At a glance
Airbags save lives so the production of airbags must be 100% reliable. Quality control is the only way to ensure that the airbag will open at the right moment.

Challenge
An airbag manufacturer approached plasmo with the request to implement process monitoring for its laser welding processes for the new airbag series at its main production location. The most important requirement was to develop a quality inspection solution that should conform to the state of the art and the company’s own individual requirements, while at the same time connecting to the company’s internal database to ensure the legally required traceability of 15 years. To achieve this, a large number of welding parameters had to be inspected as well as material characteristics had to be monitored simultaneously.

plasmo’s solution
Following initial operating tests as part of the entire “airbag” production process, all functionalities were tested extensively in practical application. Upon completion of the test phase, the processobserver for process monitoring and quality control in laser welding was chosen from plasmo portfolio for the new airbag-production line.

The system fulfills all testing requirements during the manufacture of the airbag. The time when the weld is made, the component is assessed as being OK or NOK while the NOK component traceable results are transmitted via a bus system. Defects such as pores, seam narrowing, weld spatters, changes in welding depth, insufficient connection, impurities, laser performance, welding speed and gap changes are detected. This results in an OK or NOK (not OK) signal. The process ensures compliance with strength-related specifications and definitions of the customer.

In addition, every weld or every welding process result signal is transmitted by the plasmo –system for storage in the customer’s database (Oracle, SAP). This is an important additional software for automated archiving, for statistical purposes and for inspection of the entire process control.

### PROCESS MONITORING FOR LASER WELDING

**APPLICATION**
seam tracking airbag gas cartridge

**JOINING PROCESS**
laser welding

**POSITION**
inline

**PLASMO SOLUTION**
plasmo processobserver advanced

**TECHNOLOGY**
diode based

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| pre process | inline process | post process |
Result - customized quality control
plaso has implemented an inline testing process that, thanks to real-time testing, does not require any follow-up process, reduces laboratory analyses and offers far more than conventional quality assurance. Consequently, it makes a vital contribution to process and cost optimization, in particular in the possible event of a recall of entire series.

The additional offline software allows for filtering out the specific defective components, based on new evaluations of data amounts (up to 15 million). Based on this data, it is possible to filter out these defective parts separately.

This makes a decisive contribution to the quality assurance of these safety-relevant components.