

OWIS Engineering: Line laser alignment

A perfectly aligned line laser shall project a homogeneous line (fig.1). The laser manufacturers are facing various challenges such as straightness of the line (fig. 2), a homogeneous distribution of intensity (fig. 3) as well as the orientation of the line in regards to the housing (fig. 4).

In order to achieve the goal of a homogeneous line, an anamorphic refractive optic (Powell or cylindrical lens) needs to be aligned precisely to a collimated beam of a laser module (diode and collimator) – see figure 5.

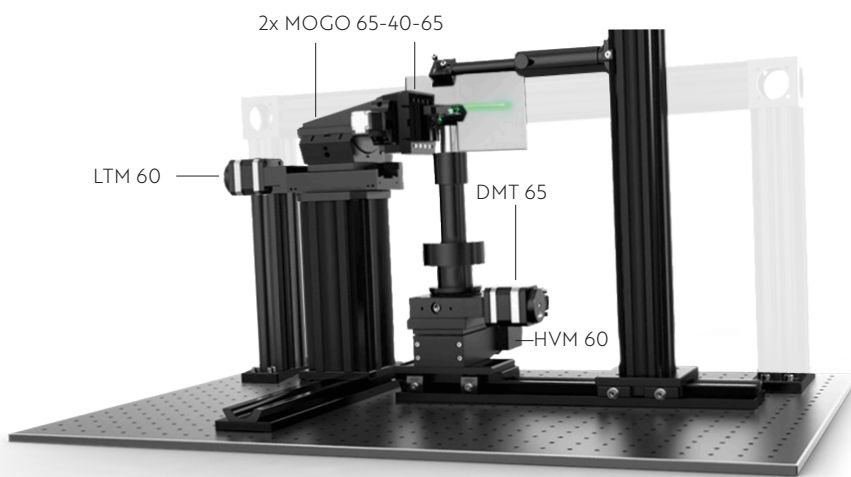


fig. 6

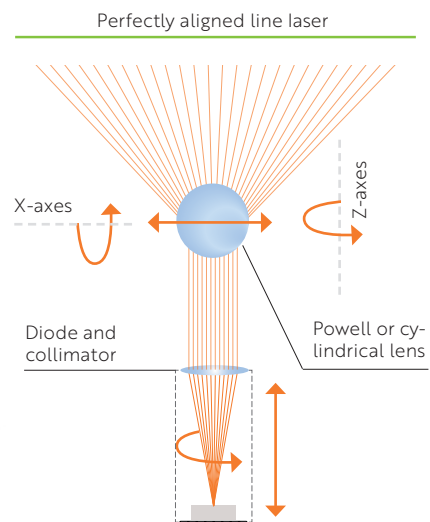


fig. 5

Thanks to the fact that our components can be combined freely, it is possible to build individual multi-axis systems. Therefore, OWIS developed a motorized 5-axes assembly along with Z-LASER GmbH (fig. 6).

In order to achieve the correct installation position, the laser module can be adjusted in the direction of the beam by the **elevator stage HVM 60** beneath.

Furthermore, it can rotate around the Z-axis by means of our **rotary measuring stage DMT 65**. The optic is positioned by the precision **linear stage LTM 60** towards the X-axis in order to align it with the laser module. Both high-precision **goniometers MOGO 65-40-65** rotate the optic around the X- and Z-axes. The alignment might be automated completely with the help of a camera.

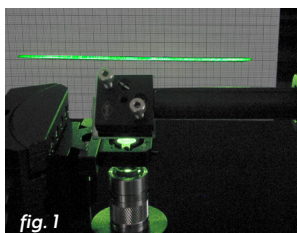


fig. 1

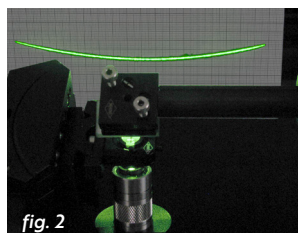


fig. 2

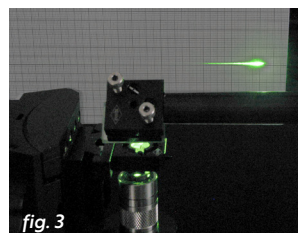


fig. 3

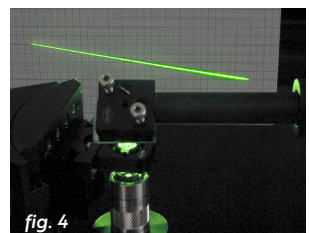


fig. 4