

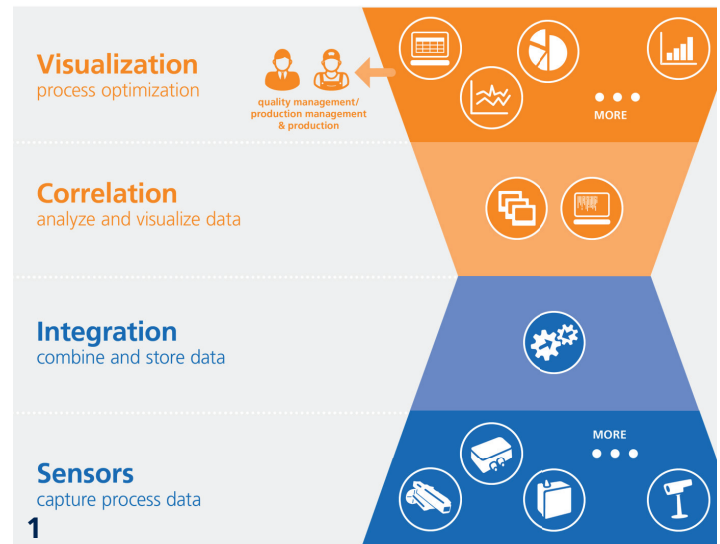
Big Data at a Glance

FUTURE - For plasmO Industrietechnik GmbH, a leading provider of quality assurance solutions in the field of laser beam joining of materials, a modern CAQ system, in addition to the actual purpose of quality control, enables the optimization of production. This significantly increases added value for the end user.

The recording of the process conditions takes place today by means of sensor technology already, to some extent including interfaces to ERP and MES systems. These data are brought together in the integration level (time, place, retraceable). The volumes of data accruing here, depending on the production and the sensors, can be correspondingly high – these are increased by cross-facility approaches. An initial compression for the reduction of the data volume normally takes place here through the calculation of parameters from, for example, chronological high resolution sensor measured values.

Data, however, does not represent information, information must be extracted from the correlation level, for this, just as with, for example, deep learning concepts, statistical methods are applied.

This information must be suitably presented depending on the organisation of the company. A user experience analysis quickly shows the requirements on the man-machine interface, for example, for the management, for the Production Manager and the quality representatives. plasmO took on this task and offers Dashboards for this visualization. Dashboards are frequently found in the commercial controlling of companies, the objective of plasmO was to develop Dashboards for the control of production. (More detailed, very compact paragraph) This can be explained using an example of the production of identical and different components at different



locations using different machines. The sensors deliver the measured values, the production runs under the specification of selected process limits, components with different numbers of seams are welded, data from real production is anonymized.

The user experience analysis produced simply summarized Dashboards for the different levels, which, for each production level, display process deviations with colours and through appropriate illustration of the quadrille. Navigation between the individual levels can be done simply via menu options (Illustration 2 shows this for the machine level at a location).

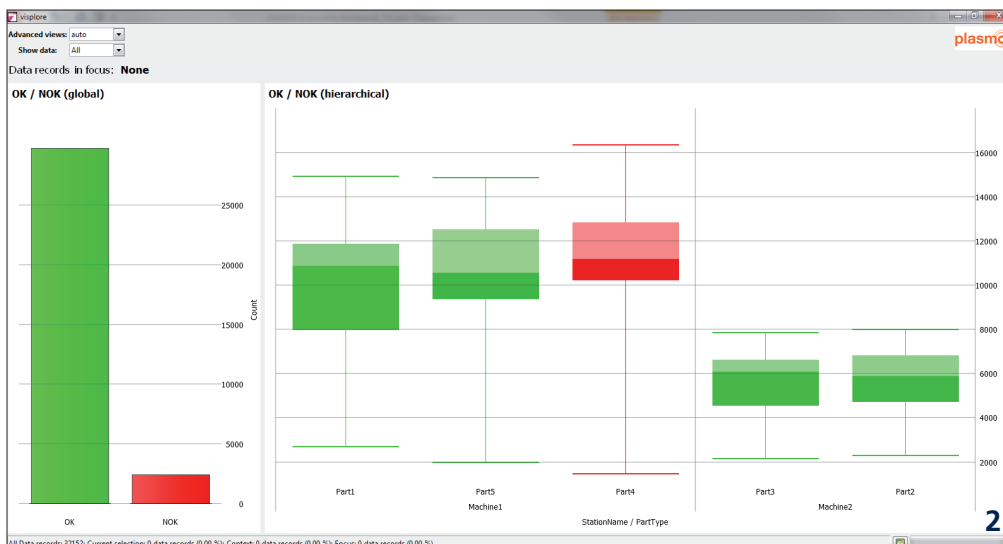


Illustration 1:
Structure and User Experience of a Modern CAQ System

Illustration 2:
Dashboard Overview Machine Level at a Location3

Illustration 3:
Detail Dashboard Component Level of a Machine

With these Dashboards deviations can be quickly identified and measures can be implemented. By changing to a machine level, quality representatives and production can now obtain detailed information in another Dashboard for root cause analysis (see Illustration 3).

»The analysis of the production here takes place later, with the use of a modern CAQ system, the rejects would have been avoidable.«

Good and suspicious components are very easy to distinguish between. The chronological progression of the process parameters (lower left diagram) shows that the defects have occurred in the course of a shift change.

The analysis of the production here takes place later, with the use of a modern CAQ system, the rejects would have been avoidable.

The detection of defects in real time demonstrates the added value of modern CAQ systems using Dashboards. Together with end users, further Dashboards have been developed. The solutions are integrated in the plasmO quality inspection systems, however the system provides interfaces for additional sensors and is not restricted to plasmO sensors.

Network-compatible interfaces allow the operation of the Dashboards at different workplaces with up-to-date data, the handling of large data volumes (several million data sets) also enables interactive working with the Dashboards.



This approach demonstrates further, that with suitable visualization the complexity of Big Data applications can be transformed into manageable user-friendly man-machine interfaces even with cross-site production.

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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.

PRODUCE QUALITY. ALWAYS.

