



## Fused Silica Lens Systems in Solar Cell Production



▲ Fused silica lens systems from Sill Optics

The use of laser scan systems in the solar industry will be the most cost effective and efficient production method in the near future. Of course the development costs must be kept under control, but the increase in efficiency will help, to achieve the

average costs of other energy sources very soon. All manufacturers have a special focus on thin film solar cells. This material saving technology has been developed further within the last few years and nowadays it is possible to create layers with less than 1  $\mu\text{m}$  thickness. This bears enormous cost savings. Another advantage is a super lowlight efficiency, as well as a good temperature coefficient. This coefficient describes the decreasing effectiveness of a solar cell with increasing environmental temperature. This enables especially photovoltaic plants in southern Europe a better output. The laser as a non contact tool minimizes the risk of breaking the sensitive wavers. It also minimizes the use of hazardous chemicals and precious drinking water. Future trends see already the growth of the modules from 156  $\times$  156 mm to 210  $\times$  210 mm.

Sill Optics is already developing scan lenses for these large sizes. They will be presented at the LASER Show in Munich this year. The focal length will be around 330 mm. There will be a version for 1.064 nm, 532 nm, and 355 nm. All lenses made from fused silica and with low absorption coating.

To adjust your laser beam to the required aperture of the scan lens Sill Optics already offers fused silica beamexpanders with magnification ratios of 1 $\times$  to 20 $\times$ . With this variety of expansion factors any lasertype can be adapted to achieve the required spot size.

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