A070 - AUTOSCHEINWERFER-BESCHICHTUNG

APPLICATION NOTE A070-ST99

ANALYSIS OF COATING APPLICATION FOR CAR HEADLAMPS

HELLA is a family-owned, Germany-based and worldwide active company who develops and manufactures lighting components and systems for the automotive industry. Car headlamps are a core business, with a plastic reflector at the backside and a transparent glass-like plastic lens in the front of each headlamp as essential components.

Part of the headlamp manufacturing process is applying a UV-resistant varnish on the transparent lens, and a chrome-like coating on the reflector, both applied by a coating robot, involving several coating steps. As the quality of the applied coatings during initial testing was not constant, HELLA asked Bronkhorst for assistance. Due to the use of Bronkhorst mass flow meters, HELLA was able to analyse the application process accurately, and to identify essential steps in the process to improve the coating quality.

LED headlamp (Photo: HELLA)

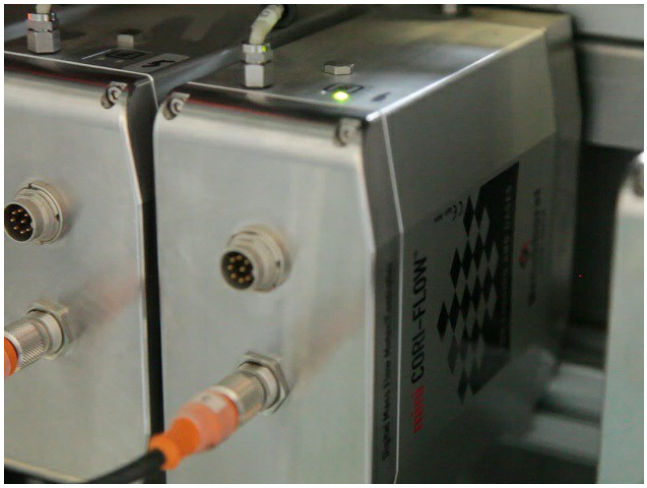
Application requirements

For an optimum headlamp performance, the UV-resistant varnish as well as the chrome-like coating should be smooth - so without irregularities - and of uniform thickness.

Important topics

- Mass flow meter for process analysis
- Measurement accuracy
- Powerful combination of soft- and hardware

Process solution



In a test setup at HELLA, a Coriolis mass flow meter (series mini CORI-FLOW M15) was positioned immediately upstream of the spraying pistol of the coating robot, and for 14 days all kinds of tests were performed. Due to the use of this mass flow meter, a high measurement accuracy has been obtained that they had never seen before. Combined with the FlowView software package, the M15 mass flow meter measured negative effects within the coating application process that did not get noticed up to that moment. Repeatability issues as well as artefacts within each of the coating application steps were identified using this Bronkhorst solution.

After these negative effects were identified, HELLA removed them from the process after a thorough investigation, leading to an improved process and a much better coating quality. This resulted in an optimised and faster coating application process.

According to HELLA, the combination of the mini CORI-FLOW M15 device and FlowView software is a very powerful and professional tool for analysis purposes. In addition to the performed tests, they ordered two Coriolis mass flow meters for a pilot setup, and they have plans to order additional mini CORI-FLOW M15 devices for the paint train in real production. In the latter case, there will be a change from standard devices to explosion proof devices.

Recommended Products

MINI CORI-FLOW™ M15

Min. Bereich 0,2…5 kg/h
Max. Bereich 3…300 kg/h
Druckstufe 100 bar
Medienunabhängig
Hohe Genauigkeit, schnelle Messung

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