



LASER MICROMACHINING

08 Ultrashort pulse lasers are used for microcutting, microdrilling and surface patterning – with low operational costs

0119

www.microproduction.eu

micro

PRODUCTION

The Magazine | Components | Structures | Systems

Laser sintering

24 Additive manufacturing is growing out of the niche

EC machining

44 Electrochemical machining with closed electrolytic free jet



Cleanrooms

62 Only as much as necessary, as little as possible

innovation
for quality.

sphinx-tools.ch

SPHINX+TOOLS

Sterility for any workplace

Cleanroom facilities. In industrial manufacturing, in science and in research, the need for a clean particle and germ-free environment plays an ever-important role. For this purpose, Spetec, Erding/Germany, offers cleanroom facilities. In many instances it is excessive to install oversized, technically complex, and expensive cleanroom facilities. Often the economy of an exclusive cleanroom is simply not justified, and in many instances it is quite sufficient to create a localized cleanroom environment.

The flow box ›FBS‹ or ›CleanBoy‹ have been developed for this purpose. The use of a laminar flow box or a CleanBoy establishes cleanroom conditions at the location where they are needed. The CleanBoy, available as a floor-standing or table-top device, offers a cost effective and simple solution to the particle problem. The unit is simply set up and is ready to use immediately with no further installation. A mobile, wheel-mounted version makes it possible to transport the unit to different locations within the company. It is also possible to adapt the dimensions to meet the requirements of more problematic workplaces. For the manufacturing of the flow box FBS, materials such as acrylic glass and stainless steel are applied. For installation in an acidic atmosphere, a special protective coating will be offered as an option. The effective cleanroom space of the FBS covers a size between 2,5 sq.ft. and 12,9 sq.ft.

The cleanroom devices are equipped with a filter of the type ›H 14‹. As the provider explains, these have a filtration efficiency of 99.995 percent. This means that the filter captures at least 99.995 percent of all particles of a size of 0.12 μm (as per MPPS). The filtration efficiency is approximately 99.9995 percent for particles with a size of 0.3 μm . This laminar airflow below the flow modules means that there is no crossover with dirty air from the outside and the air moves as a parallel stream.



Spetec GmbH, D-85435 Erding,
www.spetec.de

High deflection speed

2-axis deflection unit for wafer solutions. The German-based company Raylase offers with its ›Superscan IV-15 Wafer‹ 2-axis deflection unit a sophisticated solution for challenging industrial applications. Predestined applications include, in particular, the structuring of wafers in the solar industry. This special version of the Superscan IV-15, with its ultra-high speed, is designed to meet the high-performance requirements that apply to the manufacturing of wafers, where the highest possible angular velocity is essential. One trend-setting application for the scanner is the production of photovoltaic

wafers using the innovative PERC technique. PERC wafers consist of solar cells with a passivated emitter and passivated rear side. They are capable of reflecting light at wavelengths above 1180 nm, resulting in less heat development in the cell and a significantly higher efficiency of conversion into usable energy.

Raylase has optimised the laser scanner specifically for these applications to enable the high-quality yet time and cost-efficient production of these powerful PERC photovoltaic wafers. The Superscan IV-15's model-based, digital control offers very high speeds of up to 200 rad/s. Speed and dynamic responses are

guaranteed, thanks to digital control and powerful PWM output stages. When combined with the Raylase camera adapter and MVC components, the Superscan IV-15 is the perfect precision tool with process monitoring.

The robust, water-cooled master block design enables applications at up to 2 kW laser power when quartz mirrors are used. The deflection unit can be controlled digitally both via the XY2-100 enhanced protocol and via the SL2-100 protocol. The input aperture is 15 mm. Lenses with optimized holders and scan mirrors are available for all standard laser types, wavelengths, power densities, focal lengths and processing areas. Custom solutions can also be provided.



RAYLASE GmbH,
D-82234 Weßling, www.raylase.de