

plasmo at EuroBLECH 2010:

## Quality assurance system with integrated sensors for quick remote-welding applications

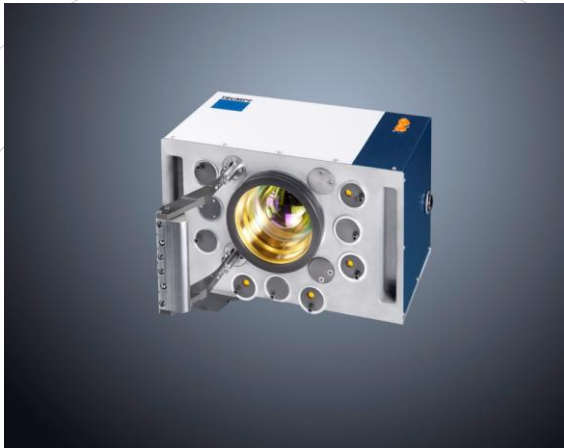
This year's EuroBLECH 2010, held in Hannover from 26 to 30 October, sees plasmo Industrietechnik present its wide range of usage options for remote-welding applications. The laser-remote-welding technology was used to develop a process which competes directly with spot-welding. The welding speed (which is 10 to 15 times faster than spot-welding), the freely programmable seam geometry, and the accessibility to the joint which is only necessary on one side, are features which make remote welding attractive. Its additional future prospects are particularly a result of the lightweight designs based on using maximum-strength steels.

### Quality requirements

The heightened quality requirements for serially produced components in many industrial sectors can often only be met through a 100% final inspection. The issue as to whether production processes can be validated is increasingly coming into focus. This is particularly apparent in the electronics industry and the automotive industry, where remote-welding processes are also being employed more frequently.

### Structure and functionality of the Inline test equipment for remote welding

The processobserver series is based on analysing visible and infrared light emissions which differ for I.O. and N.i.O. weldings. To do this, six optical fibres integrated into the welding optics are used to



[Figure 1: Window for optical fibres in order to cover the remote space]

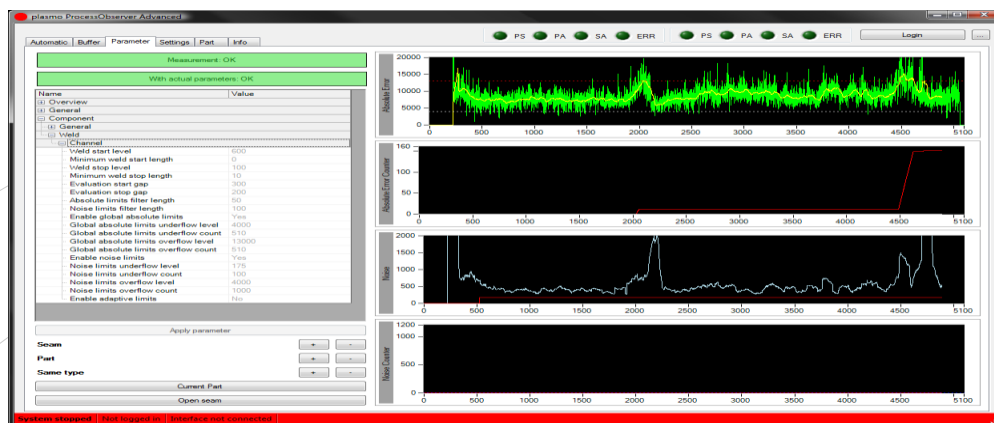
direct the process light to a sensor and analyse it. The emission values for an i.O. welding must lie within a pre-defined range. Various algorithms developed over the years reliably identify relevant process fluctuations occurring during remote welding. This makes it possible to check every seam based on the specified quality criteria, and prompt the system to make an IO/NIO decision as to whether reworking is necessary and whether the component is to be excluded from the process. In the event of complex components, such as seat fittings and automobile doors with up to 1000 seams, all seams are analysed once the components have been processed. Seam to seam times of up to 10ms are easily possible thanks to the coverage in the remote-welding space.



[Figure 2: Inline processobserver advanced monitoring used with Trumpf PFO 3D]

## Documenting the test results

All test results are stored in a database to ensure complete documentation of all welded joints in the components produced. Apart from the component number information, detailed information (see figure 3) on the individual welded joints is saved and documented, based on both the seam and the component.



[Figure 3: processobserver advanced software analysing an individual seam]

This enables consistent documentation, and forms the basis for using statistical procedures to visualise and continuously improve the production process and welding process quality.

## Visualisation

All test results can be displayed at the workstation or at an offline AP for the purposes of rapid seam optimisation. For example, the position of the automatic welded seam test is displayed to the operator directly on the screen in red or green. Extensive, detailed information in the form of statistical analyses of several layers is also available directly from the production plants, or are saved in the superior system. The operator can view the welded seams later on in the production process through a further external visualisation on the screen, and can rework these if necessary.

## plasmo Industrietechnik GmbH

*plasmo is an innovative, global technology company for automated quality assurance systems in the production industry. Founded in 2003, plasmo is a leader in real-time quality controls for welding processes. Its diverse quality assurance portfolio includes laser power measurement, welding process checks, monitoring of welded seams, geometric shapes and surfaces, customised solutions in the area of industrial image processing, analysis software, as well as a wide range of services. The expert team assists its customers from the moment the test task is defined until implementation of the test system. Almost every vehicle produced in Europe, from Audi to VW, as well as white goods and many other industrial products, go through plasmo's innovative test system during production. Reputable customers from ABB to Hettich to Magna, numerous automobile manufacturers such as Audi, BMW, Daimler, PSA, Suzuki and Volvo, and the Dutch steel manufacturer Corus all place their trust in plasmo's quality and quality assurance. In 2008, the Vienna-based company with 20 staff earned a sales turnover of 1.8 million Euros. The same year, the new plasmo office opened in Germany, and the plasmo distributors in Japan, Belgium, the Netherlands and Luxembourg also started up their activities.*

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