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First market survey on scribing equipment for modules

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More applications for lasers

»Calculate carefully«
(PI 7/2008, p. 24)

Congratulations on an excellent article in the July edition of PHOTON International regarding the role of lasers within the RISE cell concept. The use of laser-based equipment within both crystalline silicon and thin-film manufacturing has indeed been the subject of groundbreaking R&D over the past decade.

While the article focused on how lasers can play an enabling part within an »advanced« cell concept such as RISE, the adoption of laser-based processes within current production lines reveals different factors not covered in the article, and which can be more pertinent for existing cell manufacturers and equipment suppliers.

Today, the one mainstream application for lasers within c-Si cell production is at the edge isolation stage. Laser use here reveals one key aspect of industrial-qualified diode-pumped solid-state lasers: their »green« product status. Edge isolation can be performed by dry (plasma) etching, wet (chemical) etching or by laser processing – as outlined comprehensively in your December 2007 feature. Regardless of any yield or efficiency arguments when comparing these technologies, laser processing here stands alone as both »dry« and »green,« and does not generate any hazardous by-products. Laser processing has, of course, historically replaced these technologies in other industries, but the importance that »green« tooling has in the PV industry cannot be emphasized enough.

The other factor driving increased laser implementation in cell manufacturing is the ability of laser-based tooling to be incorporated specifically within existing, or »standardized,« turnkey production lines used in the industry today. Here, the drive is for iterative efficiency and yield improvements at discrete back- and front-end-of-line stages, as opposed to a new cell architecture altogether. As both higher yields and increased efficiencies are targeted on brittle, sub-180 µm thick silicon wafers, the benefit of laser processing when replacing contact technologies for next-generation tooling is one of the most significant factors accelerating laser use within the industry as a whole.

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