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A new software enables metals producers to optimize their yield and quality not only for single lines but the entire enterprise.

Look into the future - SQMS provides a quality forecast for downstream production

Industry 4.0 is not only about collecting data and making it available, it is way more than that. All different components in an automated manufacturing environment need to communicate: Machines, gauges, as well as planning and control systems are required to exchange information in order to make the smart factory possible. Hereby, the quality of the product is one of the most important control and steering factors in the modern metals industry. Customer specifications and expectations regarding every single order have to be met. With ISRA VISION's SQMS (Surface Quality Management System) and the company's deep industry knowledge and experience, the software is able to derive objective decisions out of a vast amount of collected data. Users may conduct quality forecasts of their respective products. They can also identify early in the process if the customer's requirements of the end product can be met. Furthermore, the software provides a holistic and objective overview of the entire factory and not only individual production lines.

Product quality in the metal manufacturing process is, in the first place, defined by gauge data, which means thickness, width, flatness, and temperatures. Second, the correct chemical composition is crucial, and last, mechanical properties such as strength and hardness. Those

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three factors have in common that they are quite easy to evaluate and to control in the quality management circle. This been said, there is a fourth factor which is much more difficult to evaluate: the surface quality. It is defined by the number of defects, the defect area, defect density, defect grade and even the handling of defects, which are disrupted by material cuts. All those indicators are not easy to identify and measure.

ISRA's SQMS is a business solution specifically designed to face this challenge in the metals industry. The software ties together collected surface data from the entire process, since quality management is a level-crossing function – from order inquiry and order design to planning and product execution, from the steel making until the last finishing line. In order to efficiently support line managers, SQMS defines the detailed customer-specific quality corridors for each production step. For example, a blank of a bumper for a particular automotive manufacturer passes through the line while being inspected continuously following the precise specifications that have been established before. Those may contain, for instance, quality grades from premium to standard to basic.

Collecting valuable data through the entire production process that permits absolutely objective decision making

Every data set that deviates from those quality requirements is monitored carefully and collected. In case of severe faults, the staff is informed by an alarm. A central Surface Inspection System (SIS) monitor makes sure the surface quality is always measured correctly and allows early adjustments during the process. Production at the highest

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quality level is thereby ensured. Even if a product does not reach the target quality level, the software makes it possible to reassign it for another use. If the target is to produce an automotive outer material, but the quality is not high enough, the line manager can decide to use the material for car interior or white goods, for example. This way, absolutely objective decisions are possible since all the rules are defined in one place. All relevant tasks like releasing, reassigning and repairing are integrated.

Additionally, the close monitoring process through all production steps enables the user to evaluate the production results afterwards: This reporting helps to identify KPIs that drive continuous improvements. It delivers advanced defect statistics and defect trends. Furthermore benchmarking of material, customer needs and lines is possible. The line manager can create a shift report and a production overview. Moreover, he may use a statistical process control and a classifier comparison. This analysis enables a condensed view, for example, of the last week, the last month or the last quarter's production. SQMS reporting is available on all devices, laptops or tablets, PC or mobile phones.

SQMS even supports lines without a surface inspection system, offering manual inspection. The record of the complete quality history shows all decisions and underlying data along the value chain. Since the complete data has the same format, goes to a centralized server and can be easily combined, the user has central access to all relevant surface quality data, reporting across all plants, mills, and lines. There is no need to take the old-fashioned approach, which is defining quality line by line, each line manager for their area, without having a clear

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view of the whole production chain. The application is able to compare different quality rule standards regarding the number of coils rated as being OK, to be repaired or blocked in order to adjust the yield according to the actual market situation. Last, but not least, SQMS can be easily integrated into the customer's existing QMS.

In addition to SQMS, ISRA Parsytec also offers a complete portfolio for the entire production chain of steel and aluminum. It incorporates the experience gained from over 750 surface inspection systems installations, resulting in automated quality assurance from the very first step in the production process. For example, SURFACE MASTER enables smart automatic optical surface inspection at all stages of production.



Picture 761_1: The Surface Quality Designer allows the definition of standard and customer products with all quality rules.

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Picture 761_2: SQMS supports the complete quality circle: From incoming customer order till feedback to optimize the quality standards.

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