Online-Measurements of Dip-Coated Panes on Roller Belts

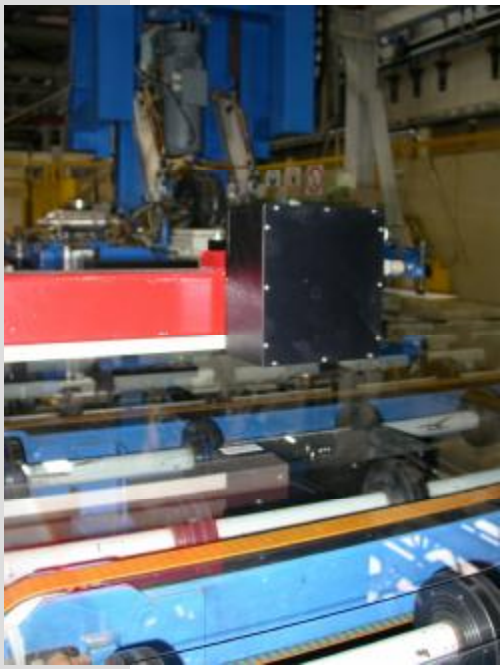
Our Partner

The Schott AG develops special materials, components and systems for almost 125 years. The Flat Glass division, a strategic business unit of the company, offers various refined flat glasses worldwide. A 100% control of these products guarantees the achievement of highest quality demands. For the production and final inspection Schott successfully relies on **tec5** MultiSpec UV/VIS/NIR spectrometer systems.

The Measurement Task

To evaluate the layer thickness the reflection and transmission properties of dip-coated flat glass has to be measured at exactly the same position. The measurements have to be taken after the disconnection, directly on the roller belt.

Amongst others, the nearly invisible glass Amiran®, which has a residual reflection of approx. 1%, as well as the color effect glass Narima® have to be checked with the same system. This requires a high dynamic range enabling exact measurements of high signals (e.g high reflection of Narima®) as well as very low signals (e.g. low reflection of Amiran®) results.



The Spectrometer System

A **tec5** MultiSpec spectrometer system records the complete spectra from 380nm to 1000nm within milliseconds. The system is equipped with a light sensitive MCS CCD spectrometer module from Carl Zeiss and a halogen light source. The optical setup allows the simultaneous measurement of transmittance and reflectance spectra at the very same position. The thickness of the layers is determined directly after the coating process.

The long-term stability of the system is checked once per day by means of various references. An excellent reproducibility with a deviation of less than 0.1% for reflectance and less than 1% for transmittance is achieved within the measurement range.

The possibility to perform non-destructive measurements directly within the process on the roller belt (see picture) with the **tec5** spectrometer system allows a 100% final checking of the products.

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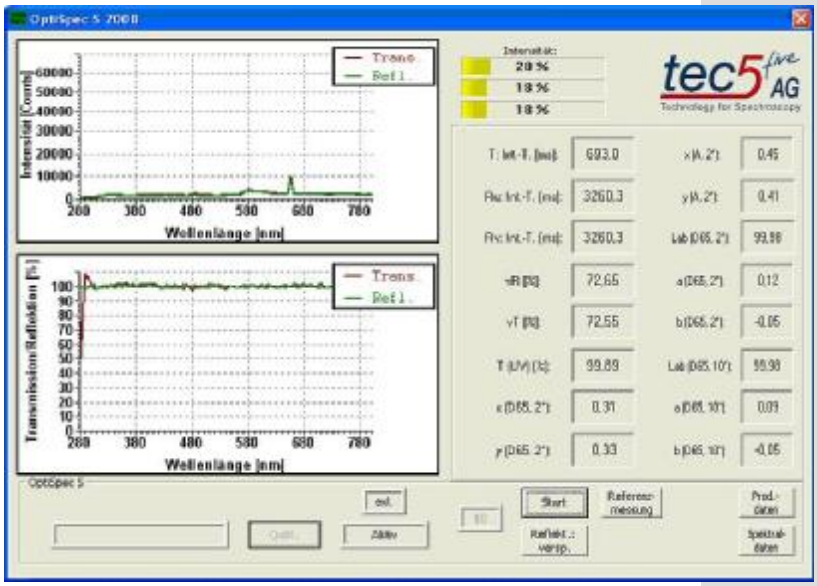
five tec5 Technology for Spectroscopy

- **Spectrometer Systems**
- **Instrument Design and Development**
- **OEM Electronic Components**

The Software

The **tec5** OptiSpec software allows a fully automated operation of the measurement system, which is controlled via SPC.

The communication between the **tec5** spectrometer system and the process control system is realized by an OPC-Interface. The system is controlled via this interface and the measurement results are read out and stored. The complete spectra are saved to a data base.



Individual referencing standards are used for the various products such as Amiran® und Namira®. The software automatically recognizes the product by means of the scanned serial numbers. Thus the sample spectra are correlated with the related reference spectrum.

Your Partner for Spectrometer Systems

Since 1993 **tec5** has specialized in the development of fiber-optic spectrometer systems based on modern detector array technology and acquired a wide horizon of experience with numerous applications.

In close cooperation with the customers and on the basis of their application know-how, tec5 develops and manufacturers custom-tailored systems for the various tasks of the optical spectroscopy. One focus of the company is the optical and glass industry.

*„The **tec5** system allows 100% final inspection to meet the highest quality demands, and to achieve the standards according to ISO 9001.“ (Leoni Prinz Optics, subsidiary of Berliner Glas Group)*

*„Coated glasses are important products for Pilkington and **tec5** MultiSpec systems are used to analyze quality relevant parameters directly in the process.“ (Pilkington)*

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Technology for Spectroscopy