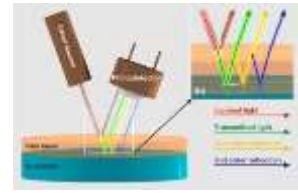


ThetaMetrisis APPLICATION NOTE #022

Thickness determination of car's clear coat paint layer



Introduction:

Thickness uniformity of the clear coating layer (the layer that protects the paint layer of a car), is responsible for the final surface quality of a car. Therefore, thickness determination is a significant parameter that has to be monitored during the automotive painting process. In this application note, measurements of clear coat paint layer thickness in different spots of a used car are being demonstrated using ThetaMetrisis **FR-Tools**.

Means & Methods: The thickness of clear coat paint layer was measured in the 850 - 1700nm spectral regime, using FR-Series product. In order to identify the uniformity of the paint thickness, measurements were made at different points of a used car. The measurement set-up is shown in the image at the right.



Results: Measurements were performed on top and on the door of the car. The fitting was applied in the 1400-1600 nm spectral range. Reflectance and fitted spectra and the calculated thicknesses are illustrated in the images below. The thickness on top measured at point 1 = 41.6um and at point 2 = 39.8um and on the door measured at point 1 = 45um and at point 2 = 44.9um. FR-tools in that particular spectral range could be employed for non-destructive fast & accurate measurement of the thickness of that layer and contribute significantly in quality assurance.

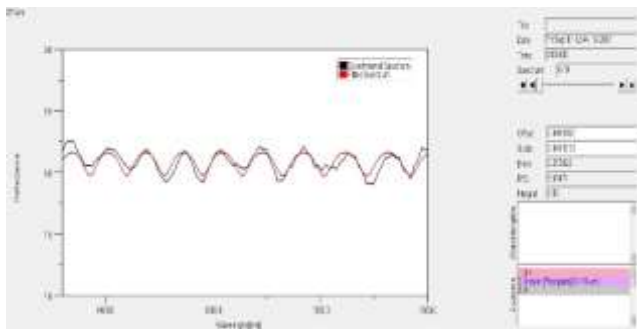


Figure 1: Reflectance and fitted spectra from the clear coat on **top** of the car at point 1.
Thickness= 41.6um

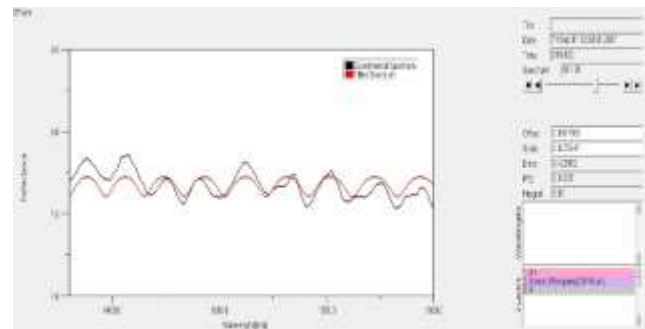


Figure 2: Reflectance and fitted spectra from the clear coat on **top** of the car at point 2.
Thickness= 39.8um

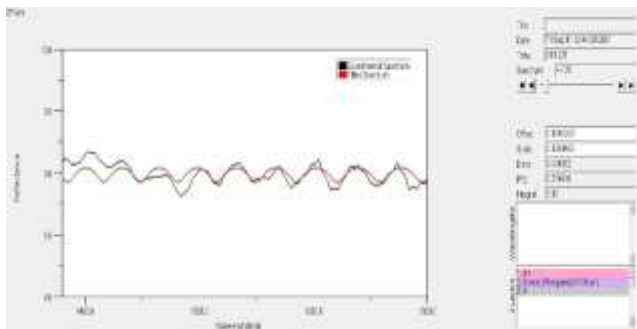


Figure 3: Reflectance and fitted spectra from the clear coat on **door** of the car at point 1.
Thickness= 45.0um

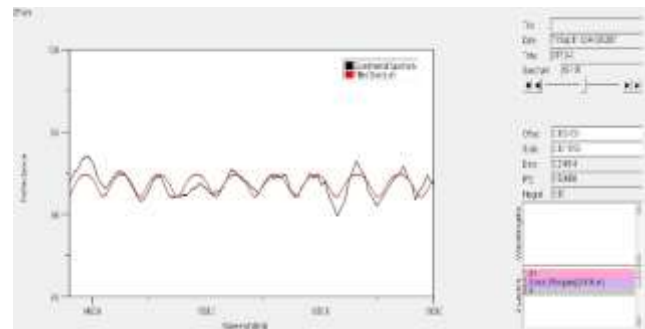


Figure 4: Reflectance and fitted spectra from the clear coat on **door** of the car at point 2.
Thickness= 44.9um