



ECN

Your energy. Our passion.

Laser technology

Micromachining for large areas

Focused-coherent light has proven to be a practical tool for micro processing of large areas. The wide available range of wave- and pulse lengths makes the laser the industrial tool for fast, dry and solvent-free processing of all kinds of materials and layers. Even after more than 50 years of laser usage in industry, new applications are still being created.

The development for large area thin-film processing of solar cells has resulted in high-level knowledge of, and infrastructure for laser processing at ECN. This knowledge and infrastructure is not limited to solar cell development, but is also usable for a broad spectrum of other applications. From large area processing to micromachining, ECN has the knowledge and laser- and measurement equipment to realize your products.

What can ECN do for you?

- Development of laser processes, including measurement and analysis.
- Production through modular automation.
- Flexible prototype development using laser technologies.
- Combination of additive and subtractive processing.

Short-pulsed laser processing

Our pulse width tuneable (250 fs – 10 ps) laser is capable of setting the pulse width without having to change the set-up.. The laser platform enables a stable processing at different wave lengths (1030 nm, 515 m, 343 nm) with a wide range of optics.

The automation of the systems is designed to easily facilitate experimental setup via Excel input.

The available laser systems have a high degree of flexibility and can be tailored to specific needs.

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Current ECN activities

Submicron area modification

The use of femto second pulses easily creates a surface sub-micron structuring on metals and in thin films. The created surfaces are used for diffraction of incoming light to enhance absorption and optical efficiency.

Micromachining ceramics and glass

The short pulse reduces the thermal load on materials, enabling the direct micromachining of brittle materials. Drilling in glass, marking of samples and microfluidics are examples that are made with the direct ablation of glass.

Scribing thin-film solar cells

A thin-film solar module has almost 1 kilometre of laser scribe length. The selective scribing enables the specific removal of layers from layer stacks. This is used for back-end processing of solar panels, thus creating a method of making tailored thin solar cell modules.

Cutting spacers for accurate print heads

Accurate cutting of thin foils without any thermal damage is used to produce components for industrial printers and coaters.