



LONDON

Quality is not concealed...

processobserver advanced

ENGINEERING QUALITY WORLDWIDE

plasmo

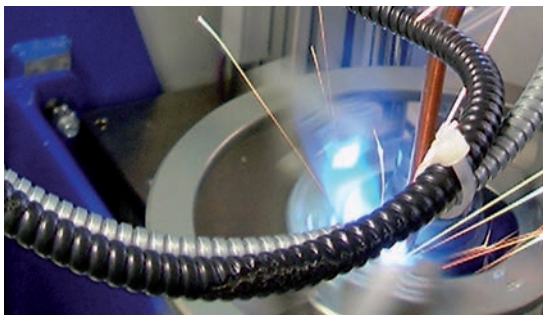
The processobserver advanced

The high-power quality control system for industrial laser beam welding.

The current situation

The processing of materials using lasers is one of the most innovative technologies in industrial production today. Effectively employing focused high-power laser systems drastically improves the efficiency of ordinary work procedures. Not only that, but the potential for new types of production methods is growing at an exponential rate.

With this growth, the need for automatic quality control systems for laser beam welding has risen.



The challenge

The challenge for online quality control systems is to recognise welding flaws in real-time and document them.

The solution

The plasma processobserver advanced offers you a hi-tech device that monitors and documents welding, cutting and drilling processes in real-time without damaging the workpiece. All data recorded is available for a detailed offline analysis.

The advantages

- An automatic quality control system is integrated into the production process.
- Failures are recognised immediately; without damaging the workpiece during the analysis.
- All production data is comprehensively recorded and documented in accordance with ISO 9001/2.
- Any quality defect is traceable.
- Statistics modules and trend analysis modules are used to evaluate the data.
- The long-term statistical evaluation functions of the processobserver advanced are an effective way to optimise your processes!
- The entire welding process can be optimised to reduce production costs.
- The offlinereader and offlinesimulation-software can be used to diagnose systematic welding errors.
- The person responsible is able to monitor and control the process, allowing to reduce the number of defects produced considerably.



The facts

This online process monitoring system for welding, cutting and drilling can bring an increase in efficiency of up to 30% - all without ever touching or damaging your workpieces!

Our welding monitoring system works for all known laser applications.

The clients

Plasmo's reliable quality control system has proven its value day after day for companies all over the world. The clients hail from a wide range of industries - job order production, equipment manufacturers, laser manufacturers and businesses with integrated production systems and quality control systems.



Real-time quality control

The processobserver advanced recognises irregularities in laser welding, drilling and cutting.

The function

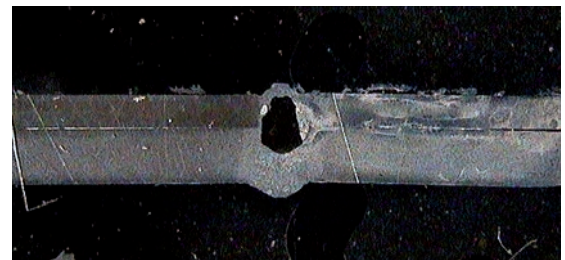
During the welding process such as laser beam welding, process light in the visible, infra-red and ultra-violet wavelengths is emitted. Failures in the welding-process are revealed in changes to the process light. Failures that can be recognised are:

- Pores/seam contraction
- Ejecta/welding spatter
- Changes to the depth of the welding
- Contaminations
- Insufficient connection/„wrong friends“
- Top bead depression/root depressions
- Cut sheet metal
- Beam misaligned, mock seam

An evaluation example

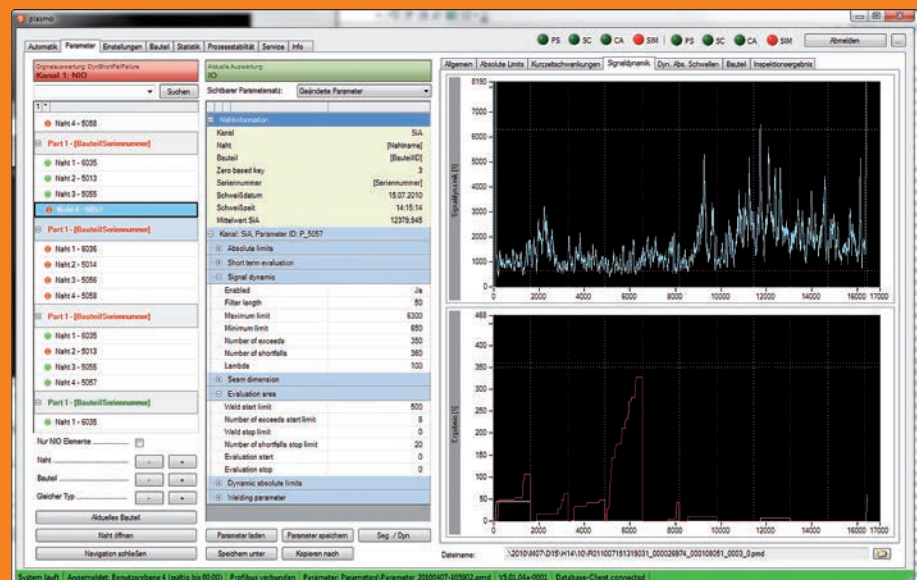


Correct welding. The result of the destructive test is IO = is OK.



Defect weldseam. The evaluation of the workpiece is NIO = not OK.

The high ease-of-use and convenience of plasmoprocesobserver's advanced online software makes it stand out from the crowd. A comprehensive GUI allows even inexperienced users to configure the system efficiently and quickly based on their needs using Windows. Support is provided in the form of a clearly presented database, helping to manage, view and analyse your measurement results quickly and smoothly.



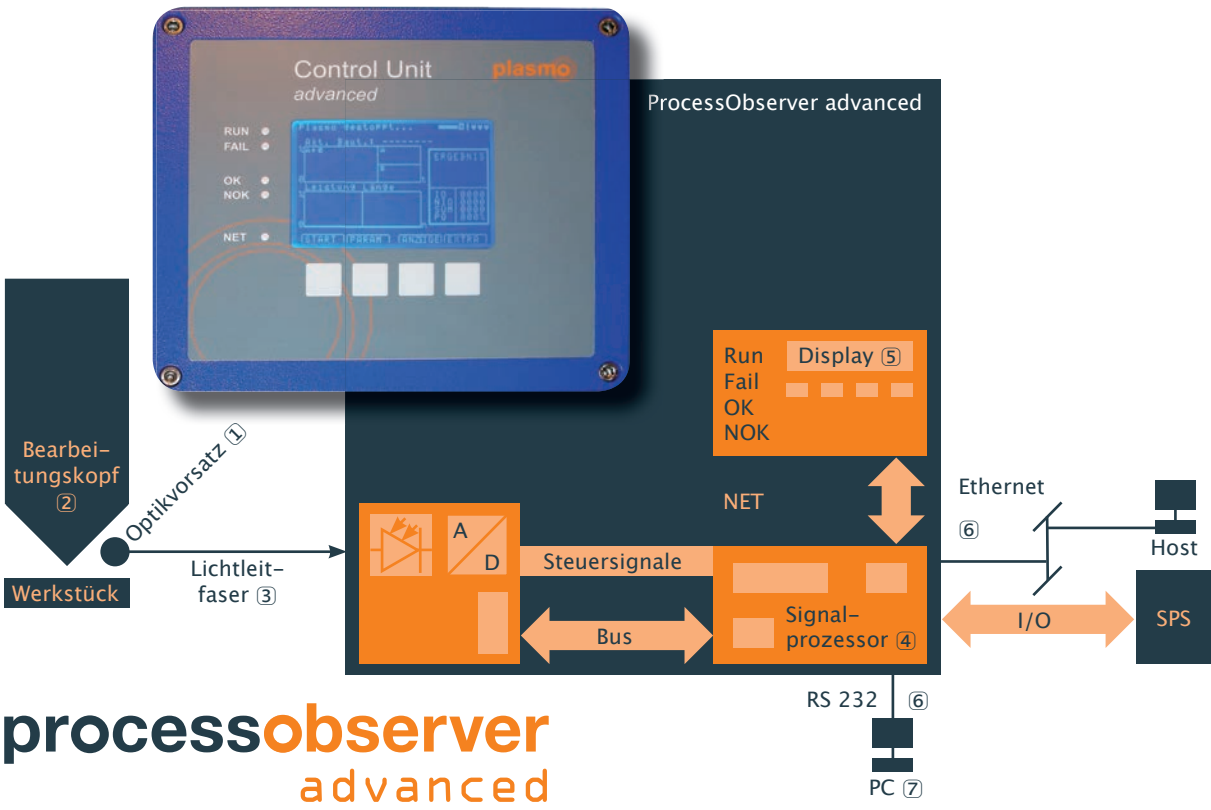
The solution

Using an optical adapter ①, fibre or an integrated fibre in a processing head ②, the process light is transmitted to a DSP computer via an optic fibre ③.

The digital and prepared signal is analysed by the signal processor ④ and evaluated. The result is shown in real-time at the end of the welding process by IO = is OK or NIO = is not OK on the front display ⑤ and at one of the outputs ⑥.

The recorded signal data is also forwarded to a superordinate computer ⑦ via the RS232 or Ethernet interface for visualisation.

Parametrisation tools and visualisation software (online and offline) are available for the computer. A range of other useful short-term and long-term analysis tools and statistics programs are available for short and long-term evaluation.



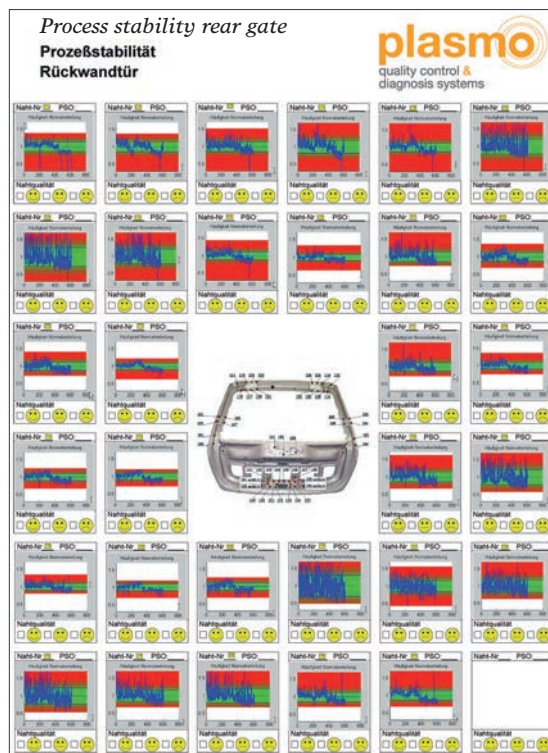
Process optimisation

A more efficient production control process and high quality also provide more security for the end client and users.

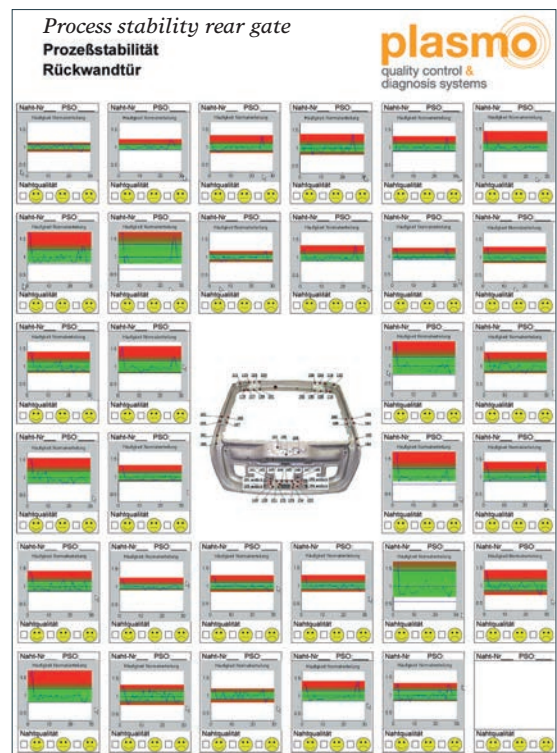
Part of the effective operation of a business is the optimisation of production processes, an indispensable element of modern business management strategies when facing both national and international competitors.

A range of software modules and statistics modules are available for optimising your processes. The most important parameters for process monitoring (Cp, Cpk, standard deviation, average etc.) are displayed. A number of features provide you with a graphic representation of the measurements.

With Colormapping, for example, a coloured „error map“ is generated as shown in the example below. This simple method of interpretation helps you to save time and optimise your processes.



Process evaluation prior to analysis with the processobserver offlinereader. Frequent deviations from the normal distribution indicate incorrectly configured process parameters.



Optimised process after analysis with the processobserver offlinereader. There are now considerably fewer welding failures; the quality of the components is guaranteed.

Technical specifications

Measurement inputs	
Optical sensor inputs for optic fibre ¹	2
Analogue input 0 - 20V ²	1
Analogue input 0 - 20mA ³	1
Measurement unit	
Optical sensor inputs for optic fibre	integrated up to 10KHz/16bit
Analogue input 0 - 20V	up to 500KHz/12bit
Analogue input 0 - 20mA	up to 500KHz/12bit
Communication	
Fast Ethernet 100Mbit/s	1
CAN Bus ⁴	1
RS 232 ⁵	2 x 230kbit/s
SPS system inputs ⁶	16
SPS system outputs ⁷	16
DeviceNet	optional
CANopen	optional
Profibus	optional
Interbus	optional
TwinCAT ADS	optional
RSLinx	optional
Profinet	optional
Display & Interface	
LCD display	240 x 128
Keyboard	4 keys
LED status display	5
Audible alarm	1
Processor unit	
CPU	Power PC 266MHz
Flash	max. 32MB
RAM	max. 256MB
Compact Flash card (CF)	max. 16GB
Connection & dimensions	
Network connection	85 - 260 V~, 40 - 400 Hz, 40 VA
Dimensions	230 (B) x 200 (H) x 150 (T) mm
Weight	7,2 kg
Ambient temperature - operation	5 - 50° C
Ambient temperature - storage	10 - 50° C
No ventilator	yes
Air humidity - operation ⁸	93% RH at 40°C
Air humidity - storage ⁸	93% RH at 40°C

¹ Photodiode 400-1.800nm

² Input resistance >100kΩ

³ Input resistance 1kΩ

⁴ supported standards up to 1Mbit/s are CAN 1.2, CAN 2.0A, CAN 2.0B passive and CAN 2.0B active, Device-Net addressing

⁵ Standard

⁶ Supplied externally, max. 24V

⁷ Supplied externally, max. 24V/1A. Sum max. 3A. If all outputs are used simultaneously, max. 200mA per output.

⁸ According to IEC 60078 - 2 -78



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