

A 2.5 kilowatts transverse-flow CO₂ laser

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This report describes a 2.5 KW transverse-flow cw CO₂ laser which has been operating successfully.

The configuration of the laser is briefly described. Arcless electrode configuration and glow discharge characteristics are studied.

By means of a multi-pin trigger located upstream of the cathode, the glow discharge stability increased at larger input current.

Experimental results indicate that the direct current output characteristic of the main power supply and the selection of the ballast resistors greatly influence the glow discharge stability and the output power.

The gas velocity in the discharge region is 40m/s, the length of active region is 86 cm. This laser can work at gas mixture pressure higher than 80 mm Hg.

A cw multimode output power of more than 2.5 kilowatts and an electro-optic efficiency of more than 12% have been achieved.

2.5 千瓦横流 CO₂ 激光器

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本报告描述成功地运转的2.5千瓦横向流动连续 CO₂ 激光器。

报告简单地描述了该激光器的结构,研究了无弧辉光放电的电极结构及辉光放电特性。

采用置于阴极上游的一组多针触发器使较大输入电流下辉光放电稳定性提高。

实验结果表明,主放电电源的直流输出特性和限流电阻的选择对辉光放电的稳定性及输出功率有较大的影响。

放电区的气体流速约为40米/秒。激活长度86厘米。

该激光器可在80毫米汞柱以上的混合气体压力下工作。

该器件达到高于2.5千瓦的多模连续输出,电光转换效率大于12%。