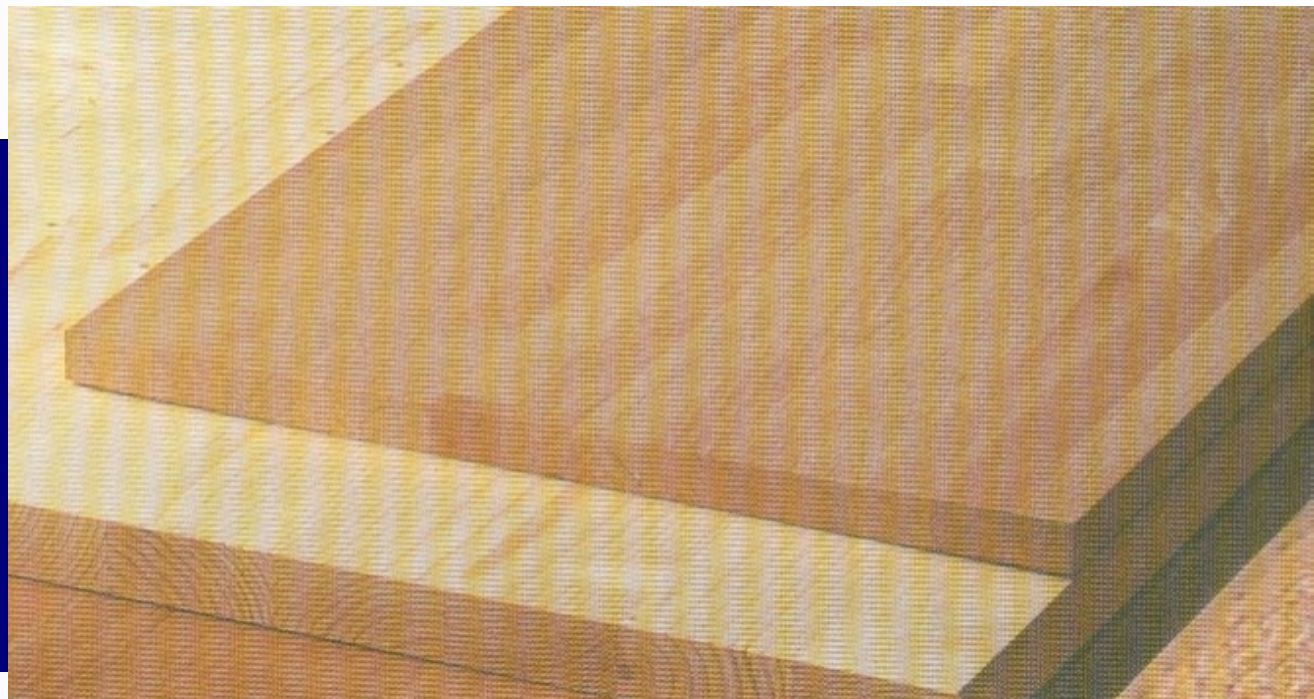
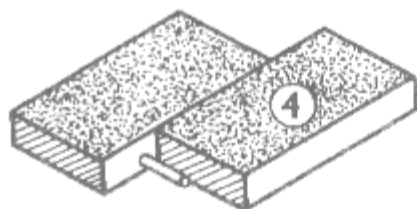
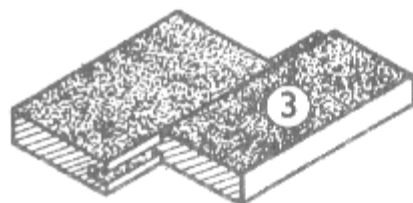
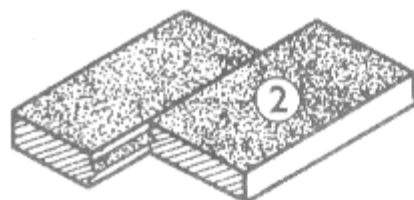
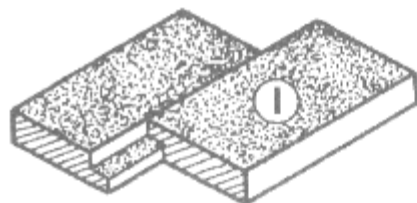




Nastavljanje gredica po širini

6. zadatak (2024.)



PRAVILA

- Širina gredice
- Širina lamela
- Površina lepljenja
- Način slaganja
- Krivljenje ploče
- Promena dimenzija ploče
- 200mm
- 80/100mm
- A!!
- Pravac godova
- Ukrućenje
- Tolerancija (RAL; EN)

1. Obrada sljubnica

Gruba
gredica

Izrada
bazne
površine

figovanje

VARIJANTA I



VARIJANTA II



VARIJANTA III



kontrola kvaliteta izrade

izbor gredica

nanošenje lepka

presovanje

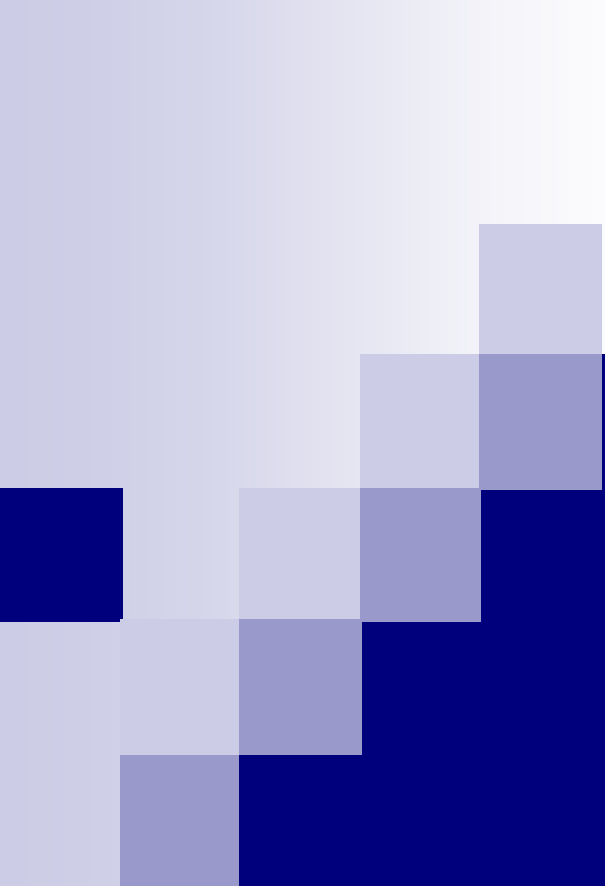


Egaliziranje debljine



dimenzionisanje B i L

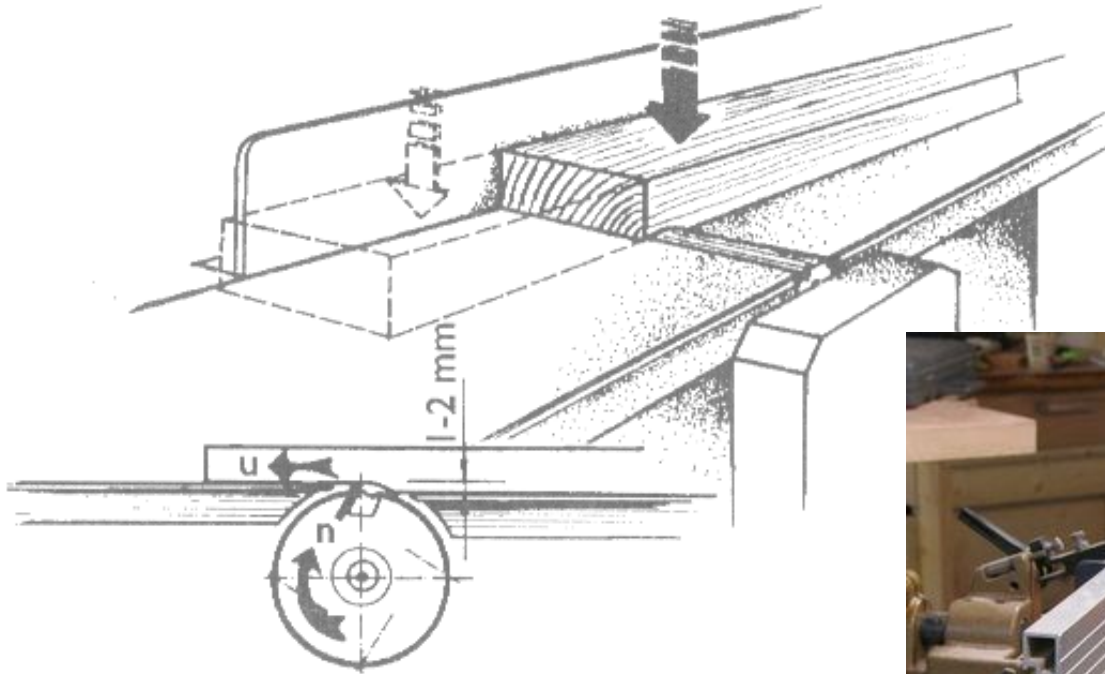
varijanta obrade	Mašina za pripremu bazne površine	Mašina za obradu sljubnica	presa	Širina lamele
1	Ravnalica	Ravnalica Fig mašina – Ledinek	Ramovske prese	različita
2	Dvostrana rendisaljka	Fig mašina – Ledinek	Ramovske prese Tople prese VF prese	različita
3	/	Fig mašina – Weinig Super 4 Četvorostrana rendisaljka	Ramovske prese Tople prese VF prese	ista



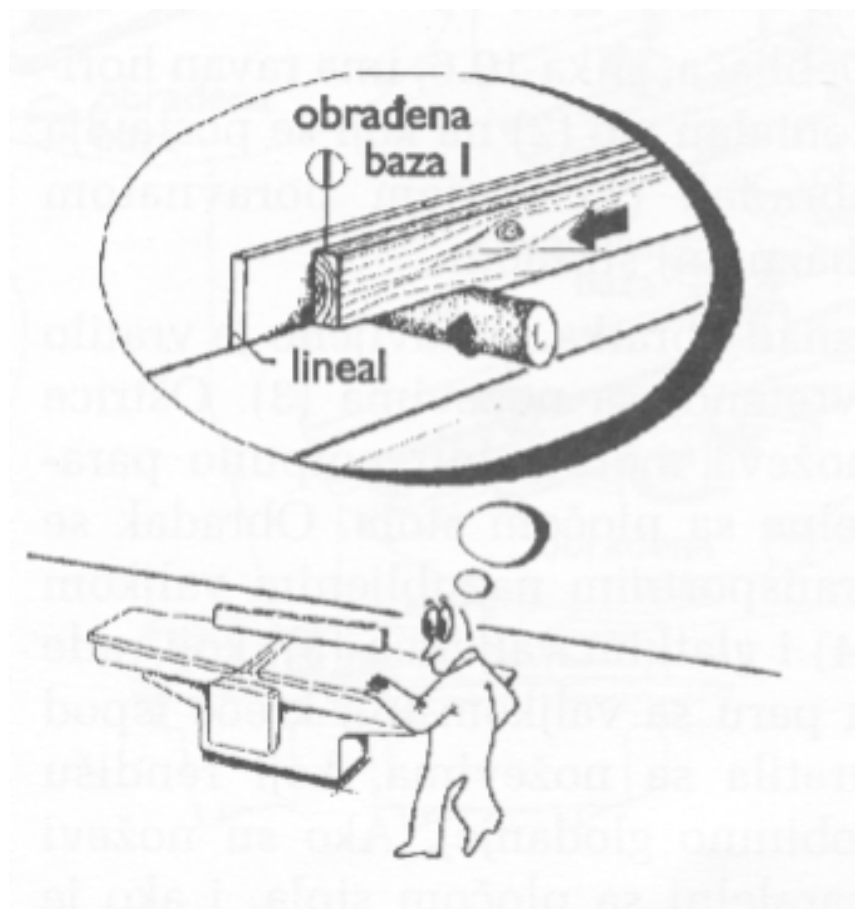
Varijanta 1

varijanta obrade	Mašina za pripremu bazne površine	Mašina za obradu sljubnica	presa	Širina lamele
1	Ravnalica	Ravnalica Fig mašina – Ledinek	Ramovske prese	različita
2	Dvostrana rendisaljka	Fig mašina – Ledinek	Ramovske prese Tople prese VF prese	različita
3	/	Fig mašina – Weinig Super 4 Četvorostrana rendisaljka	Ramovske prese Tople prese VF prese	ista

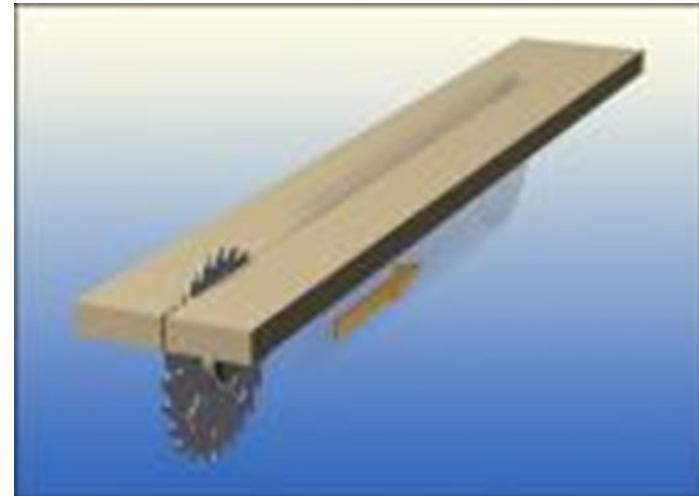
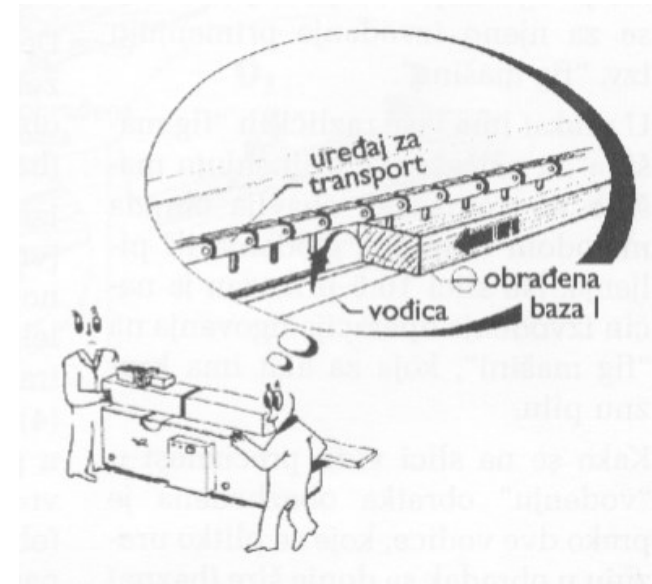
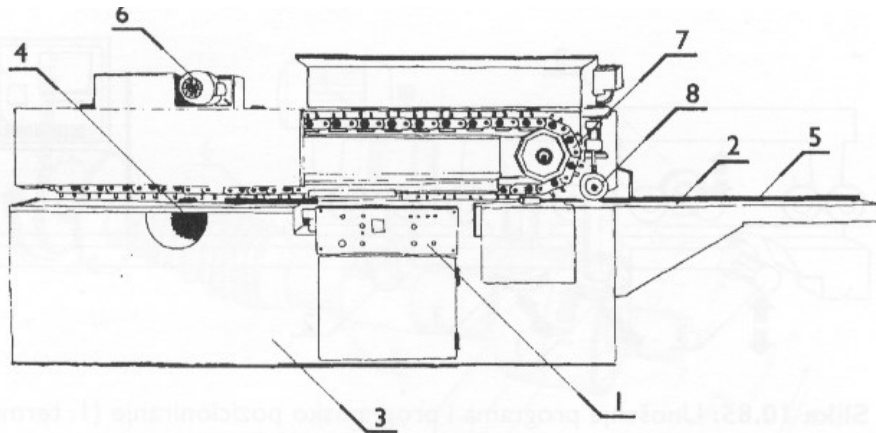
Izrada 1. bazne površine

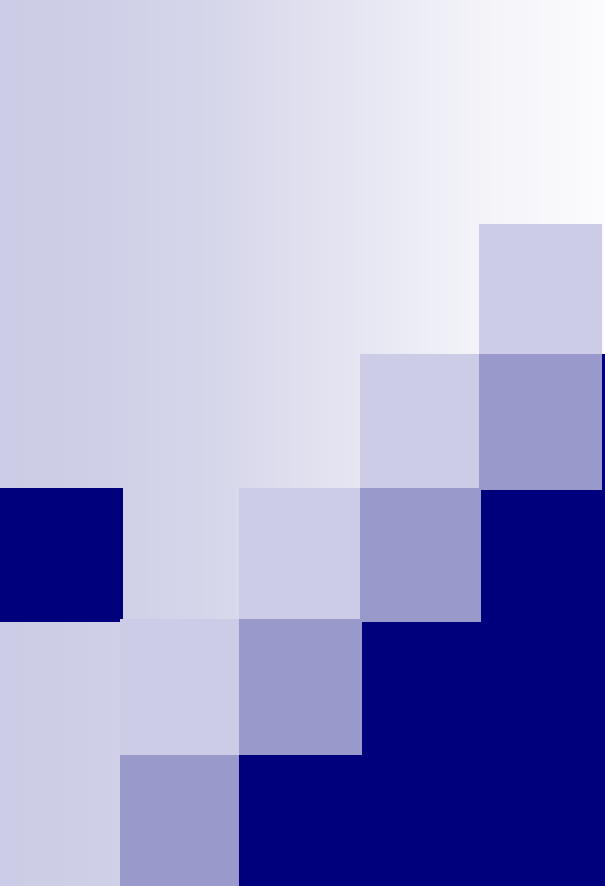


Obrada sljubnica na ravnalici



Obrada sljubnica na fig mašini - Ledinek





Varijanta 2

1. Obrada sljubnica

Gruba
gredica

Izrada
bazne
površine

figovanje

VARIJANTA I



VARIJANTA II



VARIJANTA III



kontrola kvaliteta izrade

izbor gredica

nanošenje lepka

presovanje

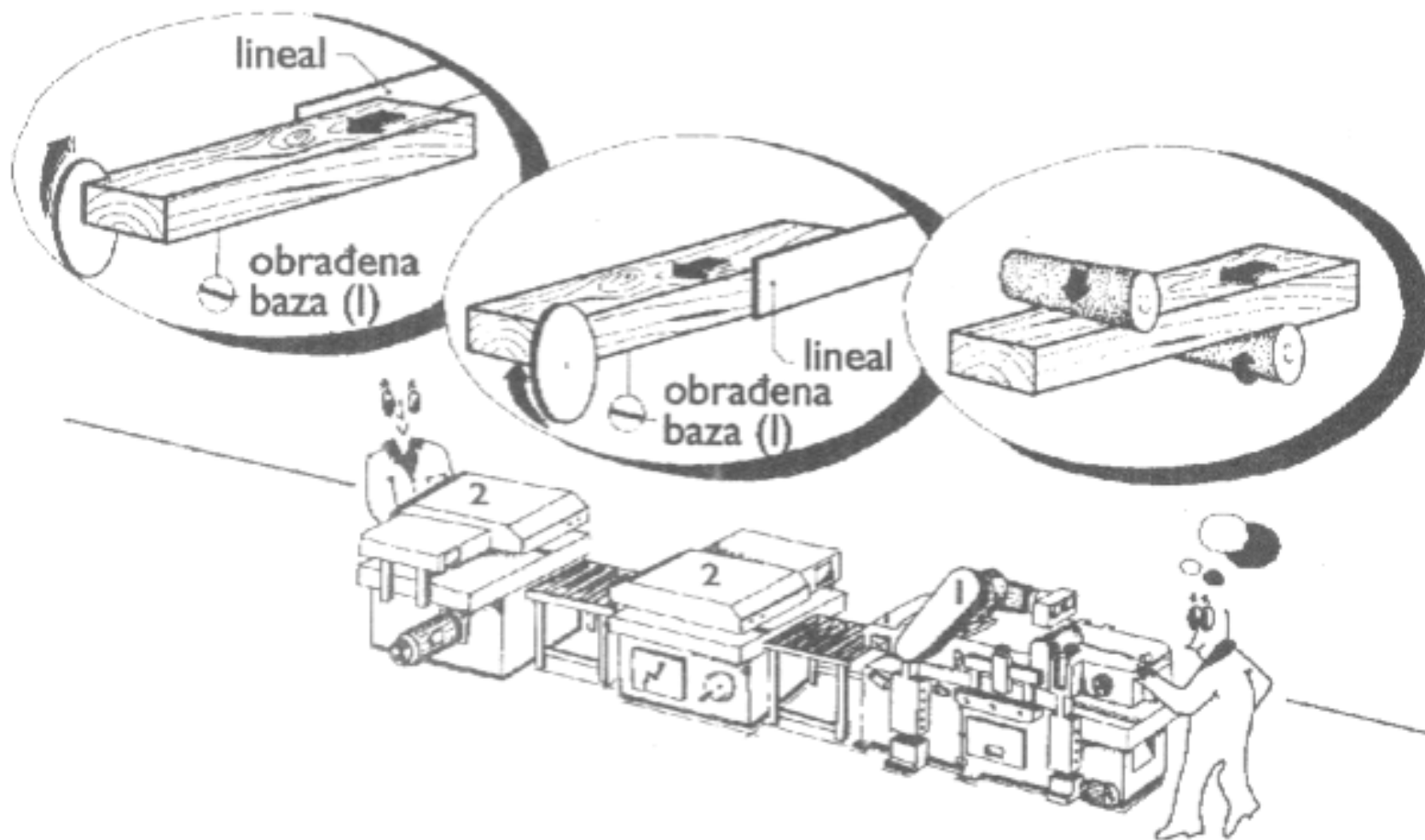


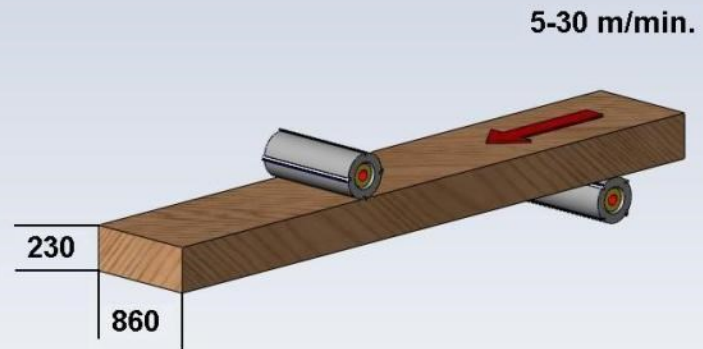
Egaliziranje debljine



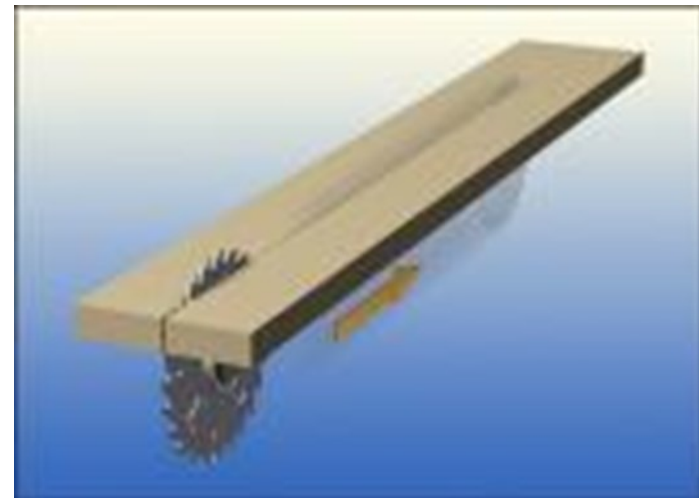
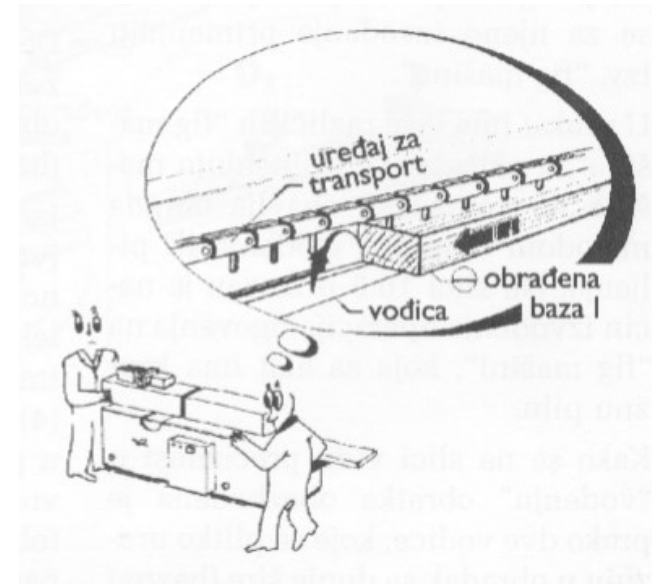
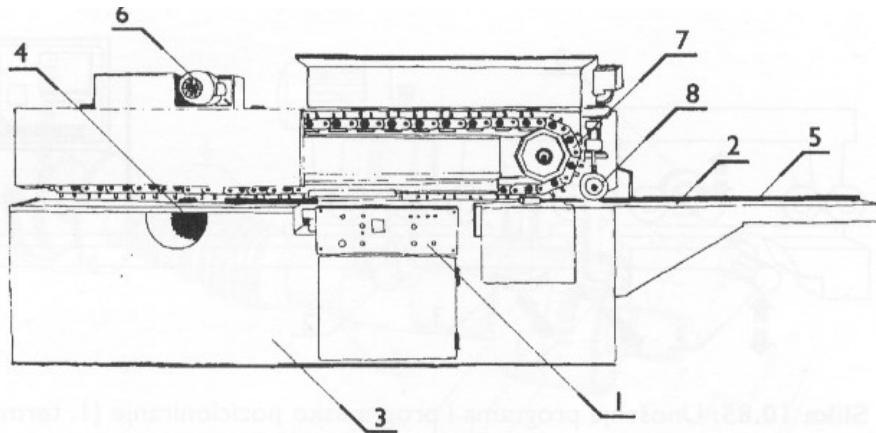
dimenzionisanje B i L

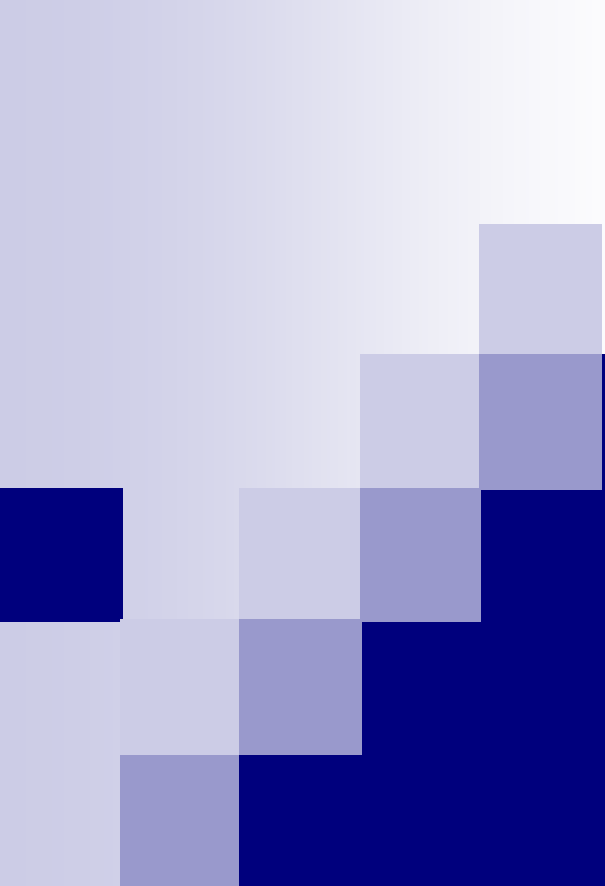
varijanta obrade	Mašina za pripremu bazne površine	Mašina za obradu sljubnica	presa	Širina lamele
1	Ravnalica	Ravnalica Fig mašina – Ledinek	Ramovske prese	različita
2	Dvostrana rendisaljka	Fig mašina – Ledinek	Ramovske prese Tople prese VF prese	različita
3	/	Fig mašina – Weinig Super 4 Četvorostrana rendisaljka	Ramovske prese Tople prese VF prese	ista





Obrada sljubnica na fig mašini - Ledinek





Varijanta 3

1. Obrada sljubnica

Gruba
gredica

Izrada
bazne
površine

figovanje

VARIJANTA I



VARIJANTA II



VARIJANTA III



kontrola kvaliteta izrade

izbor gredica

nanošenje lepka

presovanje



Egaliziranje debljine

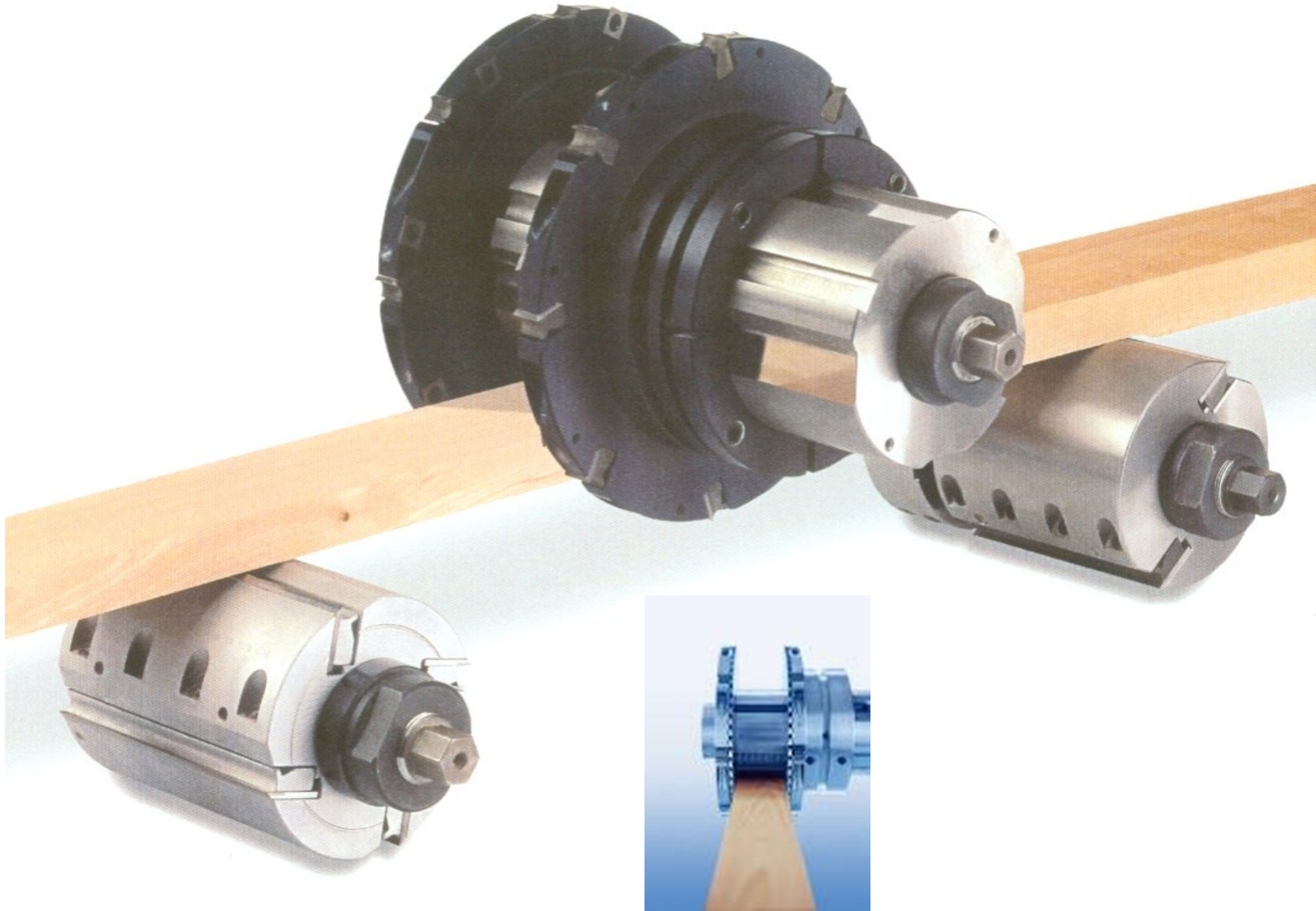


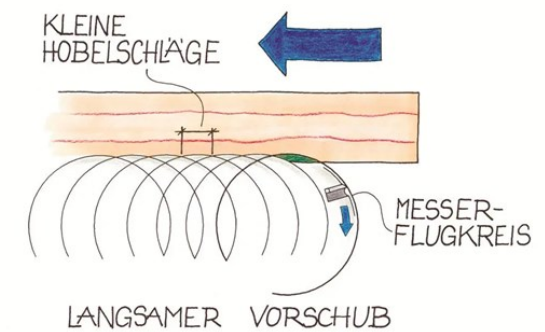
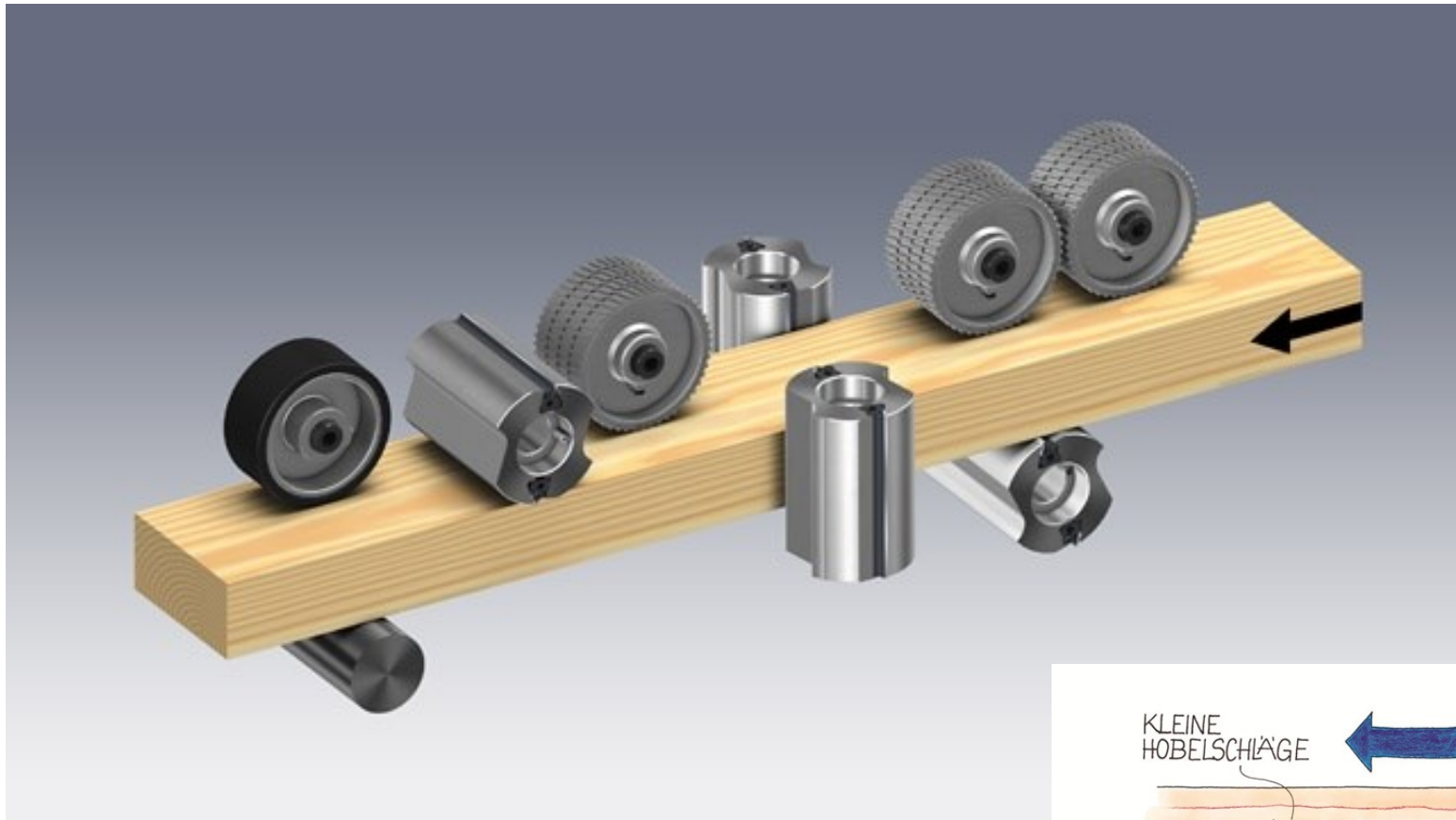
dimenzionisanje B i L

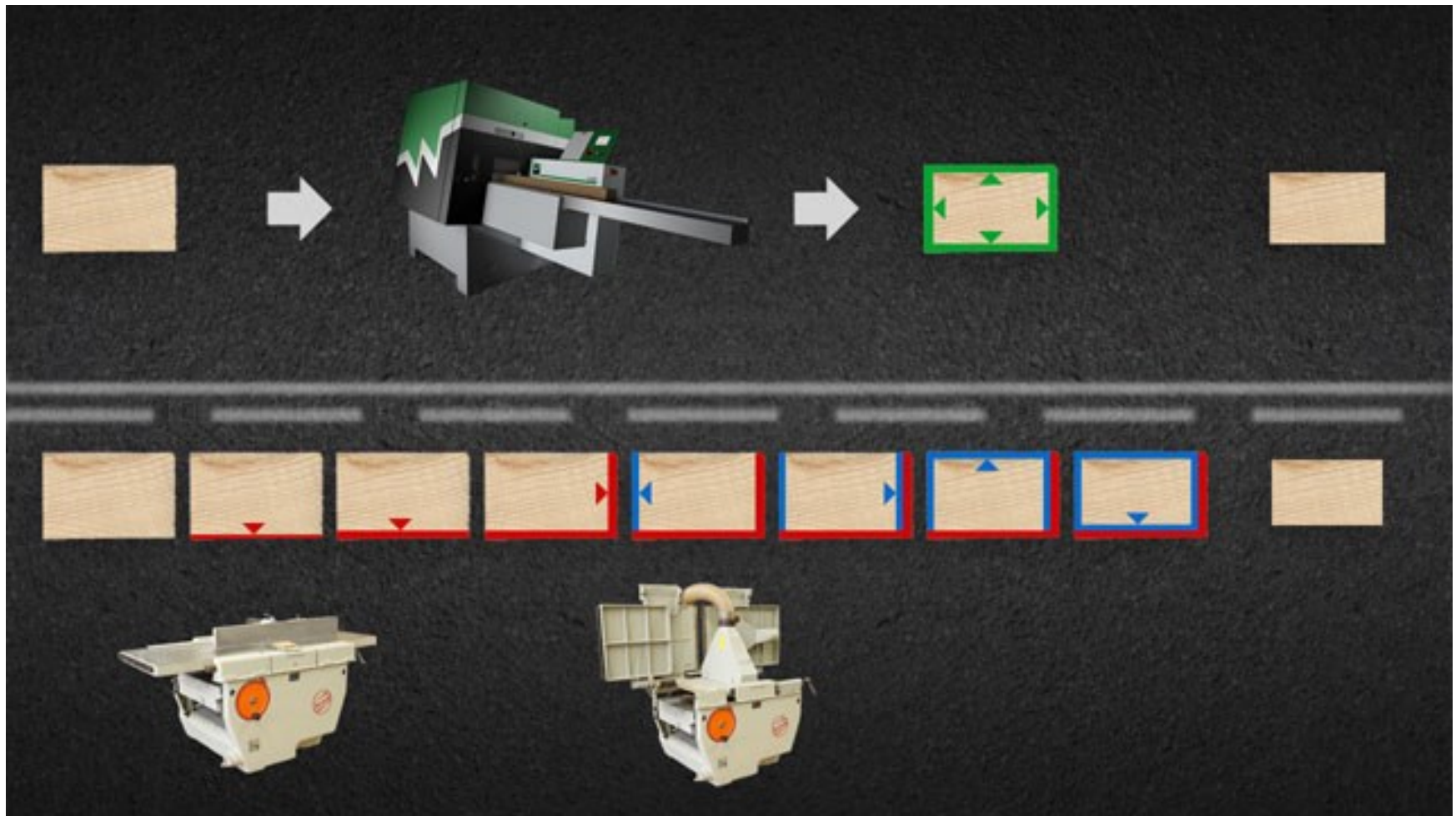
varijanta obrade	Mašina za pripremu bazne površine	Mašina za obradu sljubnica	presa	Širina lamele
1	Ravnalica	Ravnalica Fig mašina – Ledinek	Ramovske prese	različita
2	Dvostrana rendisaljka	Fig mašina – Ledinek	Ramovske prese Tople prese VF prese	različita
3	/	Fig mašina – Weinig Super 4 Četvorostrana rendisaljka	Ramovske prese Tople prese VF prese	ista

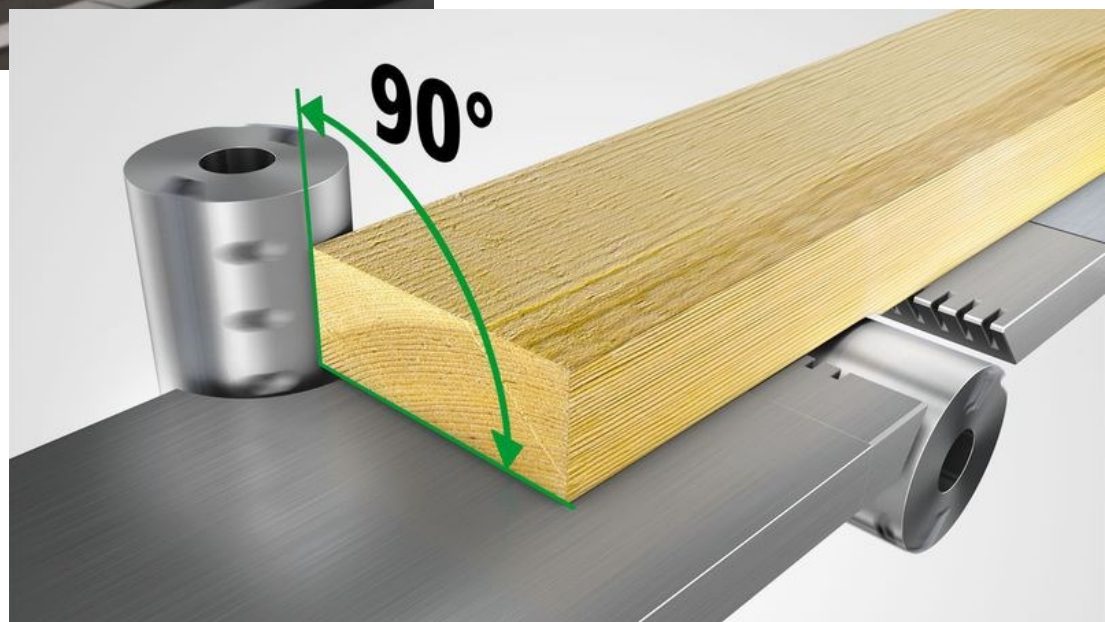
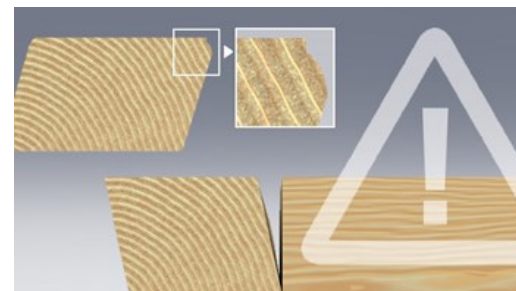
Obrada sljubnica na fig mašini Weinig – super 4

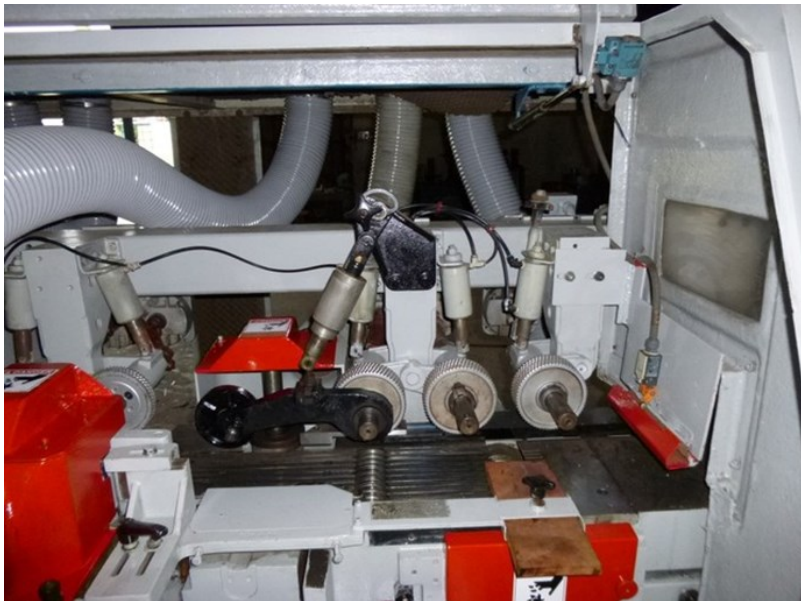


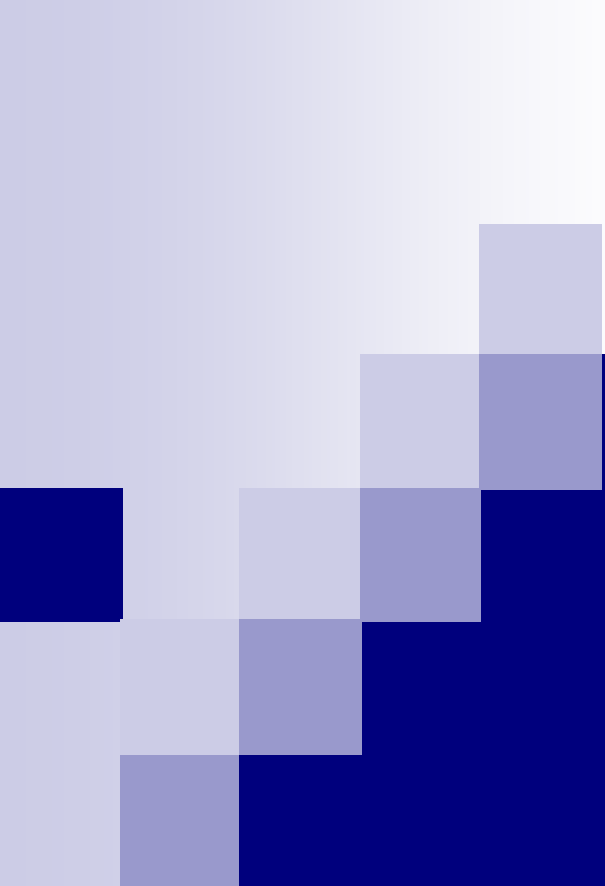












**Kontrola
nanošenje lepka
presovanje
egaliziranje debljine
dimenzionisanje širine i dužine**

Kontrola kvaliteta obarde



PRAVILNO

! NEPRAVILNO

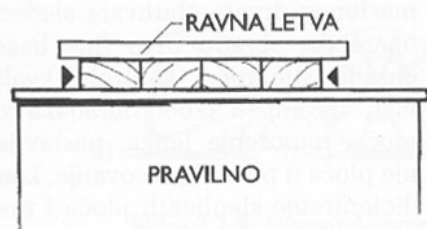
Slika 12.5: Obrada sljubnice (podužni izgled)



PRAVILNO

! NEPRAVILNO

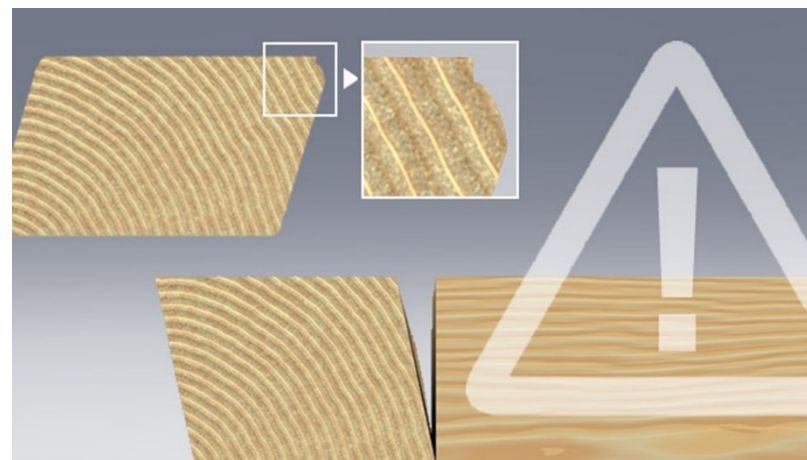
Slika 12.6: Obrada sljubnice (poprečni izgled)



PRAVILNO



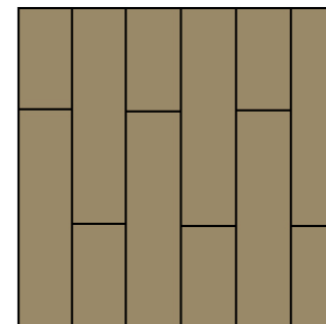
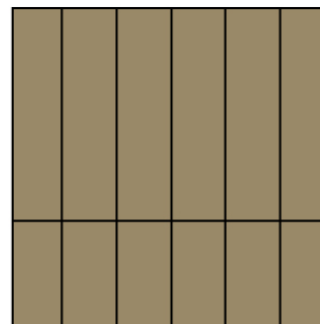
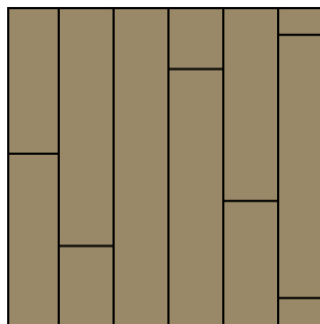
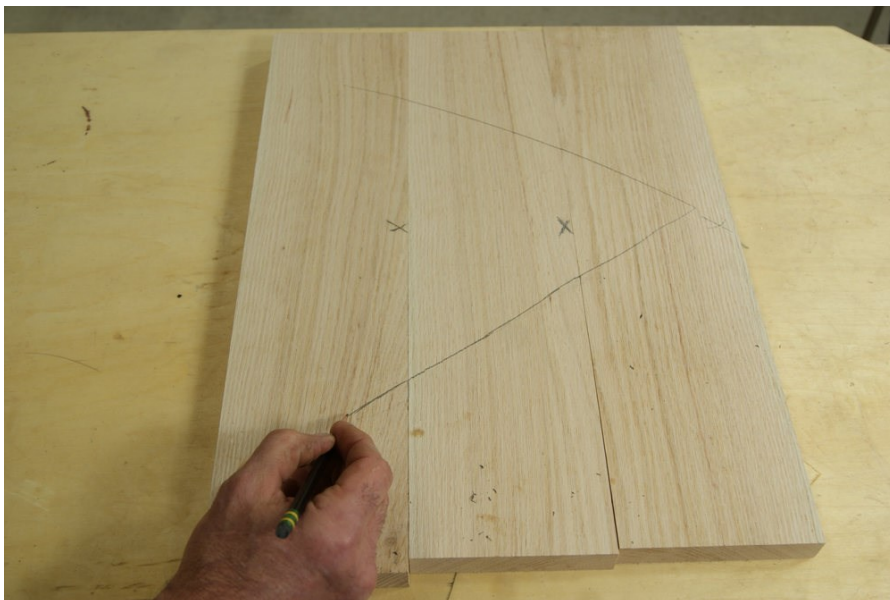
! NEPRAVILNO



Kontrola kvaliteta obarde



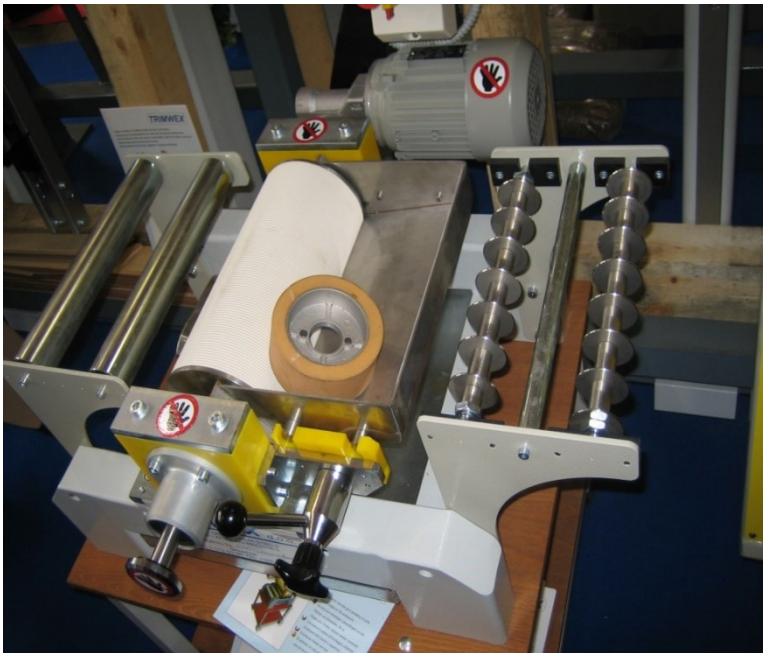
Izbor gredica – slaganje gredica u tavan

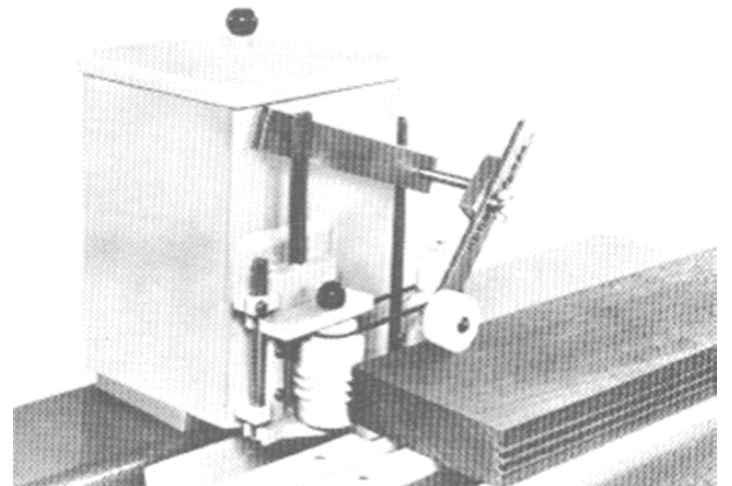
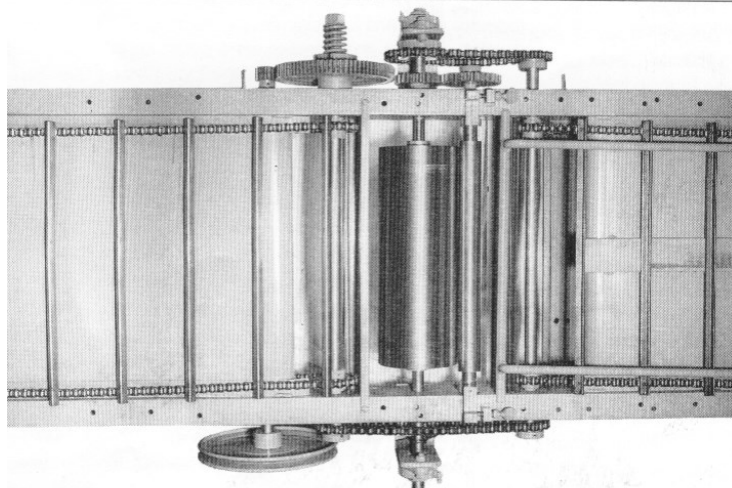
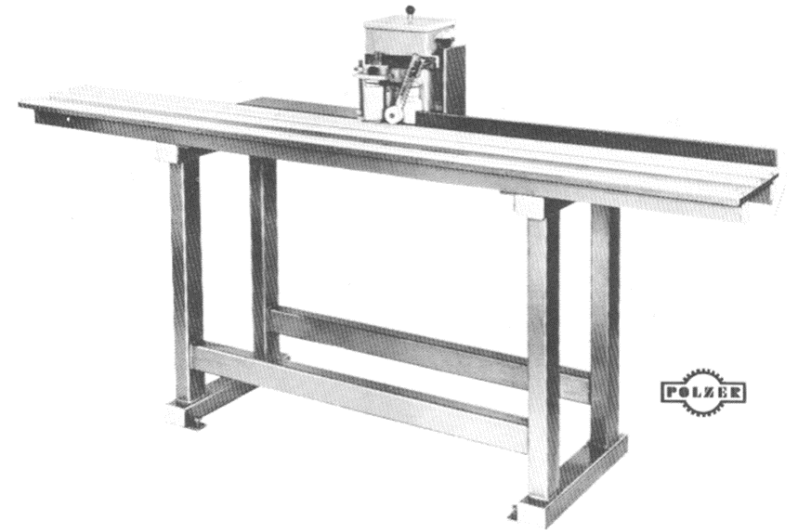
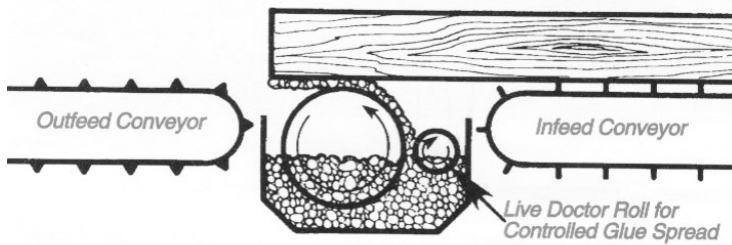
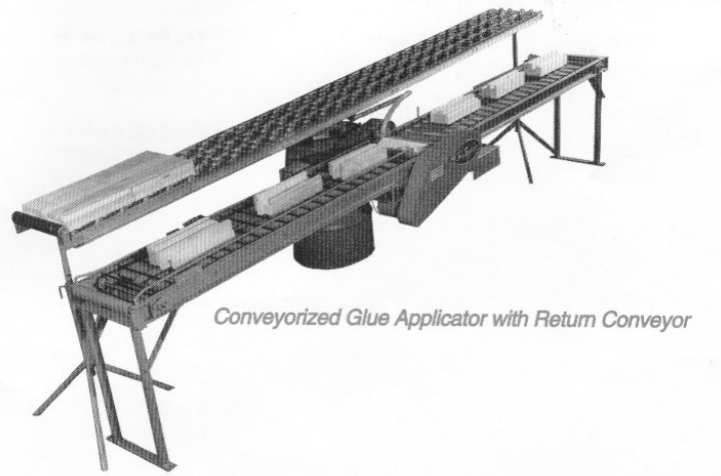


Nanošenje lepka

- Četka
- Valjak – ručni
- **Nanosačica lepka**

Nanošenje lepka – nanosačice lepka





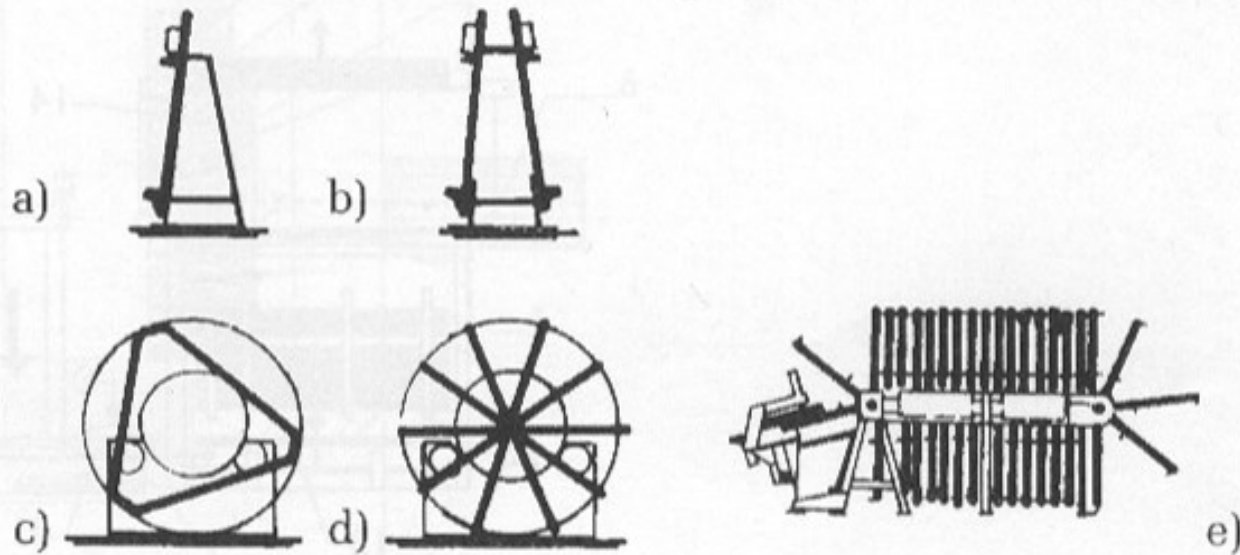
Lepkovi

Vrsta lepka	varijanta obrade
Glutinski	1
PVA-c	1/2/3

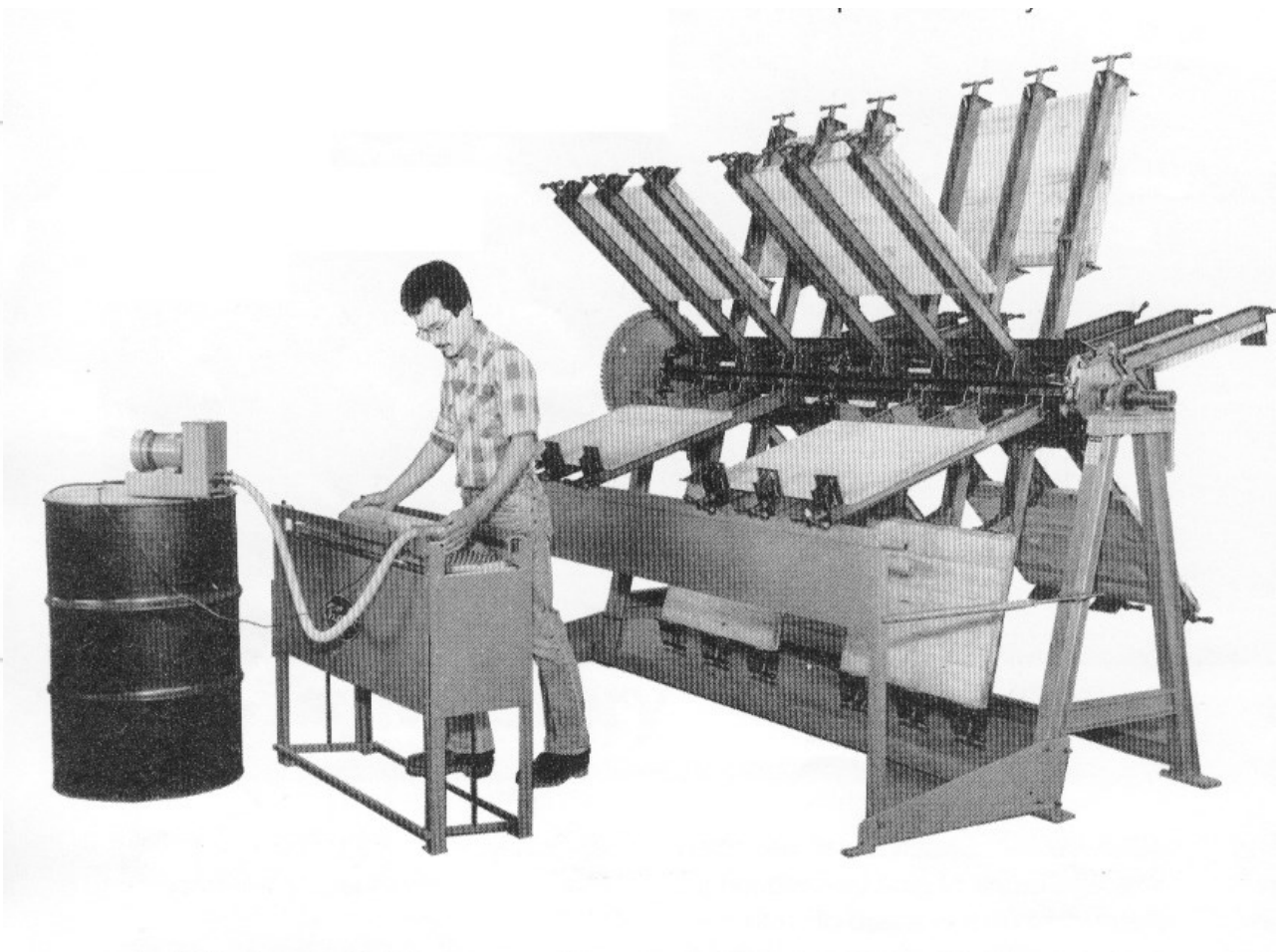
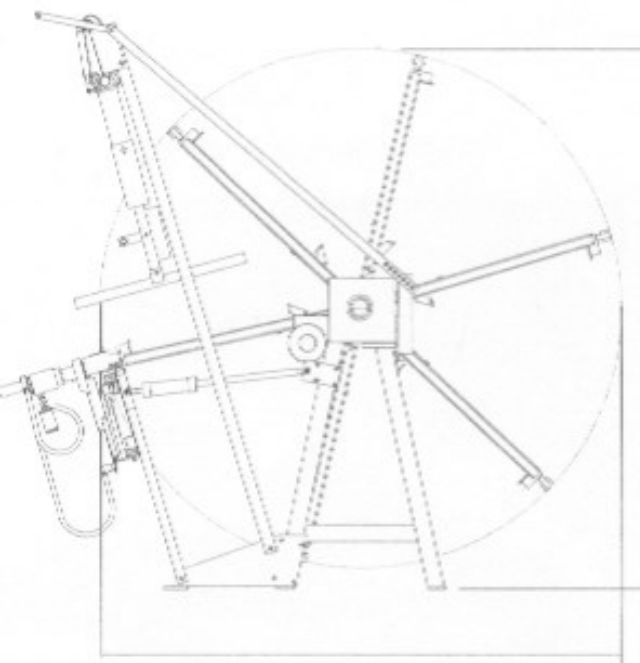
Prese

Vrsta presa	varijanta obrade
ramovske	1/2/3
VF prese	2/3

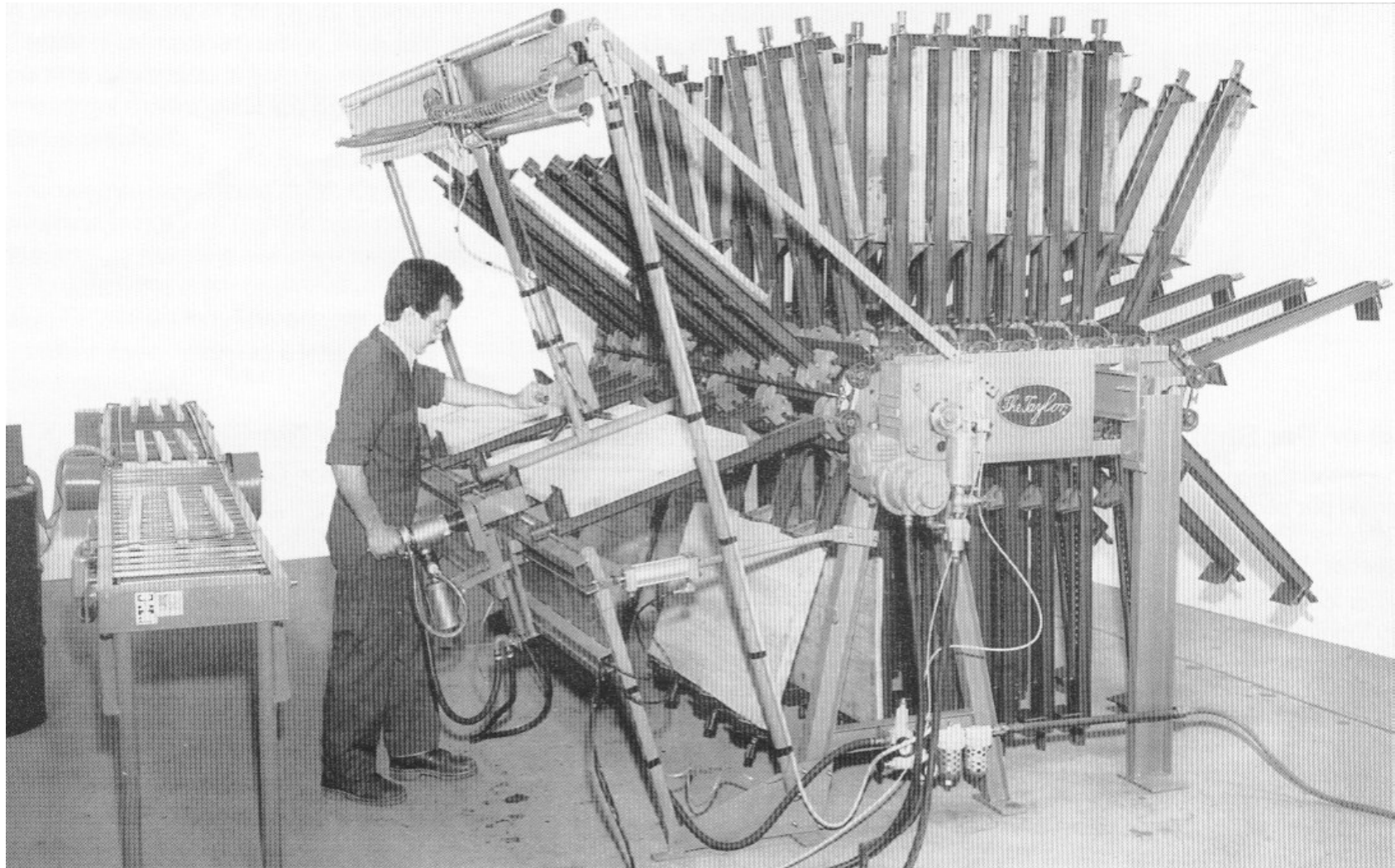
Ramovske prese



Ramovske prese - zvezdaste



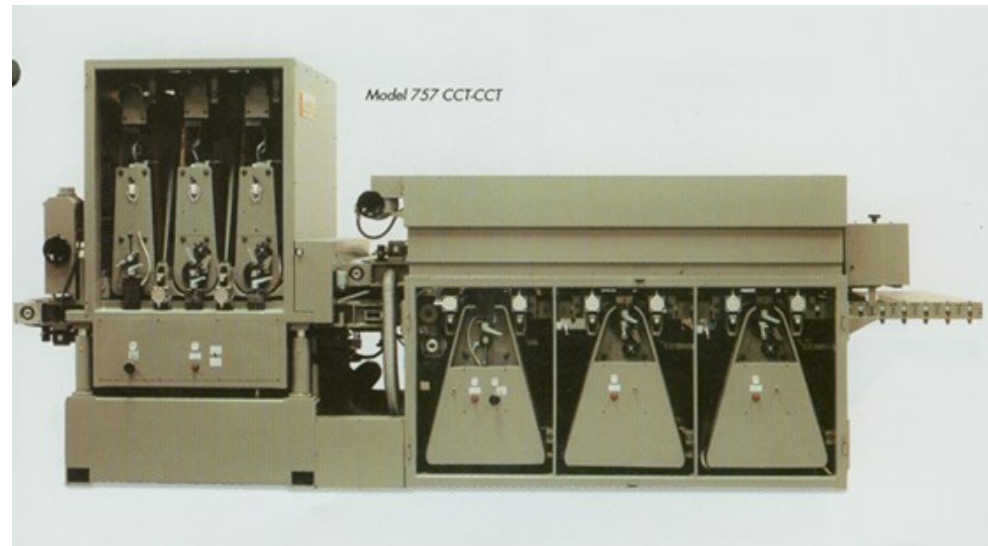
Ramovske prese - konvejerne



VF prese



Egaliziranje debljine



Dimenzionisanje B i L



<https://youtu.be/ztt2Ar8du5I>
<https://youtu.be/IG6BdPf9nH4>
<https://youtu.be/9UwRklS60FE>

- Posluživanje: 2 radnika
- Br.vretna: 2+2 do 7+7
- $d = 30 / 40\text{mm}$
- $D_{kp} = 300 \div 350\text{mm}$
- $Div = 250 \div 400\text{mm}$
- $D_{gl} < 350\text{mm}$
- $h_{max} < 200\text{mm}$
- $n_{max} = 9000 \text{ o/min}$
- $u = 8 \div 24 \text{ m/min (mehanizovano)}$
- $E = \pm 3.55,5 \text{ kW (x br.vretna)}$

profiler

- <https://www.youtube.com/watch?v=IG6BdPf9nH4>
- <https://www.youtube.com/watch?v=9UwRkIS60FE>

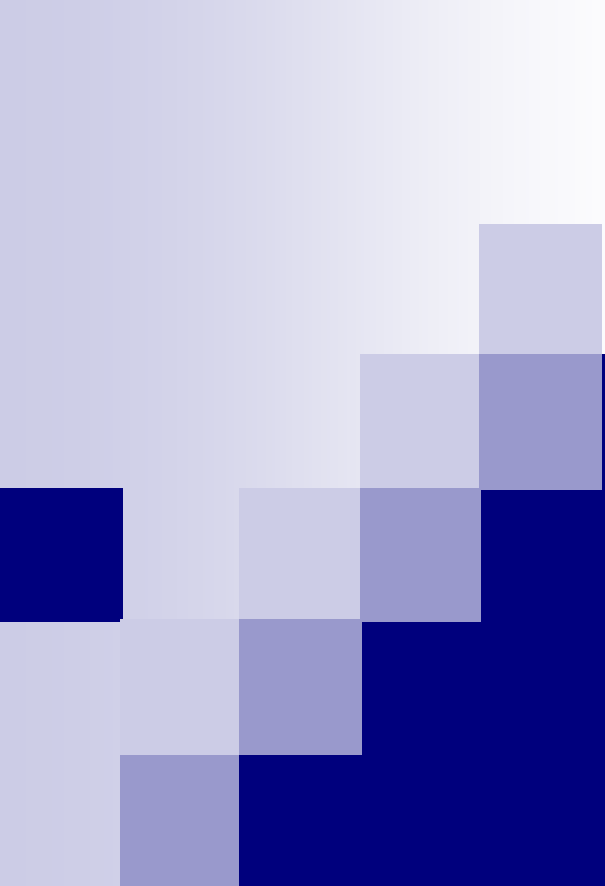
prese

- <https://www.youtube.com/watch?v=LvLwchMQ9ws>
- <https://www.youtube.com/watch?v=qOHb7A6WV5s>
- <https://www.youtube.com/watch?v=SjY2X0j4Kvo>
- <https://www.youtube.com/watch?v=zuqD1tq0-wl>
- <https://www.youtube.com/watch?v=jvy6s4SwKOo>
- <https://www.youtube.com/watch?v=evFS3F1dmM4>
- <https://www.youtube.com/watch?v=SW50DMTE-VA>
- https://www.youtube.com/watch?v=Bkt_ASNkJUU
- <https://www.youtube.com/watch?v=K80QBhenN30>
- <https://www.youtube.com/watch?v=AbxMy2UA8xA>
- <https://www.youtube.com/watch?v=gk3-rWQcgW4><https://www.youtube.com/watch?v=ulfhY9MVB8>

Super 4

- <https://www.youtube.com/watch?v=MY1cNo6Au0M>
- <https://www.youtube.com/watch?v=li0S-Pubq5g>

<https://www.youtube.com/watch?v=HbGPRUnrhfA>



zadatak

ZADATAK

Ploča trpezarijskog stola, dimenzija 1200•800•42mm izrađuje se kao daščana ploča iz bukovog gredica koje su nastavljene po dužini.

- Dimenzija poprečnog preseska gredica koje dolaze na dužinsko nastavljanje iznosi 50•87mm.
- Dužinsko nastavljanje se vrši na gredicama koje su prethodno obrađene. Nadmera na obradu po debljini i širini iznosi 5mm. Nakon obrade elementi imaju dimenziju 45•82mm.
- Nakon dužinskog nastavljanja štapovi dimenzija 45•82•6000mm se krata na dužinu od 1220mm.
- Skraćeni štapovi se obrađuju na dimenziju 43•80•1220mm.
- Nakon obrade štapovi se lepe u daščanu ploču.
- Prilikom egaliziranja debljine na širokotračnoj brusilici skida se 1mm po strani ploče, odnosno 2mm po debljini ploče.

Ulazni podaci

- Potrebna količina ploča: $N_d = 250$ ploča/dan
- broj smena: $n_s = 2$
- vrsta drveta: bukovina

Metod rada

1. Izabrati tehnologiju za izradu daščanih ploča.
2. Za izabranu tehnologiju proračunati potreban broj mašina.
3. Odrediti režime lepljenja (vrstu lepka, temperaturu lepljenja, silu stezanja, količinu nanosa i vreme stezanja)
4. Proračunati utrošak lepka

1. Obrada sljubnica

Gruba
gredica

Izrada
bazne
površine

figovanje

VARIJANTA I



VARIJANTA II



VARIJANTA III



kontrola kvaliteta izrade

izbor gredica

nanošenje lepka

presovanje



Egaliziranje debljine



dimenzionisanje B i L

Obrada sljubnica

mašina	varijanta obrade
Ravnalica	1
Fig mašina – Ledinek	1/2
Fig mašina – Weinig Super 4	3
Četvorostrana rendisaljka	3


$$N = \frac{Q}{P_{sm} \cdot b \cdot c} = [kom]$$

N – potreban broj mašina (kom)

Q – godišnja količina ploča(m³/god)

P_{sm} – smenska proizvodnost (m³/smeni)

b – broj radnih dana u godini: b = 250

c – broj radnih smena u danu: c = 2

Mašine sa mašinskom obradom

$$P_{sm} = \frac{u * T * k_r * q_{sr}}{l_o * n} \left[\frac{m^3}{sm} \right]$$

q_{sr} – zapremina ploče

l_o – dužina lamele

n – broj komada (lamela po ploči)

Prese

$$P_{sm} = \frac{T * k_r * n_{etaža}}{t_{lepka}} \left[\frac{kom}{sm} \right]$$

t_{lepka} – vreme dostizanja

mehaničke čvrstoće

n – broj etaža u presi

$$P_{god} = P_{sm} * n_{dana} * n_{sm} \left[\frac{m^3}{god} \right]$$

Proračun utroška lepka

- lepak se nanosi obostrano
- količina nanosa $q = 250\text{g/m}^2$

$$Q_l = \frac{N_d \cdot l \cdot d \cdot n_s \cdot q}{k_i} = \left[\frac{\text{Kg}}{\text{dan}} \right]$$

n_s – prosečan broj sljubnica

$$n_s = \frac{b_{pločl}}{b_{gređice}} - 1$$

k_i – koeficijent iskorišćenja: $k_i = 0.93$