



UNIVERZITET U NOVOM SADU

FAKULTET TEHNIČKIH NAUKA



Nastavni predmet:

INTEGRISANI CAPP SISTEMI I TEHNOLOŠKA BAZA PODATAKA

Vežba br 5b:

Automatizacija izbora alata i režima obrade – Kennametal Hertel

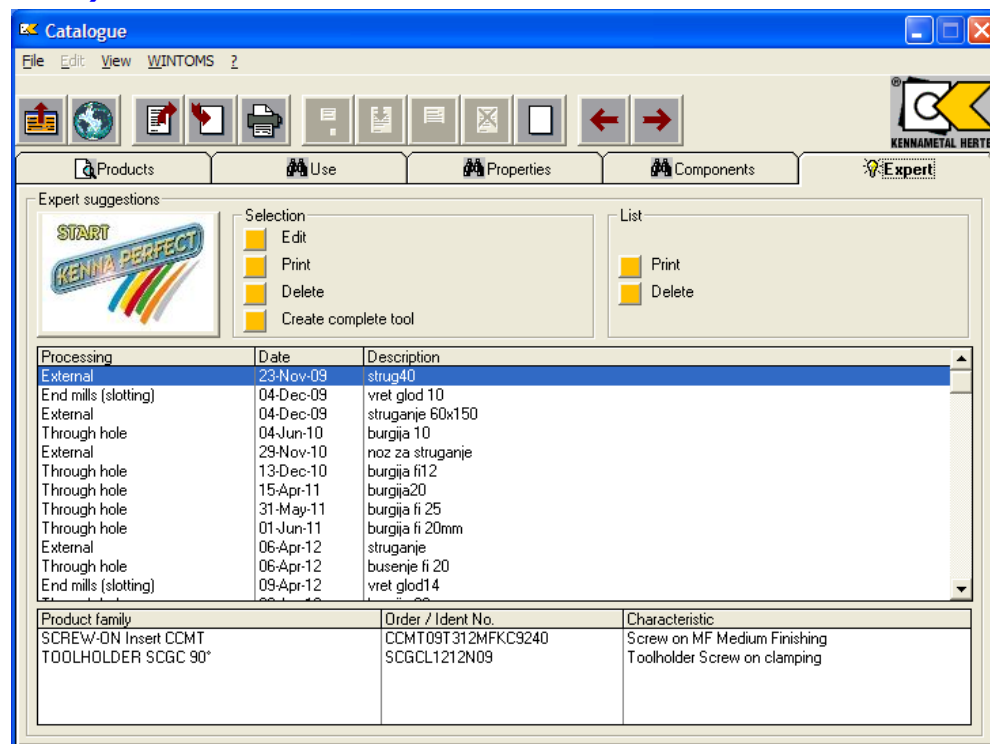
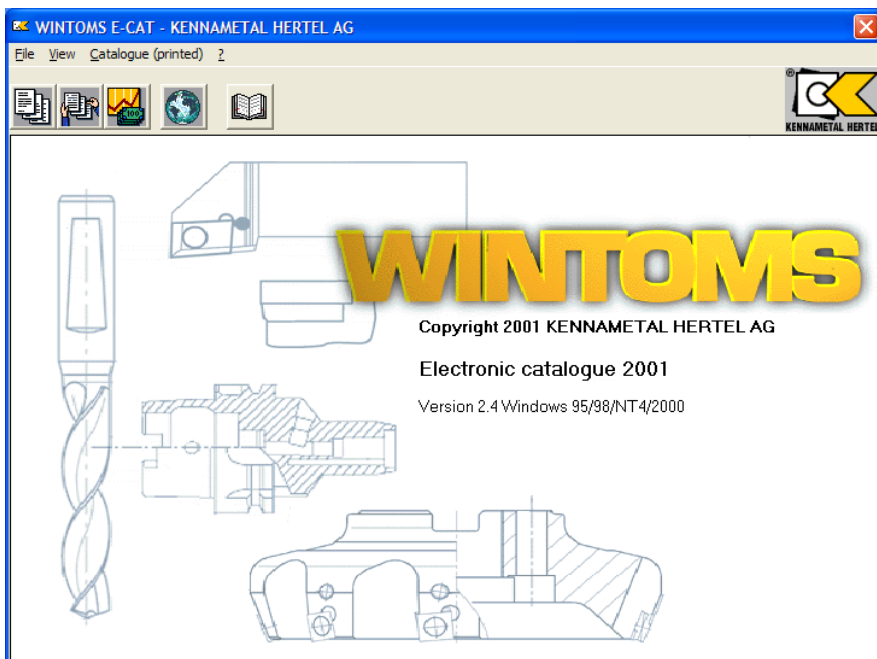
Profesor: dr Dejan Lukić

Predmetni asistent: Dejan Božić

Ekspertni sistem za automatizovan izbor alata i režima

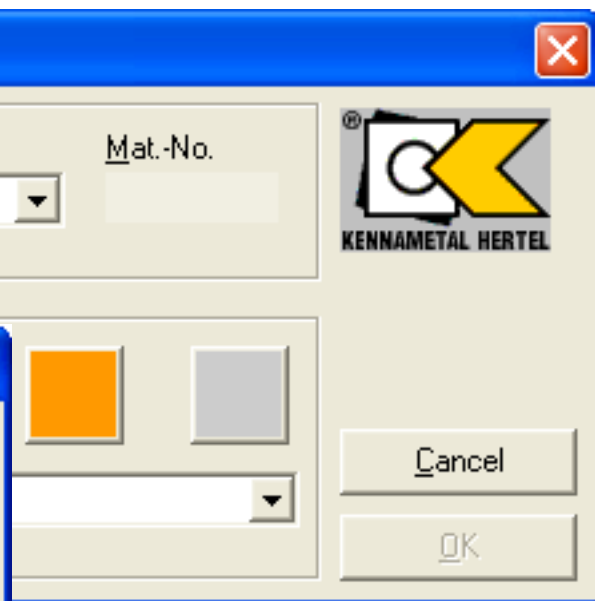
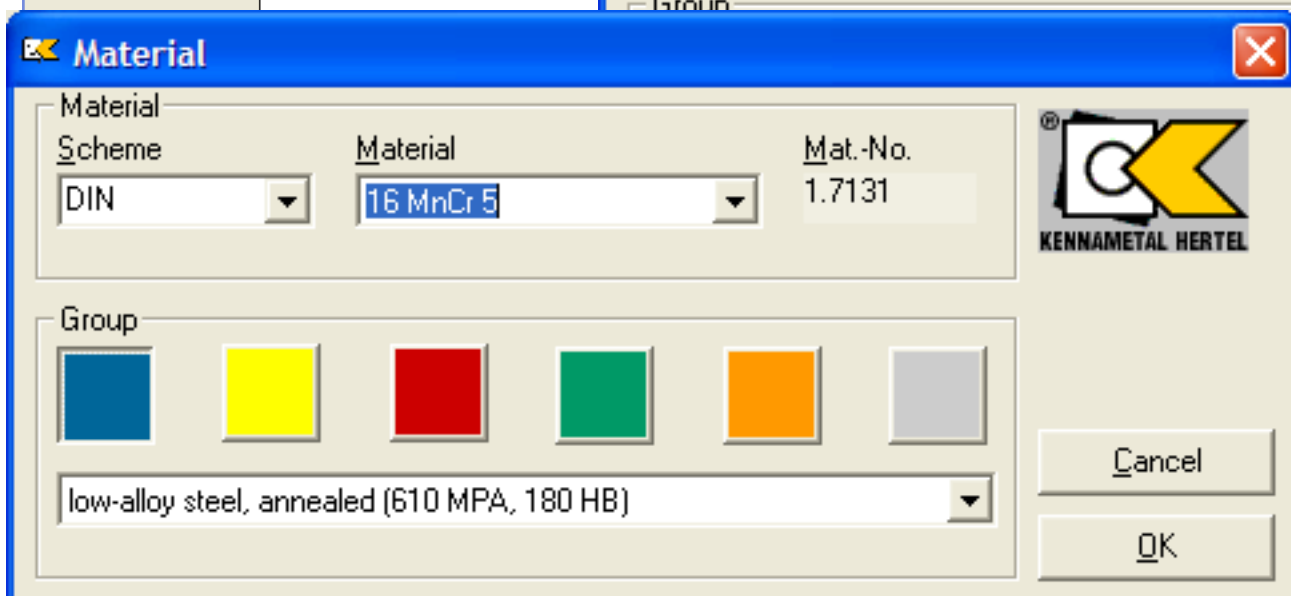
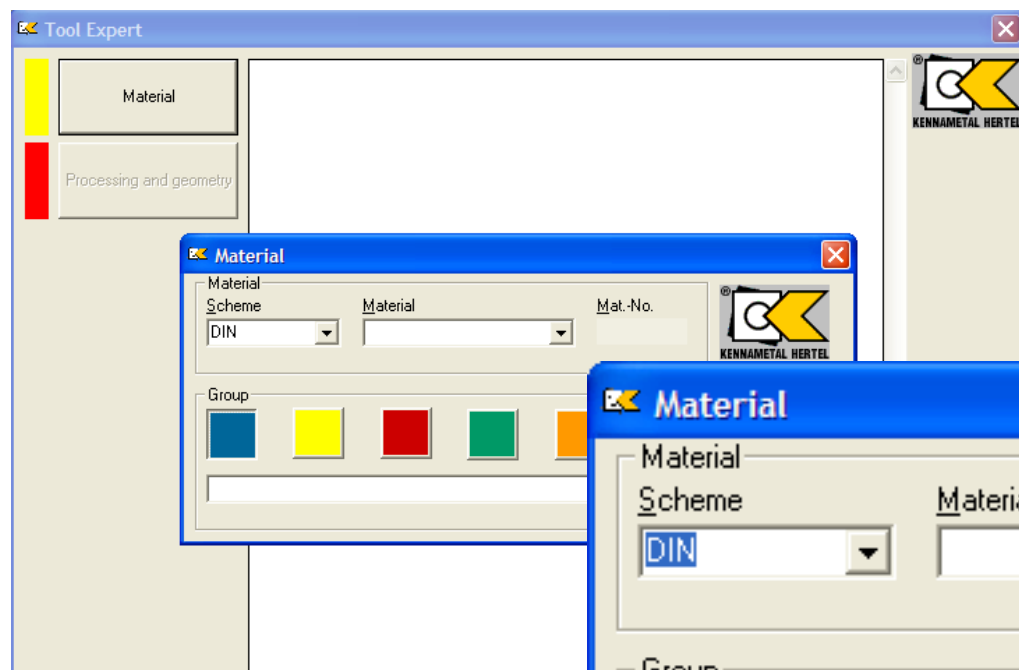
U okviru ovog expertskog sistema (Kenna Perfect) izbor alata i režima obrade se vrši prema odgovarajućoj proceduri :

- 1. Izbor materijala radnog predmeta,***
- 2. Izbor vrste procesa i zahvata obrade***
- 3. Izbor vrste obradnog sistema***
- 4. Izbor alata – reznog modula***
- 5. Izbor rezne pločice (ako je predviđena)***
- 6. Izbor režima obrade***



1. Izbor materijala radnog predmeta

Prvo izbor standarda – pa onda izbor materijala prema oznaci u standardu



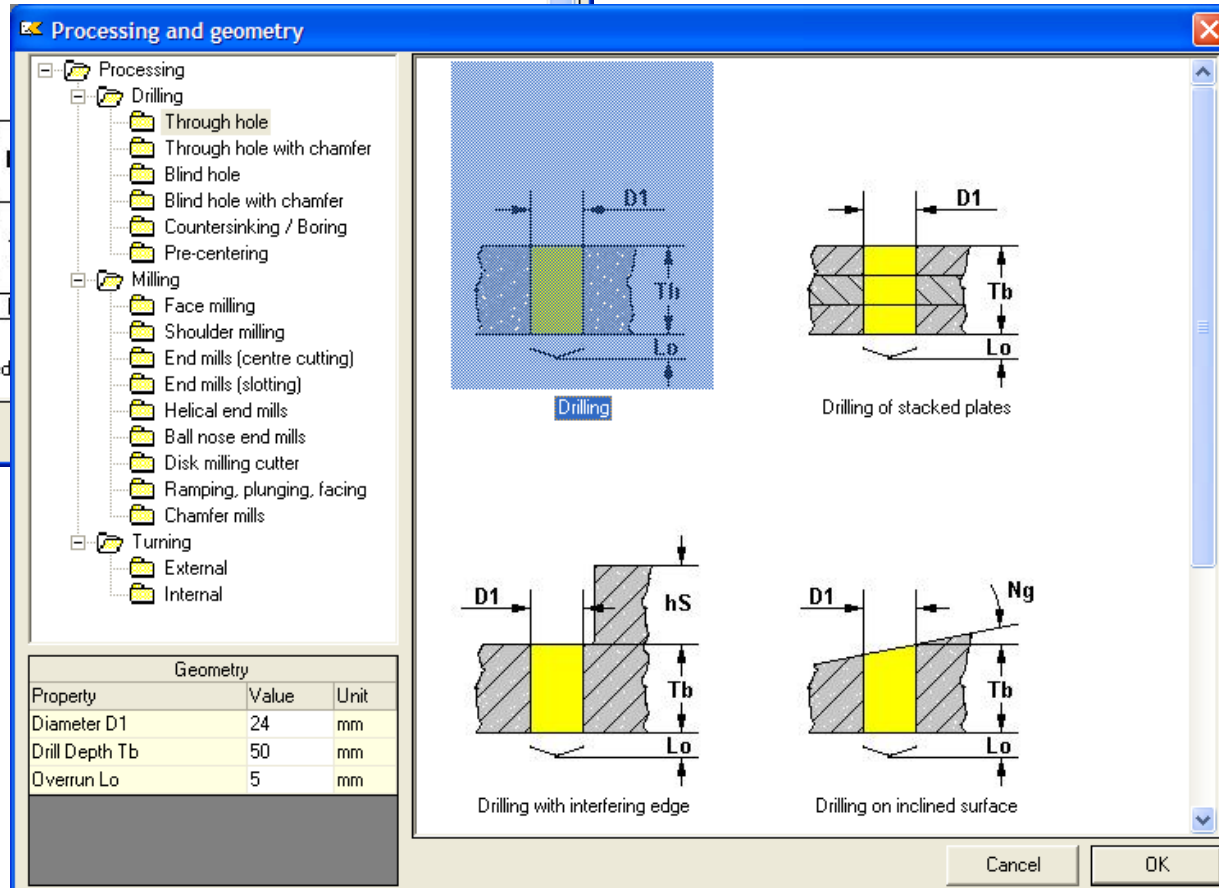
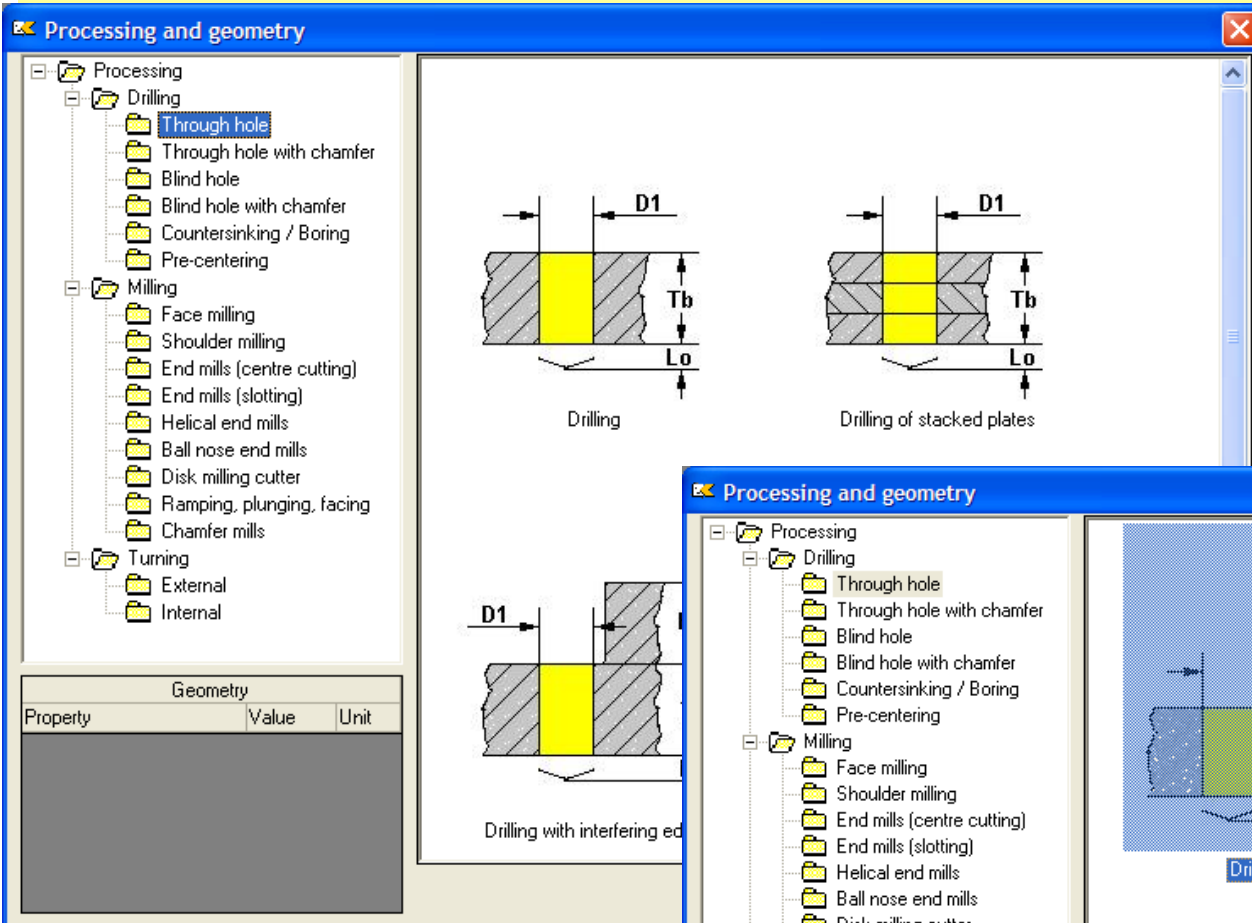
ili Izbor grupe materijala, pa karakteristika materijala (vrsta materijala, zatezna čvrstoća, tvrdoća)

The screenshot shows the 'Tool Expert' software window. On the left, there are two tabs: 'Material' (highlighted with a yellow bar) and 'Processing and geometry' (highlighted with a red bar). The main area of the window is currently empty. Overlaid on this is a 'Material' dialog box. The dialog box has a title bar with the 'KENNAMETAL HERTEL' logo. Inside, there are three input fields: 'Scheme' (set to 'DIN'), 'Material' (empty), and 'Mat.-No.' (empty). Below these is a 'Group' section with six colored squares: blue, yellow, red, green, orange, and grey. The yellow square is selected. Below the squares is a list box containing the following items:

Group	Description
01.1	plain steel, annealed, long-chipping (420 MPA, 125HB)
01.2	plain steel, short-chipping (420 MPA)
02.1	plain steel, annealed, long-chipping (640 MPA, 190 HB)
02.2	plain steel, short-chipping (640 MPA)
03	plain steel, tempered (850 MPA, 250 HB)
04	plain steel, annealed (915 MPA, 270 HB)
05	plain steel, tempered (1020 MPA, 300 HB)
06	low-alloy steel, annealed (610 MPA, 180 HB)
07	low-alloy steel, tempered (930 MPA, 275HB)
08	low-alloy steel, tempered (1020 MPA, 300 HB)

At the bottom of the dialog box, there is a 'Description' field which is currently empty. The dialog box has 'Cancel' and 'OK' buttons. The main window also has 'Cancel' and 'OK' buttons at the bottom right.

2. Izbor vrste procesa (struganje,glodanje,bušenje) i odgovarajućeg zahvata



3. Izbor vrste obradnog sistema

Tool Expert

Material

Processing and geometry

Machine data

Tool Selection

=====
material norm = DIN
Norm value = 16 MnCr 5
Mat.-No. = 1.7131
Material = 06
=====
Processing and geometry
Processing Mode = Through hole
Profile = Drilling
Diameter D1 [mm] = 24
Drill Depth Tb [mm] = 50
Overrun Lo [mm] = 5
=====

Description



Tool Expert

Material

Processing and geometry

Machine data

Tool Selection

=====
material norm = DIN
Norm value = 16 MnCr 5
Mat.-No. = 1.7131
=====

Machine data

Machine

Machining Centre Lathe

Spin

Stability

Cancel

OK

Description



4. Izbor alata – reznog modula i uslova obrade

Tool Selection

Conditions

Cooling

quality

standard only

with semi standard

found 9

KENNA PERFECT KENNA UNIVERSAL All

All WP VHM KSEM

Product family

- METRIC DFR DRILL BODY
- KSEM INSERT BLADE HPM
- METRIC DRILL-FIX DRILL BODY, LH
- KSEM INSERT BLADE GDM
- KM KIND DRILL-FIX
- METRIC HTS-C DRILL BODY

Photo

Order No. Characteristic

DFT240R2WD40M	D1=24.0 ca.2.5xD
DFT240R4WD32M	D1=24.0 4xD
DFT240R2WD32M	D1=24.0 ca.2.5xD

Property

- D1_AREA
- D1_MIN
- D1_MAX
- D1
- D2
- L_1
- L4
- L5
- L/D

The tool list is updated

Tool Selection

Conditions

Cooling

quality

standard only

with semi standard

found 1

KENNA PERFECT KENNA UNIVERSAL All

All WP VHM KSEM

Product family

- METRIC DFR DRILL BODY

Photo

Order No. Characteristic

DFR240R3WD32M	D1=24.0-25.0 3xD
---------------	------------------

Property Value

D1_AREA	24.0 - 25.0
D1	24.0
D2	32
L_1	104.0
L4	58.0
L5	0.5
L/D	3
T_max	72.0
SHANK	WD32

The tool list is updated

Cancel OK

5. Izbor rezne pločice

 **Insert Selection** 

alle

Product family

DFT DRILLING INSERT

Order No.

DFT030304LDKC7225

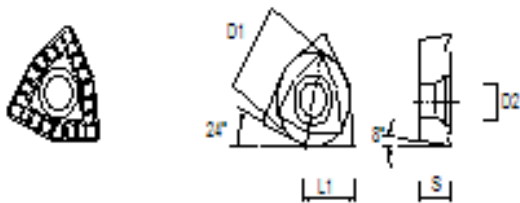
DFT030304MDKC7935

Characteristic

KC7225

KC7935

Photo



Property

Value

insert_info

DFT

L_wP

0303

grade

KC7225

D1

6.0

D2

2.6

L_1

3.97

S

3.0

R

0.4

ANGLE_EDGE

84

Alpha

8

GEOM

LD

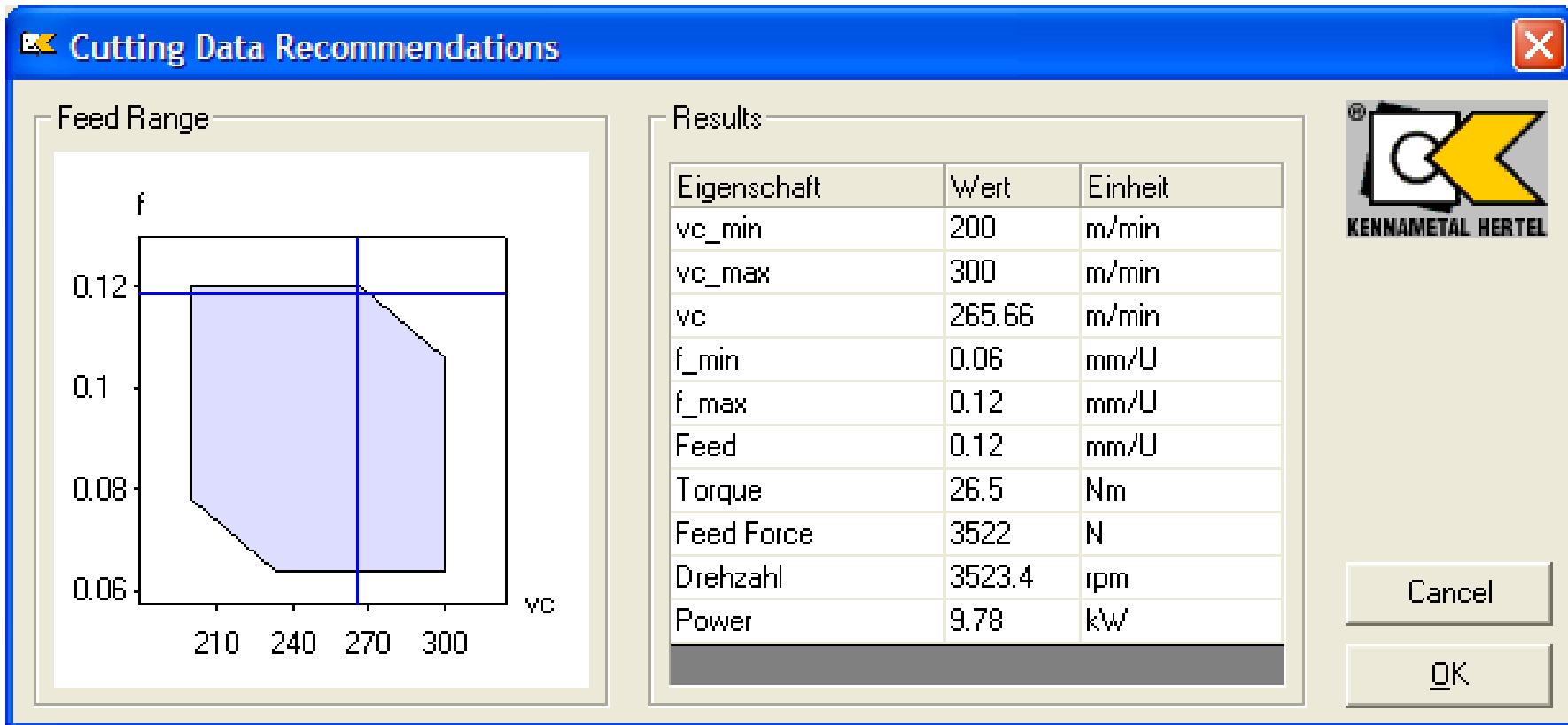

found
2

Cancel

OK

Please select the conditions

6. Izbor režima obrade



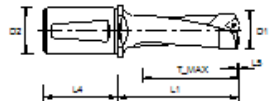
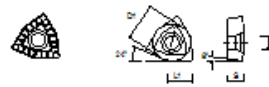
Finalni izveštaj i štampa

Tool Expert

Material	material norm = DIN Norm value = 16 MnCr 5 Mat.-No. = 1.7131 Material = 06
Processing and geometry	===== Processing and geometry ===== Processing Mode = Through hole Profile = Drilling Diameter D1 [mm] = 24 Drill Depth Tb [mm] = 50 Overrun Lo [mm] = 5
Machine data	===== Machine data ===== kind of machine = 1 Additional machine attribute [yes/no] =
Tool Selection	===== Tool Selection ===== SemiStandardTool = false Kategorie = 3 Product family = METRIC DRILL Order No. = DFT240R2WD40M
Insert Selection	===== Insert Selection ===== Product family insert = DFT DRILLIN Insert = DFT030304LD
Cutting Data Recommendations	===== Cutting Data Recommendation ===== vc_min [m/min] = 200 vc_max [m/min] = 300 vc [m/min] = 265.66 f_min [mm/U] = 0.06 f_max [mm/U] = 0.12 Feed [mm/U] = 0.12 Torque [Nm] = 26.5 Feed Force [N] = 3522 Drehzahl [rpm] = 3523.4 Power [kW] = 9.78
Description	burgija fi24

Cutting Data Recommendations

Expert suggestions 4/12/2014 2:31:43 PM

Order / Ident No.	Characteristic	Product family
DFT240R2WD40M	D1=24.0 cb 2.5xD	METRIC DRILL-FIX DRILL BODY, LH 
DFT030304LDKC7225	KC7225	DFT DRILLING INSERT 

Data Sheet burgija fi24

Property	Value	Property	Value
material norm	DIN	SemiStandardTool	0
Norm value	16 MnCr 5	Kategorie	3
Mat.-No.	1.7131	Product family	METRIC DRILL-FIX DRILL BODY, LH
Material	low-alloy steel, annealed (610 MPA, 180 HB)	Order No.	DFT240R2WD40M
Processing Mode	Through hole	Product family insert	DFT DRILLING INSERT
Profile	Drilling	Insert	DFT030304LDKC7225
Diameter D1 [mm]	24	vc_min [m/min]	200
Drill Depth Tb [mm]	50	vc_max [m/min]	300
Overrun Lo [mm]	5	vc [m/min]	265.66
kind of machine	1	f_min [mm/U]	0.06
Additional machine attribute [a:hehl]	0	f_max [mm/U]	0.12
		Feed [mm/U]	0.12