External Optical Control and Stabilization of CO₂ Lasers with PCD

- I-PCD®: Laser power control based on the laser spot velocity
- PowStab®: Stabilization of CO₂ laser power to better than ± 1%
- Beam splitting and individual control of CO₂ laser power at each processing station
- Variation of laser power between 0 and 100 % within milliseconds
- Customized solutions
External optical control and stabilization of CO$_2$ laser power using the patented PCD method enables precision laser processing of stationary or moving materials such as paper, cardboard, plastic films and other forms with CO$_2$ lasers.

Previously these applications frequently failed due to laser power fluctuations or insufficient control of laser power in relation to the laser spot velocity. Consequences for example were over processing of material and/or damage of the base material in the corners of the cutting geometry. Furthermore, varying results and quality differences could be observed from job to job.

### CO$_2$ MODULE PCD-ATTENUATOR

**PRINCIPLE**
Laser power can be varied between 0 - 100 % within milliseconds.

**INTERFACES**
Modules can be controlled either via the high-speed data link with a RAYLASE control card (XY2-100 standard) or alternatively using the analog current or voltage interfaces.

### CO$_2$ MODULE PowStab®

**PRINCIPLE**
The CO$_2$ laser operates in quasi-cw mode. Laser power is continuously measured and stabilised by PID closed loop control. Variation of output power is better ± 1 %.

As an option, a higher frequency laser beam can be generated through an acusto-optical modulator (AOM), which is placed behind the control loop.

**INTERFACES**
Software based closed-loop control in combination with a RAYLASE control card (XY2-100 standard).

### CO$_2$ MODULE I-PCD®

**PRINCIPLE**
The laser operates in quasi-cw mode. Laser power control is directly related to the velocity of the laser spot in the working field. Laser power can be varied from 0 - 100 % within a few milliseconds.

**INTERFACES**
The modules can be controlled via high-speed data link with a RAYLASE control card (XY2-100 standard).

### SAMPLE CONFIGURATION
Laser power is split into several partial beams, each individually controlled by I-PCD®. Thus different jobs can be processed on each of the parallel processing stations. CO$_2$ laser power can be kept constant using the optional PowStab® module.

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