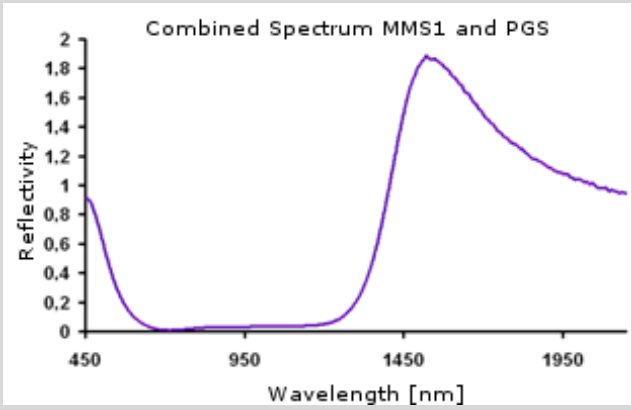
Reflection Measurements in Vacuum Deposition Installations

Measuring Task

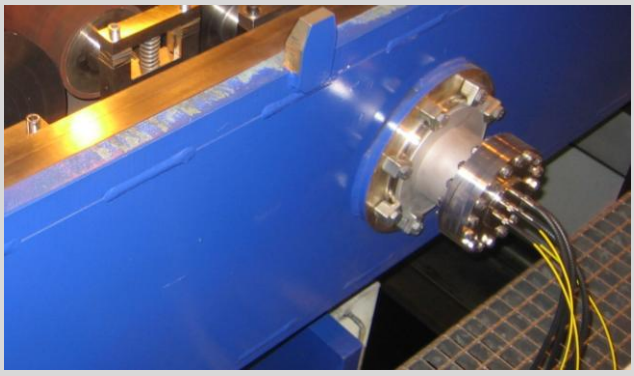
Quality control during production requires a measurement setup matched to the ambient conditions. High stability and reproducibility of the measurement results over a long period of time are essential. If the data acquisition has to be performed in a vacuum deposition chamber the setup and maintenance should be simple.
In close cooperation with one of our customers, a leading manufacturer of coated glass panes, a setup for reflection measurements in a vacuum chamber, based on our MultiSpec system has been realized.

Spectrometer System



The MultiSpec systems were developed especially for process control. The 19” housing format allows simple integration into existing measurement installations. The flexible cassette structure allows the combination of various spectrometer modules and lamps to cover the required spectral ranges. Permanently wavelength calibrated high-end spectrometer modules from Carl Zeiss are implemented, which show outstanding robustness and long-time stability. To cover large spectral ranges, multiple modules can be combined. E.g. the combination of an MMS 1 module with a PGS-NIR and a halogen lamp covers the region from 380 nm to 2150nm.

Measuring Head



Typically, the spectrometer system is linked to the probe by means of light guides. In the case of in-situ measurements within a deposition chamber special vacuum feed-through flanges are available. For reflection measurements in many cases it is sufficient to use just a Y light guide. The combined end is positioned close to the sample for simultaneous illumination and observation. This simple setup shows low probability of malfunction at relatively low cost. Alternatively, various more elaborate measuring heads are available or can be designed in accordance to customer’s requirements.

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Multi-Channel Applications

Multiplexing technology allows spectral data acquisition at multiple positions with only one spectrometer system. Consequently the costs per measurement location can be reduced significantly. Various multiplexing technologies can be applied depending on the used spectrometer types. In case of NMOS based modules the unique tec5 electronic multiplexer can be integrated for simultaneous control of up to 8 modules. For NIR or CCD spectrometers fiber-optic multiplexers (based on piezo operated fiber-optic switches) are favorable.

Software

MultiSpec Pro is a powerful software package for Windows platforms with various data display, processing and output options, optimized for process applications. It is offered by tec5 in a basic version and optional additional modules. In addition, a customer can generate his own application tools based on software development kits and libraries for C(++), VB, Delphi, and LabVIEW. Of course the interfacing to the different hardware interfaces like Ethernet, USB or PCI are implemented. Future interfaces or additional features can be integrated easily.

Your Partner in Spectroscopy

Since 1993 **tec5 AG** has been developing fiber-optic spectrometer systems based on diode array technology. Today, tec5 is operating worldwide with subsidiaries in the USA and UK and global representatives are positioned to better serve the market.

At tec5 we pair our core competencies in high speed diode array readout technology, optical, mechanical, electronic and software engineering with excellent customer support. Our high quality products range from standard OEM electronics modules to complete application specific solutions. In close cooperation with our customers, a multitude of applications have been successfully implemented in different industries.

We are proud to be at the frontend in the field of spectroscopy and to provide cutting edge technology – today and in future.

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Technology for Spectroscopy

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