

Technology Offer

Safety apparatus and method for monitoring a light path of a laser beam, and applications of same
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The invention enables a fast and effective safety for persons (or obstacles) being in danger of hitting the beam of powerful lasers like YAG lasers. While being extremely powerful, the YAG laser light is invisible to the human eye. The safety mechanism is based on a harmless, visible laser light, i.e., cylindrically surrounding the YAG beam a shutter mechanism (i.e., with an entrance of cylindrical symmetry and made of synthetic material). The safety laser light is controlled by a ring (or sector) of photodiodes (cf. Fig. 1) and the construction allows to eliminate the YAG laser beam within less than 10 ms when a person or obstacle moves into the barrier (cf. Fig. 2 for closed shutter). This time enables an elimination while a moving person shifts from the cylindrical envelope (being around 4-5 cm away from the central YAG beam) into the central YAG beam. Since the beam is faded out only – instead of shutting down the laser – it is immediately available again in the formerly screened region after the person (obstacle) quits this safety area.

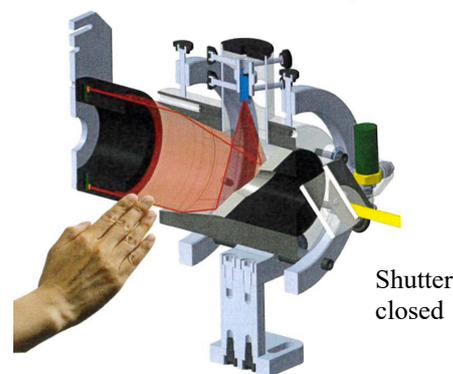
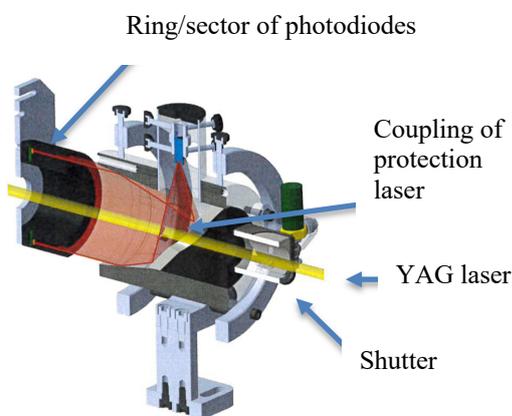


Fig.1 YAG laser, shutter and safety laser (cf. text), shutter open.

Fig. 2 Shutter closed (cf. text)

Advantages

- Safety at work.
- Extremely quick (≤ 10 ms) shutdown of even strongest laser light, can be triggered by persons or obstacles.
- The powerful laser beam, i.e. an invisible YAG laser, is enveloped by a human visible safety laser light. The (partial) interruption of the light triggers the safety shutdown.
- The shutdown is achieved by swivelling a blocking material into the beam instead of shutting down the laser. Thus, a fully active beam can be recovered immediately after the person/obstacle moved out of the critical area.

Applications

The safety feature can to introduced for all kind of even strongest laser beams.

Patent Information

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