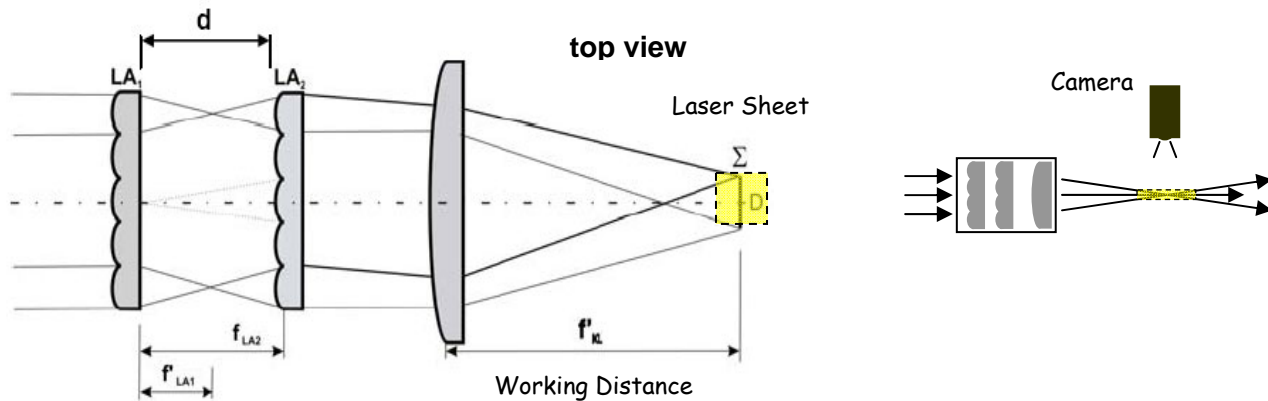
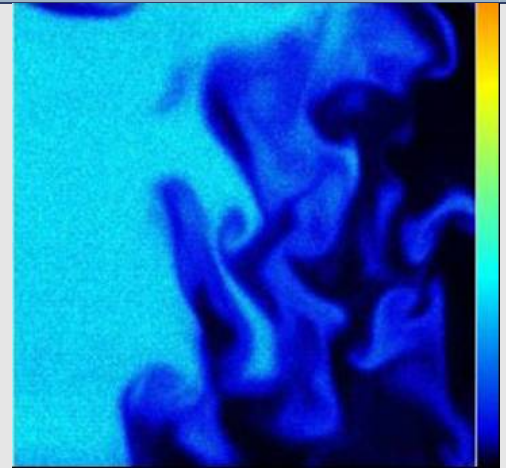


SMO TECHINFO SHEET 15 - LASER SHEET HOMOGENIZER FOR DIAGNOSTICS



Laser Sheet Homogenizer for diagnostics

Planar Laser Measurement Techniques are used for research and diagnostics of reacting and non-reacting flows in fluid mechanics or combustion.^[1] Laser based techniques offer the advantages of remote, non-intrusive measurements with high temporal and spatial resolution. A laser beam is formed into a light sheet and the signal is generated from elastic or inelastic scattering, fluorescence processes or emission of Planck's radiation in the illuminated plane. The light is collected in perpendicular direction (top view) to the sheet orientation by a CCD or CMOS image sensors.

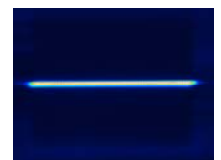


For Laser Sheet Measurements it is mandatory to achieve a very uniform illumination of the complete region of interest. However, most suitable laser like, pulsed high peak-power solid-state, excimer or dye laser sources have a rather poor beam quality. Microlens based Homogenizers are well suited for uniform illumination for high-power lasers from 193nm to 3 μm wavelengths. A Microlens Laser Sheet Homogenizer allows uniformities better than 5% for most lasers.

Furthermore, the superposition of the sub-beams in the measurement plane significantly reduces the spatial fluctuations of the beam profile. The remaining fluctuations are uniformly distributed all over the measurement area. As a result, the overall measurement uncertainty can be reduced to a level, which is close to the actual noise level of the used detector.

Sheet Homogenizer (1D): Line Flat-Top for Laser Sheet Homogenizing

- Various working distances,
- Various sheet lengths,
- Various sheet thicknesses,
- Optional: AR-Coating.



Please contact us for a customized solution.

¹ Sebastian Pfadler, Frank Beyrau, Micha Löffler and Alfred Leipertz ", Application of a beam homogenizer to planar laser diagnostics", Optics Express, Vol. 14, No. 22, 1017230, October 2006