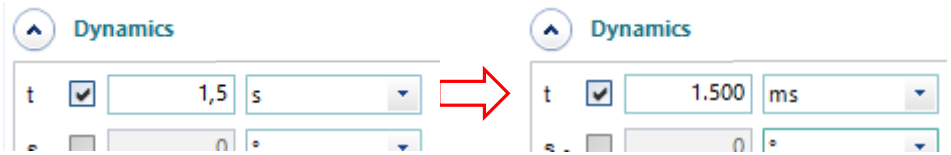
a)





b)





NCP ® 4.2 Features in detail

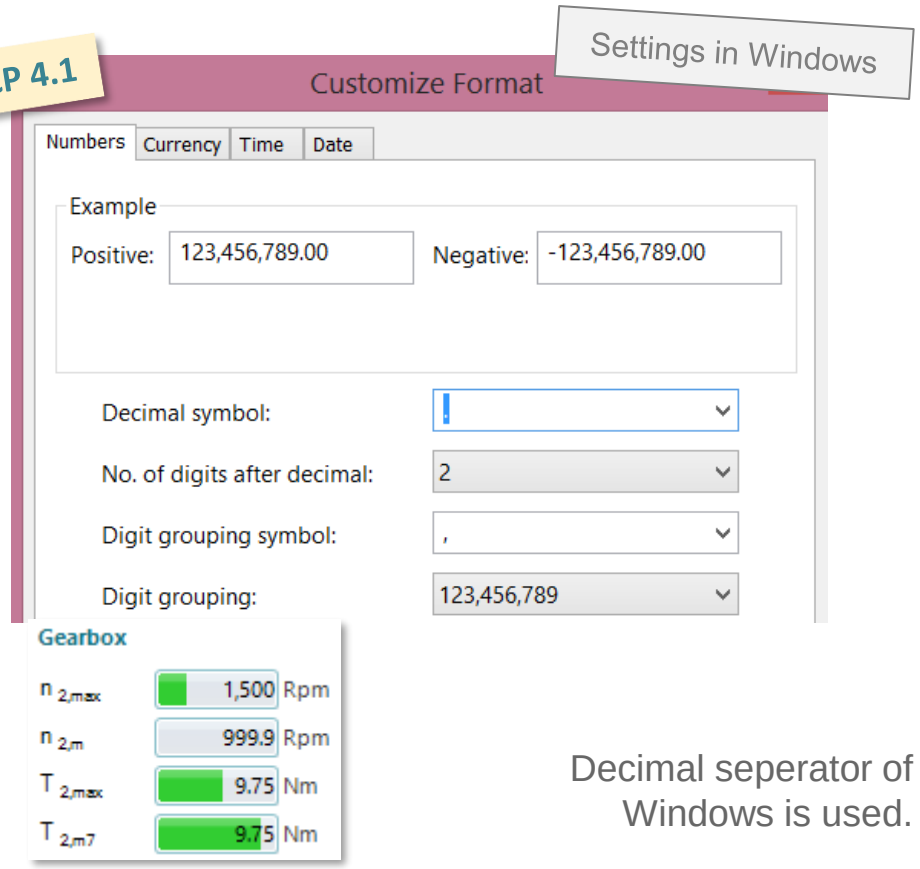
Overall improvements

I

Decimal sepearator

NCP 4.1

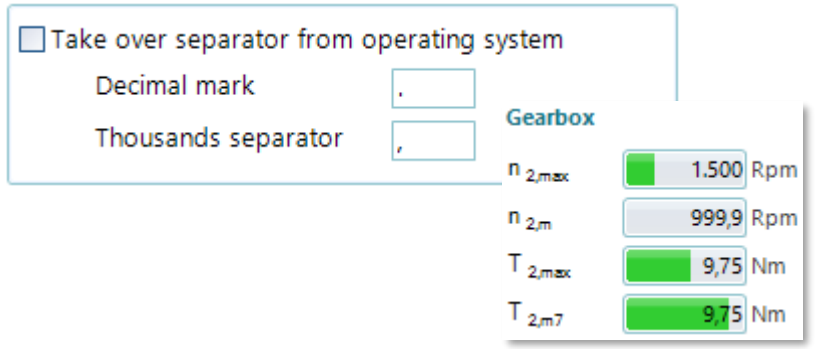
Settings in Windows



Decimal seperator of Windows is used.

NCP 4.2

The decimal seperator can be set up. NCP is no more limitted by the system settings of Windows.



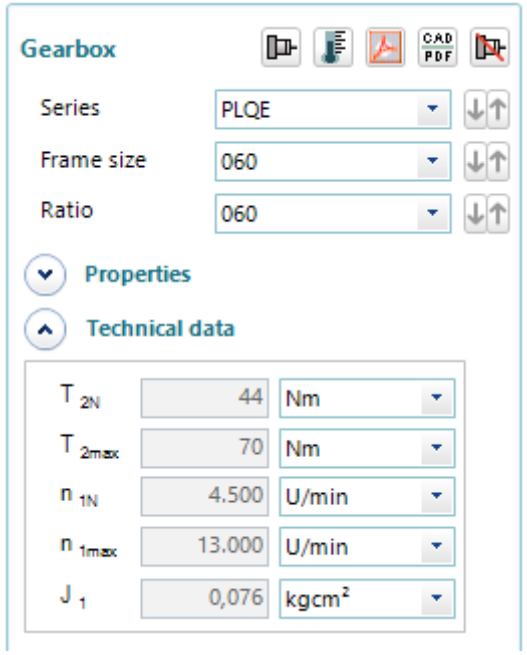
However, designer engineers often work with CAD software in which the separator is the point "."

NCP ® 4.2 Features in detail

I Overall improvements

Showing number of gearbox stages

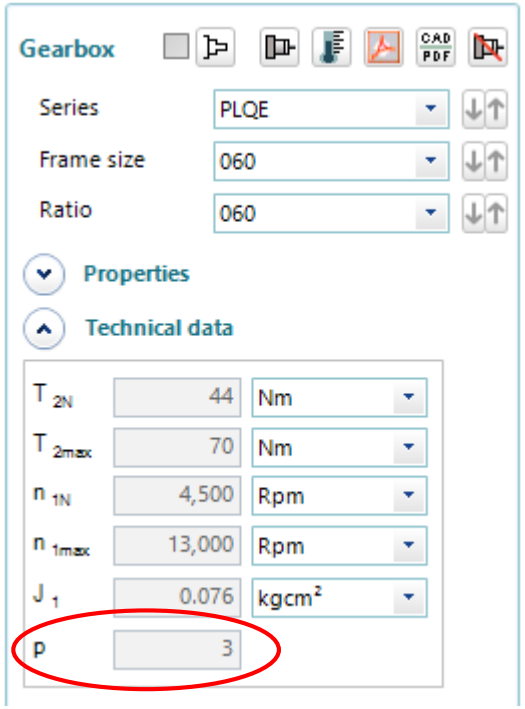
NCP 4.1



This was a wish of many users.

Example:
PLQE060-064: p = 2
PLQE060-060: p = 3

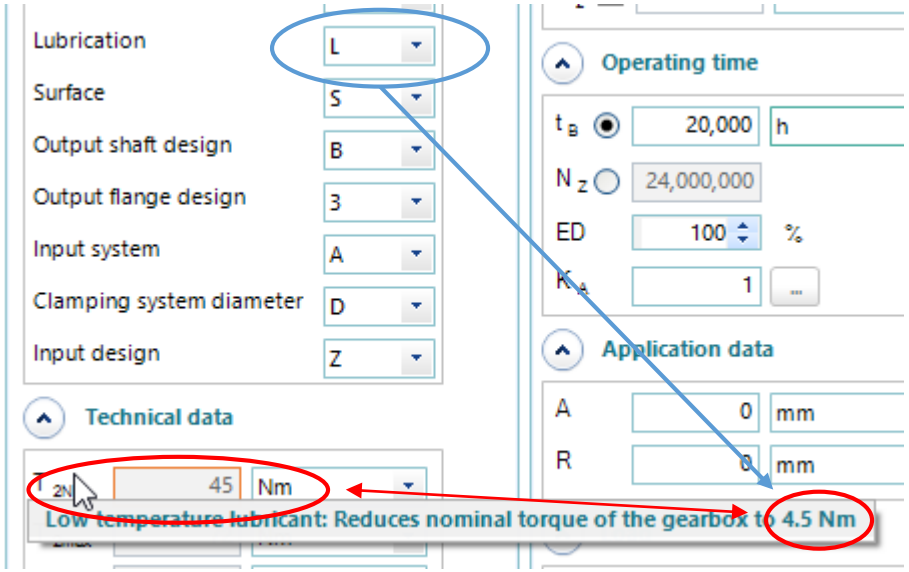
NCP 4.2



NCP ® 4.2 Features in detail

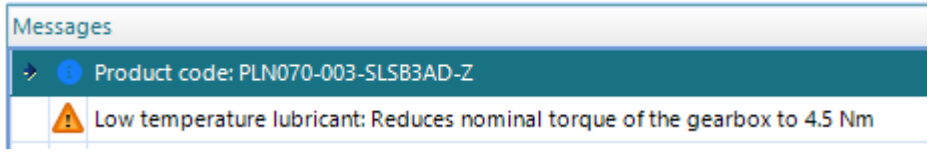
I Overall improvements

Deep temperature lubrication



If the gearbox uses deep temperature lubrication the nominal torque can be limitted. This is better visualized in 4.2:

- Additional frame to the nominal torque
- Tooltip at T_{2N}
- Like in 4.1: message in the lower area

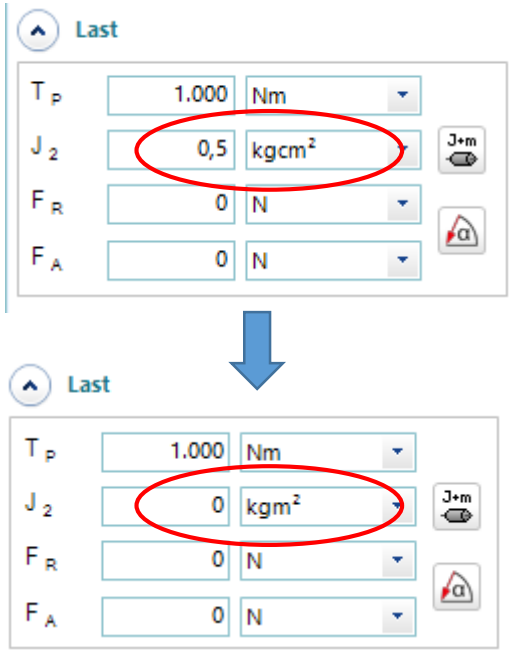


NCP ® 4.2 Features in detail

I Overall improvements

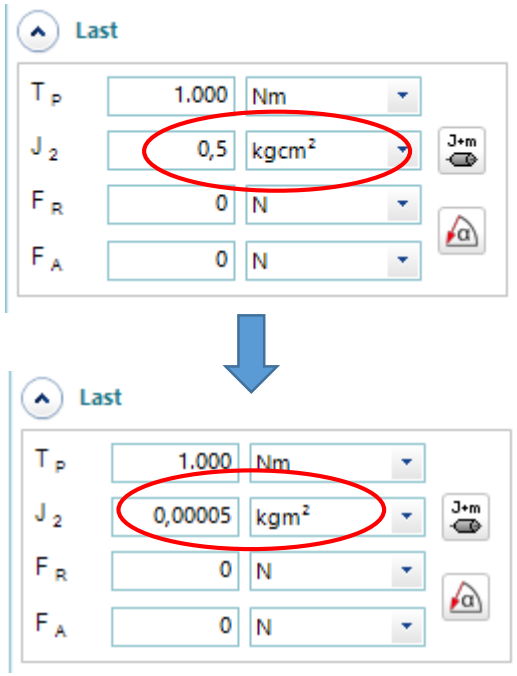
Decimal place, rounding function

NCP 4.1



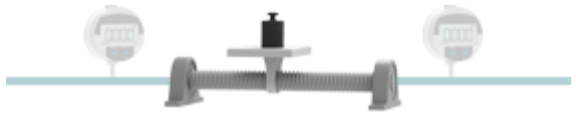
The rounding function in 4.1 sometimes results in an adverse display: 0,00005 is shown as „0“. Nevertheless NCP is calculating with the correct value.

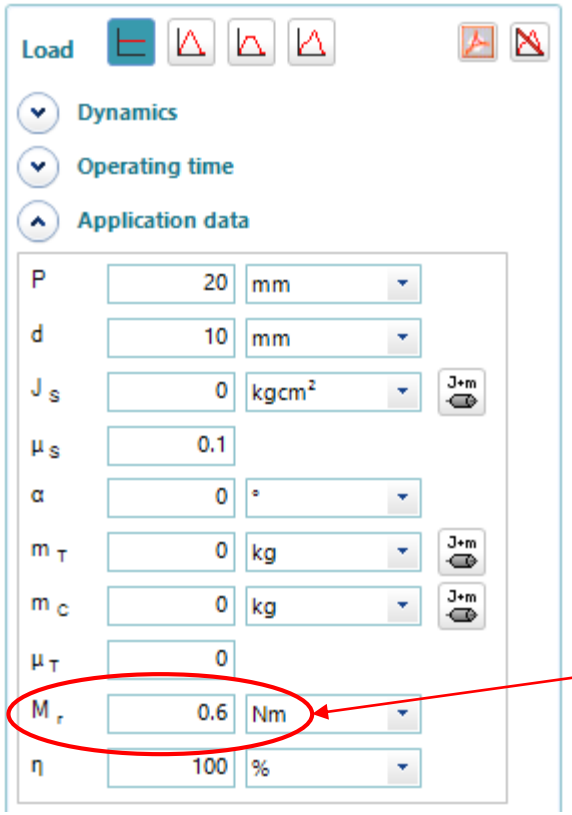
NCP 4.2



Depending on the decimal place NCP shows the correct value.

NCP ® 4.2 Features in detail





A Spindle application

Friction torque

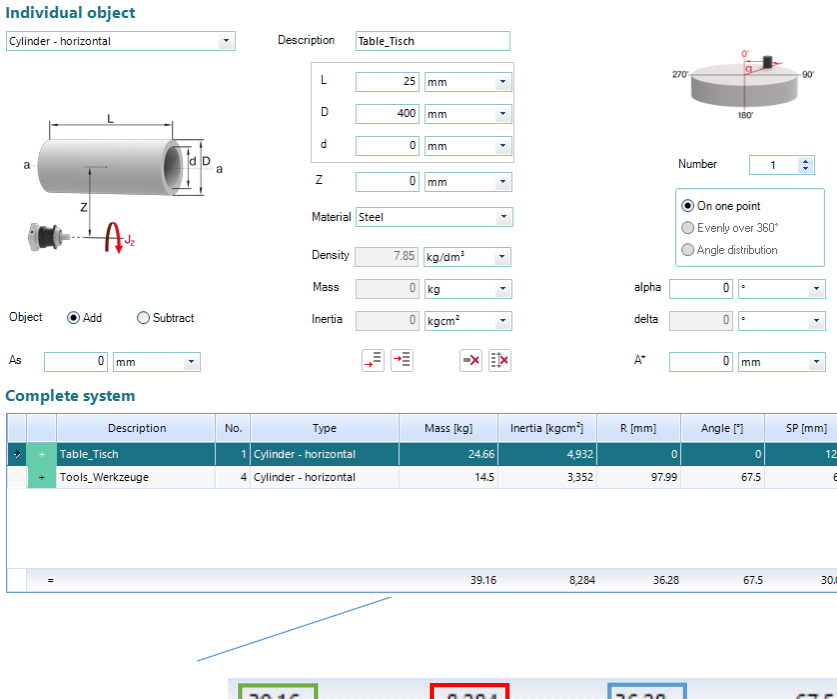
Various manufacturers show the friction torque of their spindles. It is now possible to consider that in NCP.

No-load torque

[Nm]

Type	with ball bearing	with slide bearing
EP 18	0.30	*
EP 30	0.60	0.75
EP 40	0.70	0.85
EP 50	1.10	1.25
EP 60	1.40	*
EP 80	1.00	*

NCP ® 4.2 Features in detail

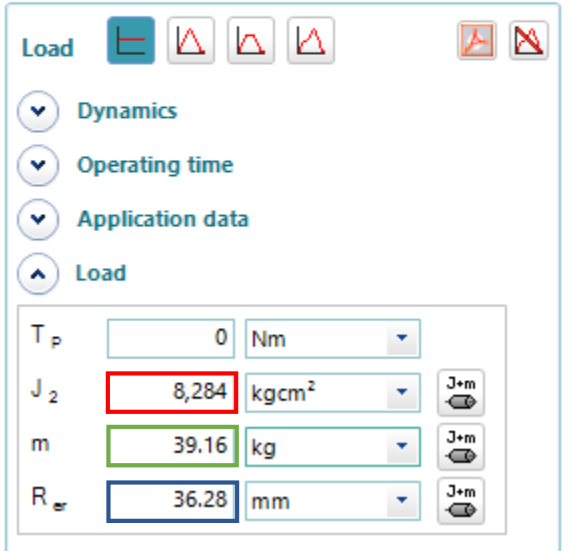


All necessary results are transferred to the corresponding fields on the main screen.

A

Rotary table application

Transfer of mass inertia calculator values



NCP ® 4.2 Features in detail

NCP 4.1

7.2 Gearbox

Description	Symbol	Value	Unit	Load capacity
Max. output speed	$n_{2,max}$	100	U/min	2%
Average output speed	$n_{2,m}$	66,7	U/min	
Maximum output torque	$T_{2,max}$	1,74	Nm	10%
Average output torque (^7)	$T_{2,m7}$	1,57	Nm	14%
Max. radial force	$F_{R,max}$	156	N	
Average radial force	$F_{R,m}$	133	N	
Max. axial force	F_{Amax}	384	N	
Average axial force	F_{Am}	384	N	
Bearing service life	L_{10h}	122.180	h	16%
Dynamic shaft safety factor	S_d	1,35	-	89%
Static shaft safety factor	S_f	3,61	-	33%
Feather key safety factor	S_p	13,3	-	11%
Thermal capacity	°C	25	-	4%

D

Documentation

Visualization of work load

NCP 4.2

	Symbol	Value	Unit	Load capacity
	$n_{2,max}$	100	Rpm	2%
	$n_{2,m}$	66.66	Rpm	
	$T_{2,max}$	1.735	Nm	10%
	$T_{2,m7}$	1.571	Nm	14%
	$F_{R,max}$	155.8	N	
	$F_{R,m}$	133.2	N	
Max. axial force	F_{Amax}	384.2	N	
Average axial force	F_{Am}	384.2	N	
Bearing service life	L_{10h}	122,180	h	16%
Dynamic shaft safety factor	S_d	1.349	-	89%
Static shaft safety factor	S_f	3.614	-	33%
Feather key safety factor	S_p	12.74	-	12%
Thermal capacity	°C	25	-	4%

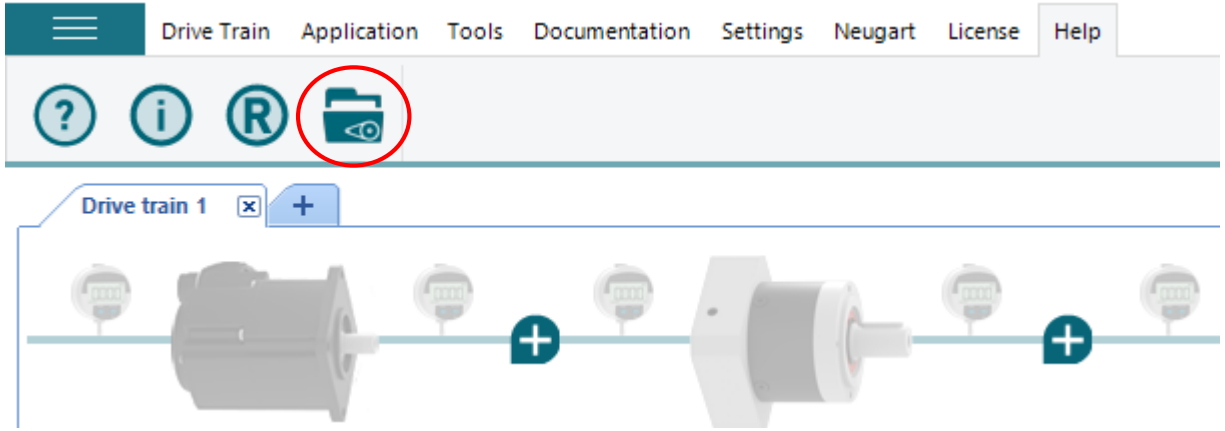
The results are highlighted with color bars.

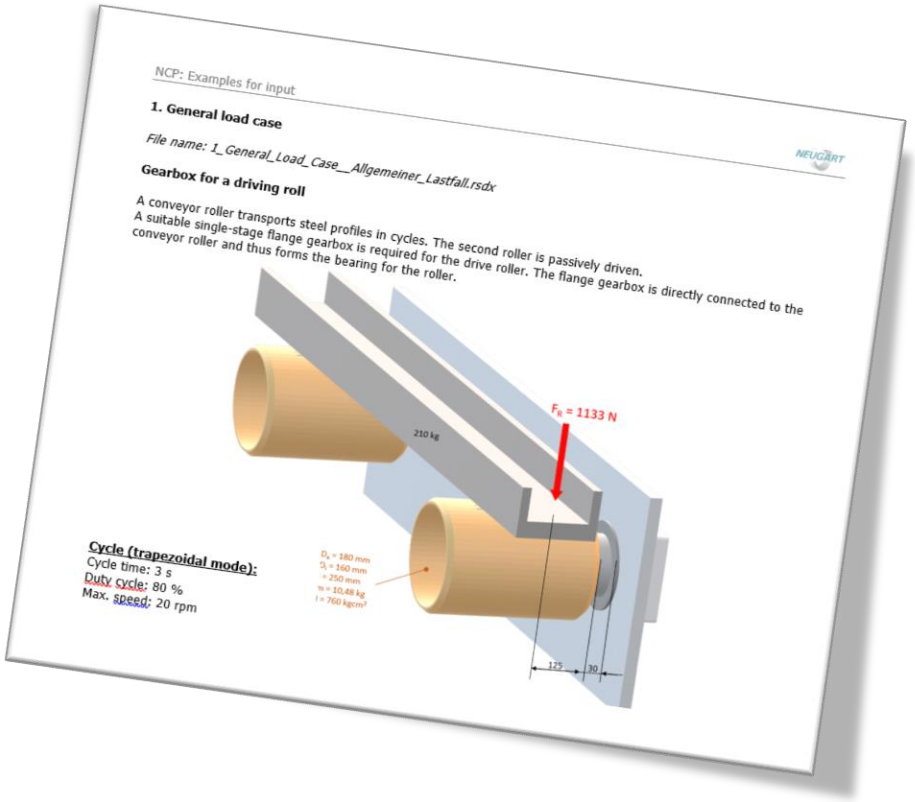
NCP ® 4.2 Features in detail

H Help

Examples of applications

A folder with examples is integrated.
There is one example with solution for each application.

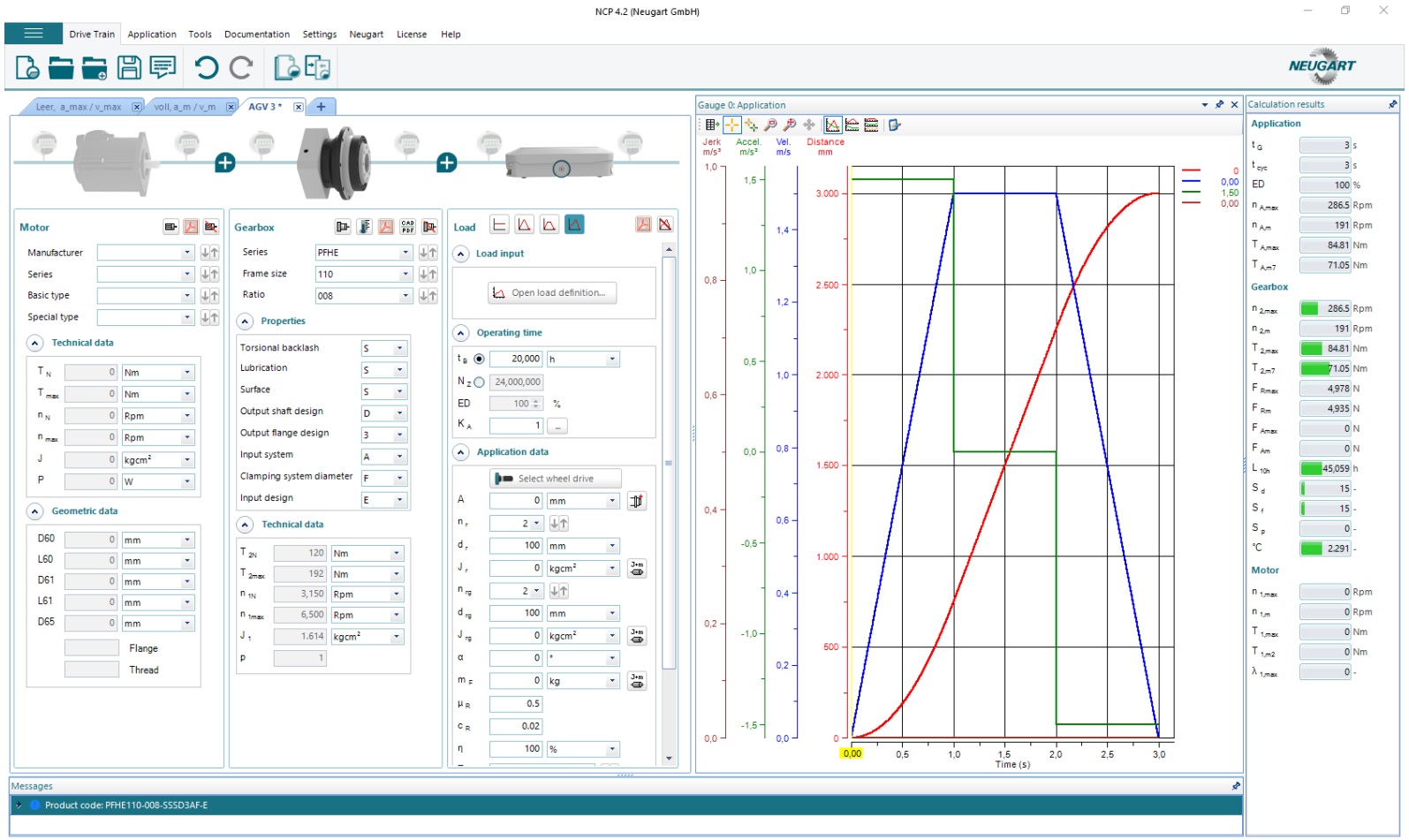




NCP ® 4.2 Features in detail

AGV

New application: traction drive



NCP ® 4.2 Features in detail

AGV

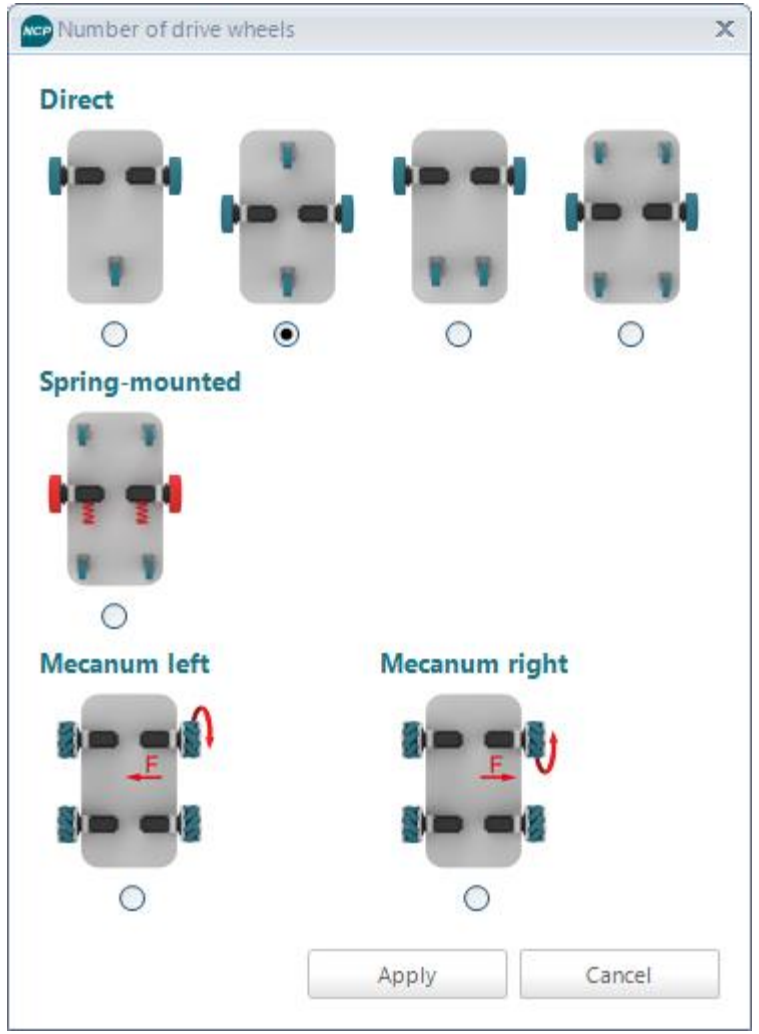
New application: traction drive

Application data

	Select wheel drive	
A	0	mm
n_r	2	
d_r	100	mm
J_r	0	kgcm²
n_{rg}	2	
d_{rg}	100	mm
J_{rg}	0	kgcm²
α	0	°
m_F	0	kg
μ_R	0.5	
c_R	0.02	
η	100	%
Typ	Direct	
F_f	0	N

Load

m	0	kg
F_P	0	N
F_Z	0	N



Thanks for using