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Efficient Image Processing

THE VOLKSWAGEN PLANT in Emden has successfully installed the plasmo profileobserver compact image processing system for the series monitoring of the rear and roof seams and the water channel in the production line of the Passat B8 model.

Volkswagen in Emden, with over 264,000 vehicles produced and 9,700 employees on an area of 4,100,000 m2 (status 12/2015 source: Volkswagen), is the largest industrial employer to the west of Bremen and to the north of the Ruhr area. The 50th anniversary of the existance of the location was celebrated in 2014.

The focus at the location is the production of the Passat B8. According to VW, with the current Passat, the eigth generation on the basis of the modular transverse matrix platform (MQB) „a new era in automobile manufacturing has begun".

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High Demand for Process Control

Already at the planning stage of a new model, current regulations for the manufacture of automobiles require the assurance of the quality via the continuous monitoring of laser soldered seams.

The expertise, the process and the cost / performance presentation lead to the cooperation between the Volkswagen, Emden, plant and plasmo from Vienna.
First and foremost, the plasmo profileobserver compact will be used for the monitoring and measurement of laser soldered seams in the visible areas. Here it is important that the smallest porosities are very quickly recognized, evaluated and visualized. Thus it is ensured that only car bodies that satisfy the Volkswagen quality specifications are delivered to the subsequent production areas.

„Already during the implementation phase, the quick and simple handling of the plasmo profileobserver compact was demonstrated. Due to the high inspection speeds and the accurate defect detection, long soldered seams, such as, for example, in the roof area, can be inspected using just a single system from plasmo", said

the project leader for this quality assurance application, A. Gronewold.

Through the use of 100% porosity monitoring, it is possible to detect and repair existing defects in the soldered seam already in the body shop. The surface geometry of a soldered seam is displayed in real time.

»Already during the implementation phase, the **quick and simple** handling was demonstrated.«

A. Gronewold,
projekt manager QA at VW

All the determined seam parameters such as form and position of the soldered seams are visualized. Special algorithms serve for the stable detection of surface pinholes in the 0.1 mm range.

The plasmo profileobserver works according to the laser triangulation principle. The image capture takes place via a high speed CMOS sensor with a maximum of 30,000 images per second. The CMOS chip converts the recorded laser line directly into height measurements. These are forwarded via a GigE interface to an industrial PC. There the evaluation of the seam geometry in accordance with parameterizable quality attributes takes place in real time.

At the end of the measurement cycle, the result (OK/NOK), the type of defect and the defect location are displayed on the monitor and passed on via a digital output or a bus system to the plant PLC and the rework stations.

The plasmo image processing software enables accurate measurement results with high dynamics and accurate traceability of the measured data back to the seam.

With the optical 3D inspection process of the profileobserver, not only the height profile but also a grey-scale image is recorded at the same measurement speed. Depending on the application and system, different working distances can be set. Due to the high scanning speed of up to 30 kHz and full-frame recording without a reduction in the ROI (Region Of Interest) and thereby the resolution. In the range of image processing systems on the market, this is - according to plasmo - unique. The plasmo systems detect the defects not only very accurately and very quickly but also in very large image areas. Optionally there is the possibility in the industrial PC of evaluating the grey value information in addition to the 3D information and recognizing additional quality attributes. The online software of the profileobserver is impressive, according to plasmo, due to its „extremely easy operation". Extensive graphics support also allows inexperienced users to configure the system to their requirements.

Thanks to the add-on software module developed by plasmo – the plasmo Dashboards – it is possible to visualize the most diverse customer-specific quality attributes. The software interface can be configured for the analysis of measurement data and the control of the measuring process. Special process and result visualizations over the entire process enable the recognition of trends and thereby the optimization of the production processes.

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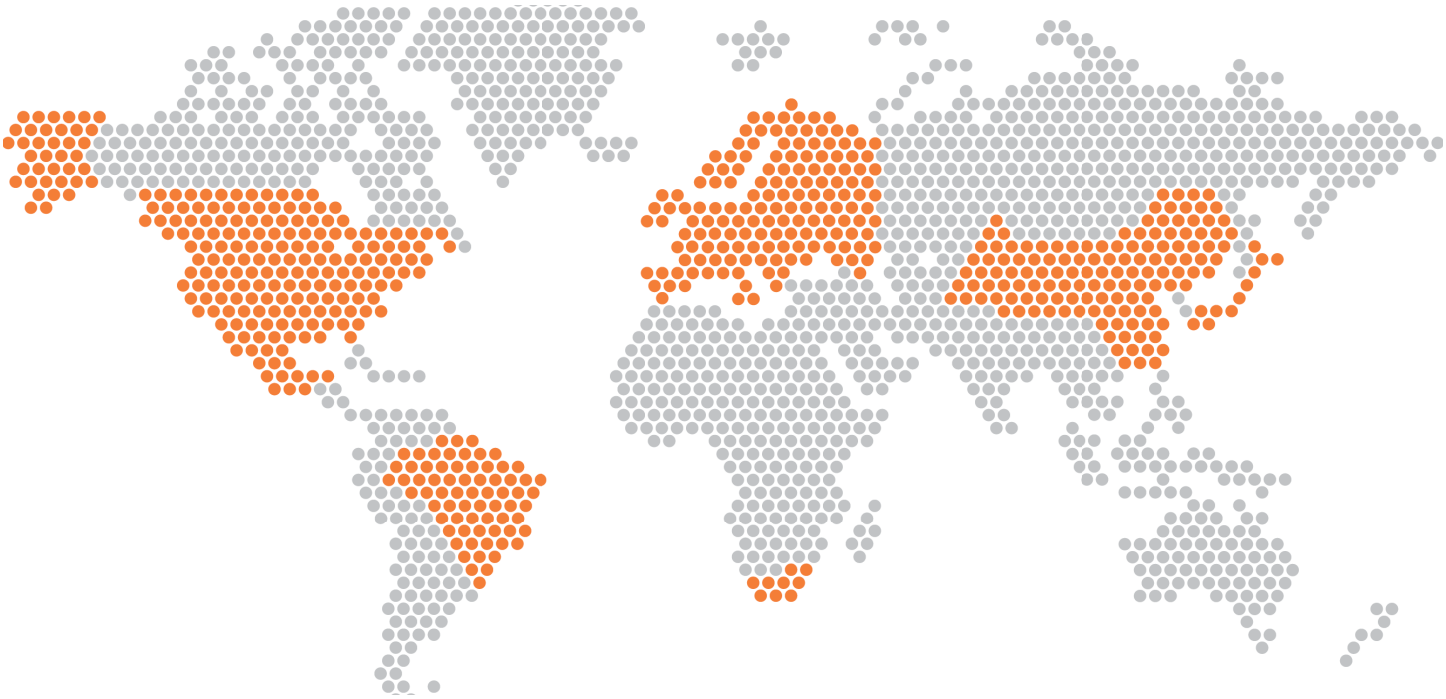
1 The plant in Emden manufactures different variations of the current Passat (B8).
2 The plasmo profileobserver checking a roof seam.
3 The plasmo image processing software enables accurate measurement results with high dynamics and accurate traceability of the measured data back to the seam.

BACKGROUND

PLASMO is active worldwide as a high-tech provider of quality assurance solutions for automated metalworking production processes. The company founded in **2003** has its headquarters in Vienna, subsidiaries in Germany and the USA and has available a network of international sales partners. Depending on the individual requirements, the plasmo Quality Suite offers solutions for the respective production processes. The plasmo systems are employed for the control of welding processes, the monitoring of weld seams, geometric forms and surfaces and for laser power measurement in the field of industrial image processing right up to the individual display of measurement results. From the sensor technology via the integration up to the evaluation and correlation level, plasmo supports and optimizes the production process. A broad range of services, including comprehensive engineering services, rounds off the portfolio. With its ready to use implemented customer-specific applications, plasmo has established a large customer base of leading international companies from various industries. In the steel industry, companies such as Thyssen, Salzgitter, Tokyo Steel and Posco trust in the first-class quality assurance systems from plasmo, just as do the automobile manufacturers Audi, Daimler, PSA, Suzuki, Volvo, Volkswagen and many more. In order to be directly available to the customer as a point of contact on site at all times and to provide customer-orientated service for the increasing number of enquiries, our plan to have our own subsidiary in the USA has now been realized.



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