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**Research area: General aims**

Production economy // Monitoring and control systems

**Key words:**

DOMAS, paper properties, image analysis, formation, THz

**TITLE:****Development of a measurement device for the determination of the formation of papers with higher grammage levels****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.

A high evenness of the paper mass distribution (fibres and other paper components) defined on small areas is one of the most important paper quality properties during the production process. The technicians name this evenness as formation or cloudiness of the paper. The formation influences the optical and mechanical properties of the paper. So the paper formation determines important properties for the further processing like stability or printability.

During a former project PTS established a measurement standard for online formation measurement with optical devices. This standard is described in a Zellcheming technical leaflet. This method is also available as a DOMAS modul but it is limited to papers with normal grammage levels. Papers with higher grammage levels can only be measured with devices based on radioactive sources.

**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 new measurement and analysis system.

The objective of this project is the development of a new measurement device for the formation of papers with a higher grammage level or for mass coloured papers without the problems and restrictions of devices with radioactive sources. The system will acquire the paper information with a THz-sensor. The new system shall do the evaluation faster and with a better resolution than the systems actually available on the market.

At the end of the project all necessary information about the system will be available, so that an industrial partner can start a serial production.

**Application/Economic benefits**

The system will be used to control the paper quality (R&D, production control, handling of complaints) in paper mills, printing plants and research institutes. Because of the avoidance of radioactive sources the use of the new system will be easier.

The economic relevance for end users is based on the enhancement of information variety about the paper quality and the production process and in the shortening of evaluation time.

The production and service of the system will be done by an industrial partner.

**Period of time: 01.01.2012 – 31.12.2013**

**Remarks**

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