COMPACT LASER SOLUTIONS

Exactly the performance that you`ve been looking for …
new products need new lasers!

Thank you very much for being interested in our products.

We would like to demonstrate some of the main characteristics and advantages of our **superior laser-concept for laser-marking-purposes** (Blade-series):

- **incredible laserpower (20 watts, 532 nm / green)** even though only having an **ultra small footprint**. Just using aircooling (no need to use a complicated cooling-unit and/or to regulary exchange parts of the coolingsystem (for instance: ion exchangers, filters, …). It should also be mentioned, that due to the fact, that no liquids are used at all in our coolingsystem, the risk of the occur of leakages and therefore the risk of damaging the laser-source and of other expensive repair-jobs caused by leakages is eliminated completely.

Our highpower-laser is only a little bigger than an average postcard (200 mm x 200 mm). Consequently it **can be very easily integrated into production lines**.

- **Exceptional high efficiency** due to fact, that the laser is operated with a special **ND:YVO4-crystal** (much higher gain due to the very high stimulated emission cross-section compared to a ND:YAG-crystal). Therefore our laser is **ideal for generating very short pulses of only several nanoseconds at high repetitionrates**. This is very important, when the heat-effected zone is supposed to be held as small as possible.

- **Highest stability of the excellent beam-quality in the diffraction-limited single-mode using high pulse-peak-power, no matter which frequency is used and no matter if operated in single-shot-mode or with pulserates of 1 Hz up to 400 kHz. Due to the high pulse-peak-power and the small M2<1,3 it is even possible to generate an optical breakdown (plasma in the air). Therefore our laser is also perfect for LIBS-applications**.

- **Computer-operated change of the wavelength** (for instance from 1064 nm to 532 nm or to 355 nm) using our DuoBlade.

- Capability to precisely form the laser-emission using a **special technique of modulation, which does not influence the quality, the form and the focus-position of the laserbeam at all** (this feature is especially important when working on critical applications, such as photovoltaics and passport-production). With our modulation-technique, you can modify the energy of any laserpulse within a pulse-train. The so called “first pulse problem” is eliminated completely. Using our unique modulation-technique, **you are able to reach a very high throughput** even if managing complicated applications. Compared to the wavelength of an infrared-laser (around 1064 nm) our green laser using a wavelength of 532 nm accomplishes an up to **4 times higher power density** on the material while being operated at the same power-rate. On top of that, a wavelength of 532 nm is absorbed a lot better by most materials (including but not limited to: copper, brass, gold, many synthetic materials (plastics) and semiconductors) than the wavelength of an infrared laser. Consequently our laser can even be used for cutting-applications. Of course even materials as ceramics, diamonds and yet glass, can also easily be processed, using our laser. As a further consequence of the shorter wavelength compared to an infrared-laser, ultrafast scanheads using highly dynamic, small
- deflection mirrors can be implemented, whereby the throughput is increased while having exactly the same focus-spot on the material.

The **laserdiode** used in our systems has an estimate **lifetime of 100.000 hours**. And in case, a laserdiode-exchange should one day be necessary, the system does not need to be sent in: The exchange can easily be done on site (you can even exchange the laserdiode yourself after having been instructed by us).

Beam-source and supply-unit can be disconnected and then combined with other units which have different characteristics (**"construcition-kit"-function**). Therefore (by **separating beam-sourse and supply-unit**) it is possible to avoid negative effects on the thermal-management (a very important feature if the laser is supposed to be integrated in an existing production-line). When being used for laser-class1-applications, our laser is superior to other lasers which lack the above-described function.

The list beneath is supposed to give you an overview over the advantages of our lasersystems, using our $Blade_{532/20}$ (20 watt, 532 nm) laser-system as an example:

- 20 watt single-mode ($M^2 < 1,3$) / 532 nm (green), linear polarised.
- unique options of modulation (a special technique of modulation enables you to modulate every single pulse in the pulse-train).
- steady focus, no matter which power and frequency is used and no matter if operated in single-pulse-mode or with pulserates of 1 Hz up to 400 kHz.
- huge variety of materials that can be marked and – depending on the dimensions of the material – also be cut: copper, brass, gold, many synthetic materials (plastics) and semiconductors, ceramics, diamonds and yet glass.
- entirely using air-cooling (and no water at all = not even a closed water-cycle).
- complete abandonment of the use of air-filters.
- highly splash-proof (if appropriately integrated).
- only using one single pump-laser-module.
- laserdiode with an estimate lifetime of 100.000 hours.
- diode-exchange can easily be done on site (by yourself after having been instructed by us).
- special YVO4-crystal-resonator-geometry (extreme high level of efficiency: up to 50 % laserpower at 532 nm in relation to the pumping power of the laserdiode.
- no "photodarkening" of the lasermedium or even it`s destruction as a result of reflections on the material.
- very small dimensions.
- very high wallplug-efficiency.

We are convinced that all the advantages our lasers combines (especially with regards to power, small size and prime costs) show, that they are superior. Please do not hesitate to compare these features our lasers are offering towards other lasers in the market place. While comparing make sure that those lasers provide the opportunity to modulate the laserbeam in the way you can do with our laser systems.

For further questions or for a demonstration of our lasersystems, including free of charge sampling, please contact us.