



UNIVERZITET U NOVOM SADU

FAKULTET TEHNIČKIH NAUKA



Nastavni predmet:

INTEGRISANI CAPP SISTEMI I TEHNOLOŠKA BAZA PODATAKA

Vežba br 5b:

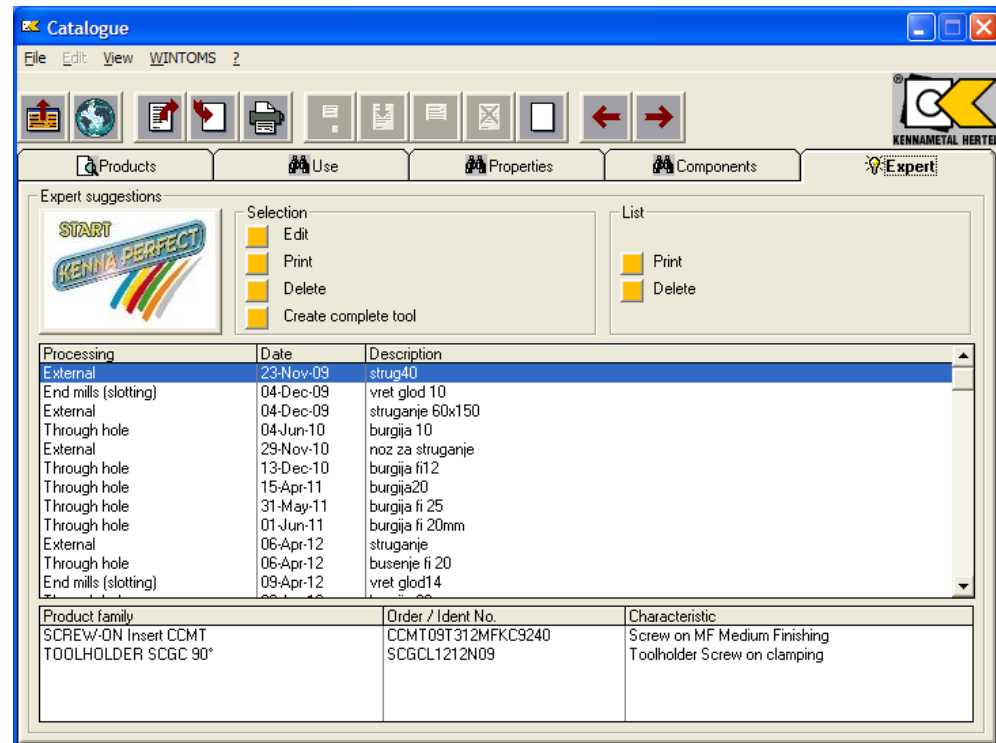
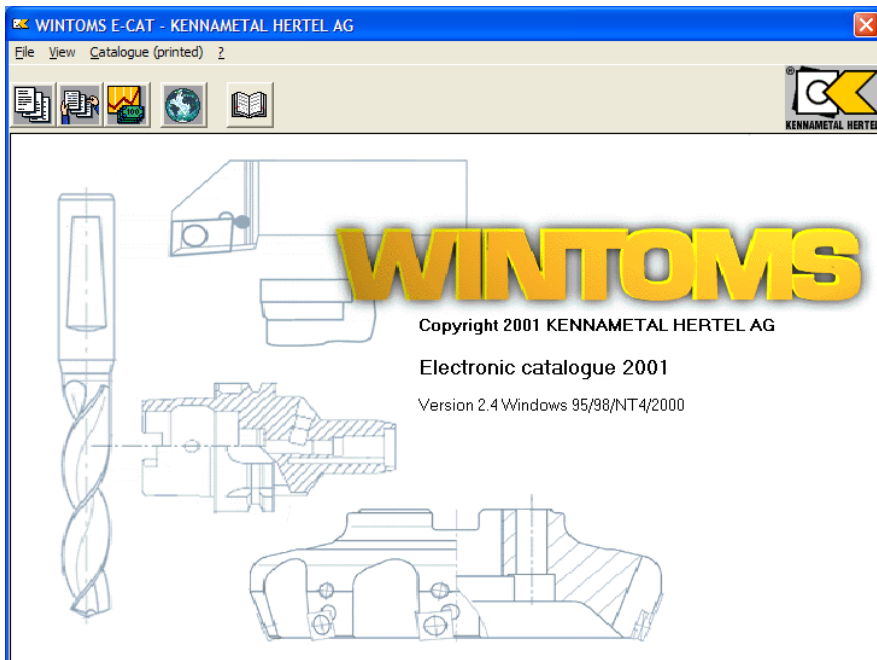
Automatizacija izbora alata i režima obrade – Kennametal Hertel

dr Dejan Lukić, vanr. prof.

Ekspertni sistem za automatizovan izbor alata i režima

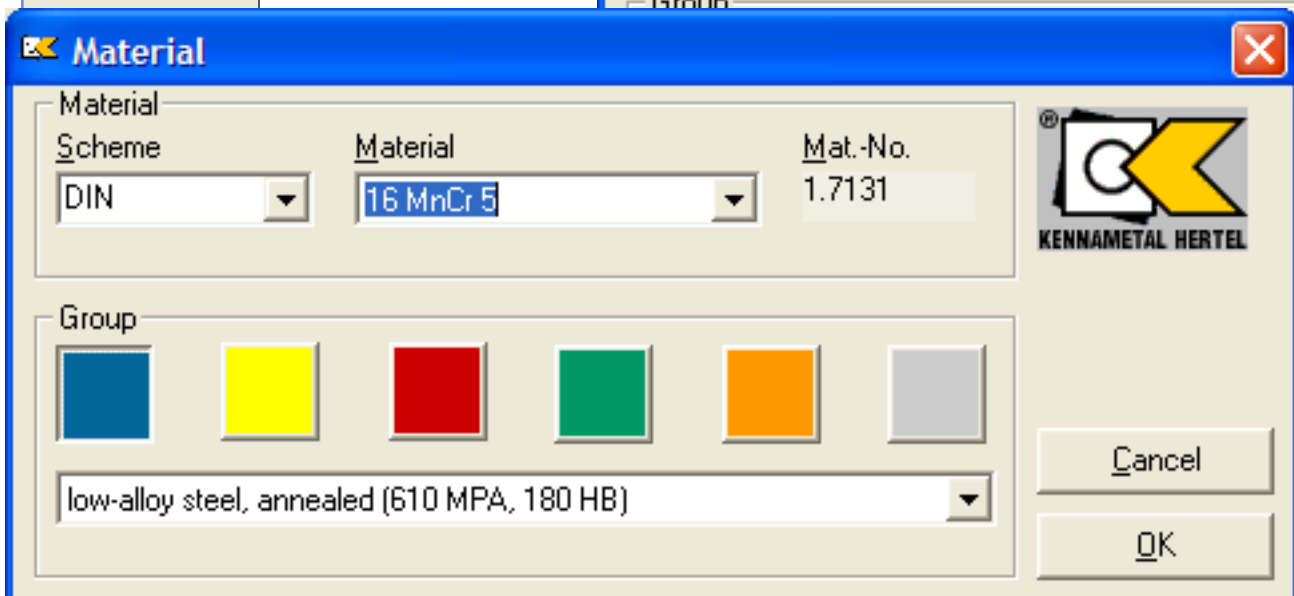
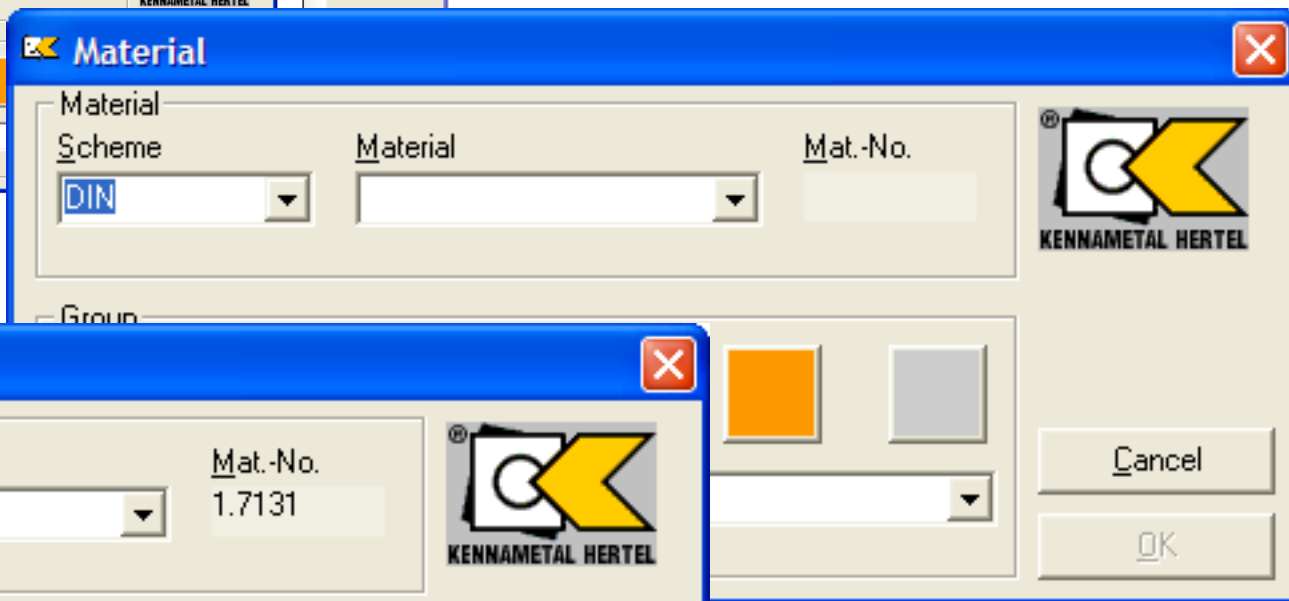
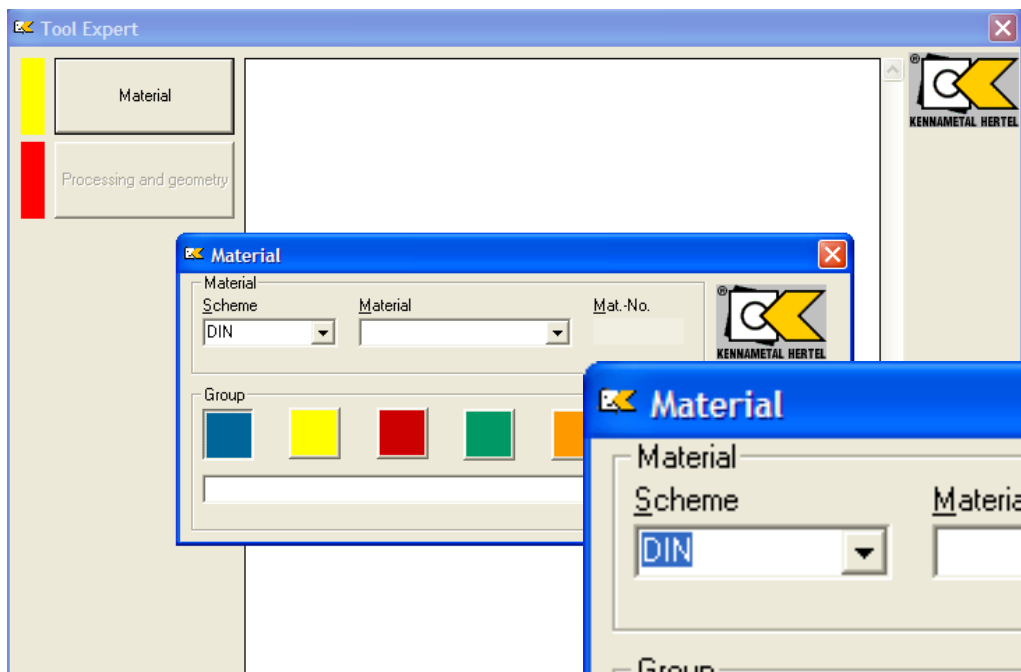
U okviru ovog expertskog sistema (Kenna Perfect) izbor alata i režima obrade se vrši prema odgovarajućoj proceduri: :

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

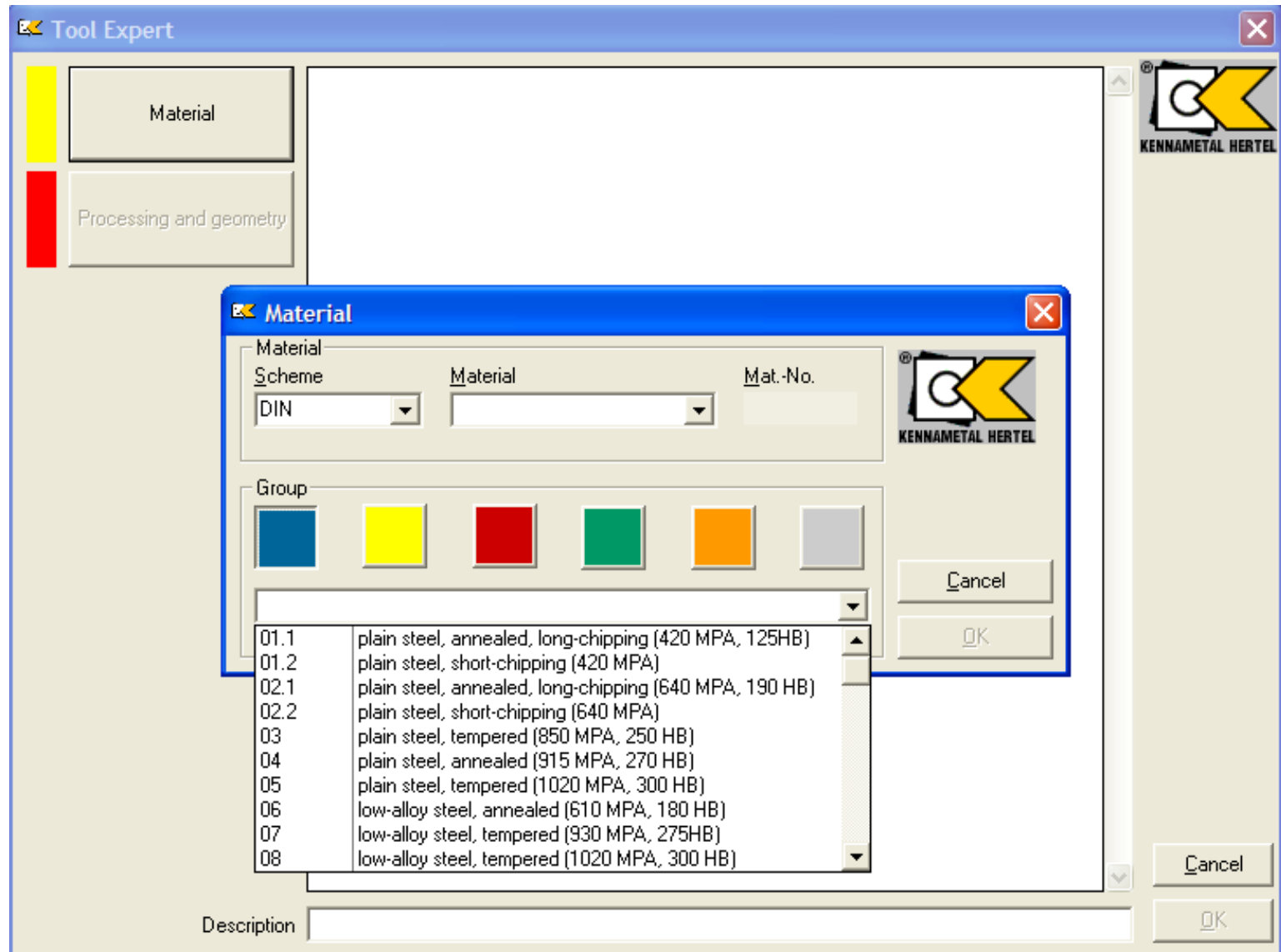


1. Izbor materijala radnog predmeta

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



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



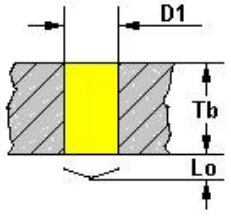
2. Izbor vrste procesa (struganje,glodanje,bušenje) i odgovarajućeg zahvata

Processing and geometry

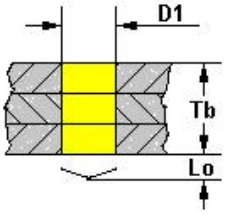
- Processing
 - Drilling
 - Through hole
 - Through hole with chamfer
 - Blind hole
 - Blind hole with chamfer
 - Countersinking / Boring
 - Pre-centering
 - Milling
 - Face milling
 - Shoulder milling
 - End mills (centre cutting)
 - End mills (slotting)
 - Helical end mills
 - Ball nose end mills
 - Disk milling cutter
 - Ramping, plunging, facing
 - Chamfer mills
 - Turning
 - External
 - Internal

Geometry

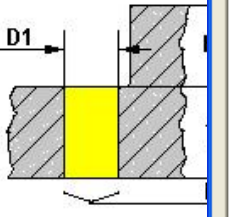
Property	Value	Unit



Drilling



Drilling of stacked plates



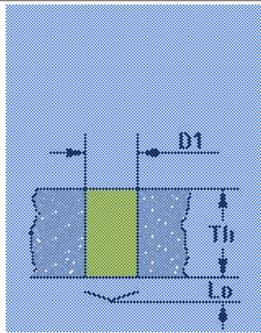
Drilling with interfering edge

Processing and geometry

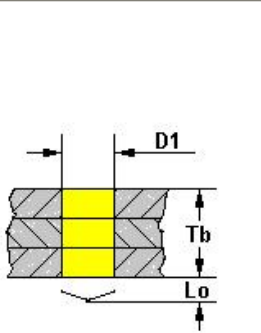
- Processing
 - Drilling
 - Through hole
 - Through hole with chamfer
 - Blind hole
 - Blind hole with chamfer
 - Countersinking / Boring
 - Pre-centering
 - Milling
 - Face milling
 - Shoulder milling
 - End mills (centre cutting)
 - End mills (slotting)
 - Helical end mills
 - Ball nose end mills
 - Disk milling cutter
 - Ramping, plunging, facing
 - Chamfer mills
 - Turning
 - External
 - Internal

Geometry

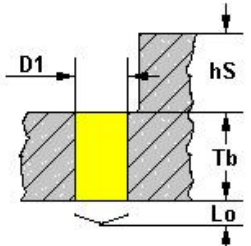
Property	Value	Unit
Diameter D1	24	mm
Drill Depth Tb	50	mm
Overrun Lo	5	mm



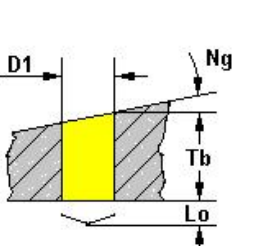
Drilling



Drilling of stacked plates



Drilling with interfering edge



Drilling on inclined surface

Cancel OK

3. Izbor vrste obradnog sistema

Tool Expert

Material


Processing and geometry

Machine data

Tool Selection

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

Machine data




Machine

Machining Centre Lathe

Spin

  All


Stability

   All

Cancel

OK

Description



4. Izbor alata – reznog modula i uslova obrade

Tool Selection

Conditions

Cooling: All

quality: All

standard only
with semi standard

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: All

quality: All

standard only
with semi standard

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

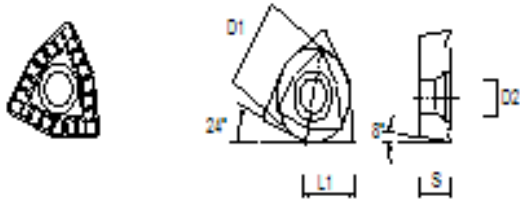
5. Izbor rezne pločice

Insert Selection

alle

Product family
DFT DRILLING INSERT

Photo



found
2

Order No.	Characteristic
DFT030304LDKC7225	KC7225
DFT030304MDKC7935	KC7935

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

Cancel

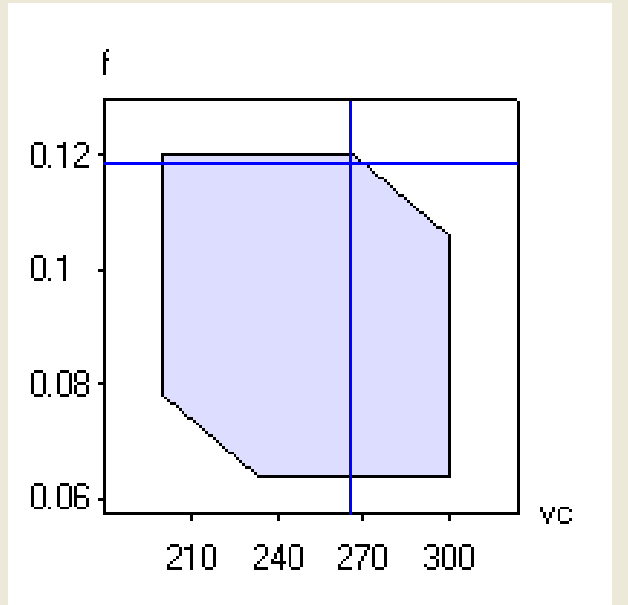
OK

Please select the conditions

6. Izbor režima obrade

Cutting Data Recommendations

Feed Range



Results

Eigenschaft	Wert	Einheit
vc_min	200	m/min
vc_max	300	m/min
vc	265.66	m/min
f_min	0.06	mm/U
f_max	0.12	mm/U
Feed	0.12	mm/U
Torque	26.5	Nm
Feed Force	3522	N
Drehzahl	3523.4	rpm
Power	9.78	kW

KENAMETAL HERTEL

Cancel

OK

Finalni izveštaj i štampa

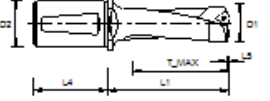
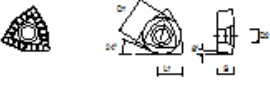
Tool Expert

Material	material norm = DIN Norm value = 16 MnCr 5 Mat.-No. = 1.7131 Material = 06
Processing and geometry	===== Processing Mode = Through hole Profile = Drilling Diameter D1 [mm] = 24 Drill Depth Tb [mm] = 50 Overrun Lo [mm] = 5
Machine data	===== kind of machine = 1 Additional machine attribute [yes/no]=
Tool Selection	===== SemiStandardTool = false Kategorie = 3 Product family = METRIC DRILL Order No. = DFT240R2WD4
Insert Selection	===== Product family insert = DFT DRILLIN Insert = DFT030304LD
Cutting Data Recommendations	===== 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 c9 2.5/D	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:nein]	0	f_max [mm/U]	0.12
		Feed [mm/U]	0.12