Complete Quality Control at Scania Trucks

temp-gard, oven recorder – wave-scan, orange peel meter – spectro-guide, color and gloss

Scania is one of the world's leading manufacturers of trucks and busses having delivered more than 60.000 trucks in 2008. As a lot of their products are custom-made, uniformity is an essential quality requirement. Therefore, specifications were established for gloss, color and orange peel and are part of their routine QC system. Scania's QC system starts with the routine monitoring of their various production ovens:

1. Temperature control of the production oven

The prerequisite for proper physical and optical properties is a controlled and stable baking process. The temperature as well as baking time determines the cross-linking quality of the paint. Scania is using the BYK-Gardner oven recorder temp-gard on a regular basis to control the temperature distribution of their ovens as well as the object temperature. As the object temperature is highly influenced by the steel thickness, Scania selected the most critical measurement spots: the bottom of the cab, the door which is made out of thin steel and the front of the cab which is usually made out of thicker steel material. The fourth sensor is used to monitor air temperature.

The temp-gard travels with the truck cab through the oven protected by a thermal barrier with temperature safe insulation. The temperature data is stored and transferred to the PC. The temperature profile with all critical values (peak temperature, threshold data and associated times) can be analyzed with the temp-chart software. A cure index using the equivalence method for calculation is recorded to optimize the curing process with never before seen accuracy.

2. Color and Appearance control at Scania Trucks

Uniform color and appearance are important quality criteria. Material as well as process parameters like humidity, gun/bell distance, atomization, film thickness etc., can influence color, gloss and orange peel.

Orange Peel or Flow & Levelling

The paint finish of a truck has two main requirements: Protect the surface underneath and enhance the quality of the overall product. Eye catching finishes should look like a mirror – "high gloss and perfectly smooth". The wave-scan with its expanded measurement range and the information from the structure spectrum, allow Scania to perform a detailed analysis of appearance changes corresponding to variations from material and/or application parameters. To document and communicate how the paint department is running, Scania is using the standardized reporting system in auto-chart. Their report of choice is the trend graph that shows the average per day or week by color family or by single colors.

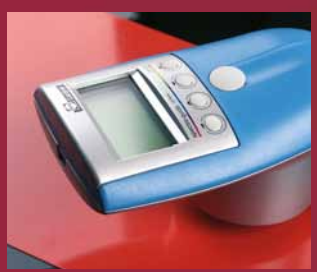
Color and Gloss Control

Last but not least, the overall appearance of the cab is influenced by color and gloss. A product of the same color but higher gloss level is visually perceived darker and more saturated than a low gloss product. Since several years Scania has standardized how to control color and gloss in all of their European sites. They decided to use the BYK-Gardner spectro-guide gloss because of the excellent inter-instrument agreement, the possibility to exchange data by email and the ease-of-use by customizing the menu of the instrument to the specific needs of the operator. And most important, the spectro-guide's unique feature allowing simultaneous measurement of color and 60° gloss. The majority of the trucks are painted with solid colors. Therefore Scania uses a sphere instrument to compare the actual color hue to defined master panels received from their paint supplier. For better visual agreement Scania specified dECMC for production control.

Another challenge is the matching of plastic add-on parts, like air deflectors, grills and toolbox lids. These parts are out-sourced, and will be integrated in the cab in areas, which are highly visible to the driver. As they are painted with a different paint system than the metal cab, it is necessary to check color agreement under different lighting conditions to avoid metamerism. Metamerism occurs when a pair of materials appear to match under one light source, but mismatch under a second light source. Reason being, the pigments used to color the pair are not the same. Therefore, Scania is evaluating color differences for two light sources: D65 (daylight) and TL84 (show room light).

Complete quality control to guarantee uniform color & appearance!

temp-gard see page 237.



spectro-guide see page 75.

wave-scan dual see page 37.