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Research area: General aims	**Key words:**
Production economy // Monitoring and control systems	MuMAS, paper properties, image analysis, spectral analysis, image fusion, formation, dirt specks

TITLE:

Multi spectral modular analysis system (MuMAS) for the paper industry

Background/Problem area

Since more than 10 years PTS develops and sells the image analysis system DOMAS (Digital Optical Measurement and Analysis System): It has become the standard system for different quality control tasks in the paper industry. DOMAS uses the image information from scanners and cameras. So it is limited to the visual part of the electro-magnetic spectra. New modern imaging sensors acquire also sample information in other parts of the spectra. The analysis of these images can be used to get additional information about the paper samples.

For the sustainability of DOMAS it is necessary to update the software library (OPTIMAS). Thereby it becomes possible to improve the functionality and to assure the ongoing product support.

The use of new additives and components for the effective paper production with new functions rouses the need for new developed quality control tools that require as less as possible time for sample preparation and evaluation.

Objectives/Research results

The research project shall be an important contribution to the quality control in research, development, production and processing of paper products. Starting from the DOMAS functionality PTS is developing a multi spectral measurement and analysis system.

MuMAS will be a product that helps it's users with additional new and objective evaluations from images of paper samples in different spectral intervals. Further possibilities will be the fusion and evaluation of images from different spectral sensors.

MuMAS will be a modular system and has an open concept. Future research projects about paper properties can use MuMAS as a software basis for efficient researching and as a platform to convert research results into products for users from the paper industry.

During the project the system concept has been implemented. The base of the system consists of normal hardware available at the market (PC, image sensors, cameras) and software (Windows®, Matlab®). The main focus of the project is the development of new analysis algorithms and evaluation modules, e.g. XY-Distribution of paper components (Coating, Pigments, Sizing agents) and (optical not visible) unevenness of coatings. This will be realized with example applications. Furthermore the well known DOMAS-Modules will be implemented with improved functionality on a modern platform.

Application/Economic benefits

The system will be used to control the quality (R&D, production control, handling of complaints) in paper mills, printing plants, felt- and wire production and research institutes. Special modules for textiles, fibre composites, coatings and powders can spread the application area.

The economic relevance for end users lays in the enhancement of information variety about paper qualities and production process, in the reduction of sample preparation and in the shortening of evaluation time. Suppliers of modern imaging sensors get a new trade-specific platform for the sale of their products. And last but not least the product MuMAS will result in sales revenue for the PTS.

Period of time: 01.01.2011 – 31.12.2012

Remarks