



LASER BLANKING OF FLEXIBLY ROLLED STEEL

Task

Laser cutting from coil has increasingly become established as a flexible manufacturing method – as an attractive and sustainable alternative to punching – for cutting car body components as seen in numerous such systems installed worldwide by different manufacturers in mass production. By switching from a tool-based process to a flexible laser contour cutting process, known as laser blanking, these manufacturers can enjoy great economic benefits. These include, in particular, the savings in investment costs for tools and their storage, the simple modification in the cutting contour in product development or for product change and the potential for considerable material savings through the flexible distribution and nesting of the production program. The flexibility of the laser cutting process is not limited to the easily adaptable, software-supported definition of the cutting contour, but can also be used to process material with locally different properties during the process. Fraunhofer ILT is developing a laser blanking process for cutting flexibly rolled steel of locally varying thickness.

Method

In order to process material with variable thickness reliably, the institute is pursuing two approaches. On the one hand, it has given the robustness of the process high priority. On the other hand, it is adjusting process parameters dynamically, depending on the sheet thickness. The thickness-dependent control of the cutting speed is a decisive parameter and ensures compliance with quality criteria and productivity.

Results

The institute has been able to fully achieve high standards of laser blanking of material with constant properties even with coil material with locally varying thickness.

Applications

For material with constant as well as variable properties, the highly productive laser cut from coil has reached a level which allows the industry to economically mass-produce sheet metal products in ever-changing variants. Thanks to its higher available laser power, this technology is also becoming increasingly interesting for industries that need to process larger thicknesses above 3 mm.

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3 High-speed cutting of a B-pillar.

4 Sample component.