Table 1.Cuttingspeed at $\theta = 60^\circ$

Material	Temperature melting°C	Coefficient of absorbtion $A(\theta)$ [%]	Thermal conductivity k $\left[\frac{W}{mC}\right]$	Intensity Incidence I_0 $(\frac{W}{m^2})$	Intensity absorbed I_{abs}	Speed cutting v_T $\left[\frac{m}{\min}\right]$
Al	660	0,05	237	10^6	25 x 10	3,61
Cu	1033	0,025	399	10^6	1,25x10	3,04
OT	3000	0,02	43	10^6	$1,0x10^2$	0,26

Table 2. Cuttingspeed at $\theta = 30^\circ$

Material	Temperature melting°C	Coefficient of absorbtion $A(\theta)$ [%]	Thermal conductivity k $\left[\frac{W}{mC}\right]$	Intensity Incidence I_0 $(\frac{W}{m^2})$	Intensity absorbed I_{abs}	Speed cutting v_T $\left[\frac{m}{\min}\right]$
Al	660	0,05	237	10^6	43 x 10	6,21
Cu	1033	0,025	399	10^6	21,5x10	5,23
OT	3000	0,02	43	10^6	$1,72x10^2$	0,45

4 Conclusions

The industrial laser applications withCO_2: CO_2 laser MAZAK 500, laser cutting with Trotec Speedy 300, Bystronic laser, TRUMPF brand, NEONA [8],[11],[12], [13] are successfully used for cutting, welding, sealing, drilling, punching, marking, engraving. continuous or pulsed wave. The CO_2laser uses average power [4], - 10 W – Low power for superficial engraving and cutting of thin materials, 25-35 W - Medium-low power, for engraving and cutting. 40-60 W - medium power for engraving and cutting of thick materials, 65-80 W – high power, for special operations, 85-120 W – high power, for deep cutting and engraving, over 100kW - power, for special applications with a intensity of the incident beam $I_0 = 10^{14} \frac{W}{cm^2}$.

Laser cutting of the sheet can be done for sizes of ex. L = 3 x l = 1.5 m and sheet thickness up to: 20 mm for carbon steel, 12 mm for stainless steel, 8 mm for aluminum. Angle θ - the angle between normal to surface and laser radiation when shrunk will give us a higher cutting speed.The cutting speeds are comparable to the experimental results obtained in the various works, e.g. [9], [10].

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