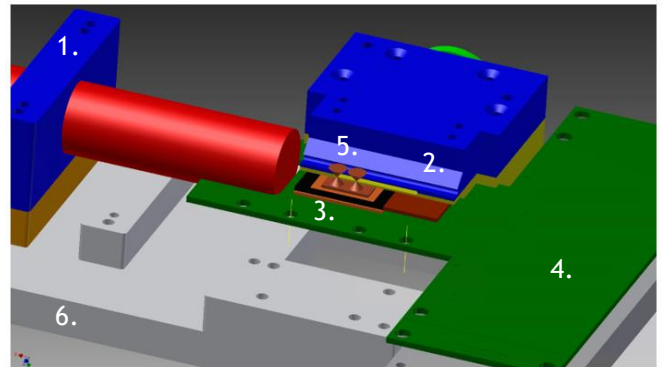


New micro-optical particle counter for large volume flows (NewPARZ)

In the NewPARZ project, a measuring cell with laser, sensor and electronics was developed for a compact particle counter for ultra-pure air, the heart of which is a special photo diode array with an angle filter. The angle filter changes its transmission over a few angular degrees from almost 100 % to an optical density (OD) of less than six at the laser wavelength. This means that several measuring points along the laser curtain can be scanned separately and in parallel with the photodiode array, where previously only a single small measuring volume was possible in the state of the art. In the demonstrator, a nozzle of 20 x 0.5 mm² was used and the established 90-degree scattered light method was parallelized with the laser steel. This allows a volume flow of up to 50 l/min to be realized.

CHARACTERISTICS

- Laser excitation: 660 nm; 200 mW
- Dimension (air) measuring cell: 2 x 2 x 40 mm³
- Particle classes: >0.3; >0.5; >1.0; >2.5; >5.0 µm
- Volume flow: 50 l/min
- Optical crosstalk between the channels due to laser: -10 ... -20mV of approx. -4.0 V dynamic range -> uncritical



STRUCTURE

1. Laser diode module
2. Nozzle (0.5 x 20 mm²)
3. Photo diode array
4. Electronic board (schematic)
5. Scattered light cone
6. Base plate

PENDING PUBLICATION:

German patent application: DE 10 2022 113 774.0
 "Particle sensor and method for detecting particles" dated 31st May 2022.

A positive search report has been received from the German Patent and Trademark Office.

