



**Comparison chart for the electrical consumption of different types of CO<sub>2</sub> lasers.**

Data were taken from manufacturer's data sheets.

List of manufacturers from which data was available:

Finn-Power	(DC, Fast-Axial-Flow)
PRC	(DC, Fast-Axial-Flow)
OPL	(DC, Fast-Axial-Flow)
Convergent	(DC, Slow-Flow), (DC, Cross-Flow), (DC, Fast-Axial-Flow)
ROFIN	(HF, Cross-Flow), (RF, Slab)
WB-Laser	(DC, Fast-Axial-Flow)
Trumpf	(RF, Fast-Axial-Flow)
HACO	(DC, Fast-Axial-Flow)

Remarks:

1. Finn-Power and Trumpf quote electrical consumption in kW rather than electrical load in kVA. Dependent on the  $\cos\phi$  of the laser, the load will be 10 – 30 % higher than the consumption, which explains part of the spread on the results (raw data was plotted).
2. It can be seen that all laser types will have a wall-plug efficiency slightly lower than 10%, independent of method of excitation or cooling. This is very surprising if one considers that e.g. RF SLAB lasers do not use a turbo blower for gas circulation, which accounts for approximately half the consumption in the case of a fast-flow device. Apparently the less efficient cooling has too be paid back in the form of reduced efficiency and hence increased RF power input to reach the same output.