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100% automated production measurement of a car body welding line with absolute reference

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Abstract:

NMS Online Absolute Scan Cell is the first “absolute” automated measurement system based on 6DoF laser trackers in car production history. It has very special and unique parameters that are going to be presented in more detail.

This unique system is able to inspect more than two hundred features on each car body produced during the production cycle with the absolute accuracy of better than 0.2 mm. One of the key features of this solution is that scanning procedure is fully automated – this allows inline inspection for 100% of production (3 models). Further exceptional characteristics is the number of features which are analyzed directly in production line – in less than 51seconds more than 200 features are inspected with accuracy better than 120µm.

Unique is also the construction of reference point pins (RPS), for automatic adaptation and measurement. In comparison with the inspection procedures in the past (offline CMM), NMS Online Absolute Scan Cell has introduced many advantages, among others: before, random deviations were not detected and deterministic deviations inspected by offline CMM were delayed, therefore correction was done much later. Now, maintenance of welding line can be planned and optimized to save time and costs. Complete software solution for this project was developed by NMS. Software provides all tasks needed for automated measurement – monitoring (security barriers, RPS pins, behavior of robots), controlling (robot start/stop, scanning process, evaluation, data transfers), failure checking.

It is fully integrated with customer’s input and output data format, data structures and database systems.