

# // Application report BST ProControl: Basis weight- and Thickness measurement at Filzfabrik Fulda

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# DEVIATION FROM THE SET POINT REDUCED BY 80 %

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## Filzfabrik Fulda benefits from the measurement systems of BST ProControl for quality assurance

The Filzfabrik Fulda GmbH & Co KG, whose roots extend back to the year 1881, is one of the leading system suppliers for technical textiles in the non-woven and wool felt sector. The company offers its customers from more than 100 industry segments everything from a single source – from the fiber, to the processing, to the punched and self-adhesive product. The FFF GROUP, which also includes the Filzfabrik Fulda, employs in its six companies, both nationally and internationally, more than 550 employees. These are among other things entrusted with the manufacture of the versatile materials, which can be used in the fields of filtration, the automotive industry, but also in the furniture and classical textile industry. The focus of the Filzfabrik Fulda does not lie solely on the manufacture of flat materials. Customers can choose from a widely ranged modular concept. The complexity of the customers' wishes is also written in capital letters, which means, that - if needed - smaller batches can be produced as well. No matter, which dimension – the priority is always the material's high quality.

### Choice fell on BST ProControl - as a matter of conviction

Plant manager Daniel Pongratz points out: "The fundamental values on which our company is based are honesty, open-mindedness and team spirit". Against this backdrop, he convinced the management to equip several production lines with measurement systems for quality assurance. Pongratz explains: "In concrete terms, three lines of the needle felt production were affected." According to the preceding calculations of the plant manager, who is at the same time responsible for the project and quality management, purchasing a measuring sensor system for thickness and basis weight measurement should amortize itself within two years. During the search for a suitable supplier with the required technology, the decision fell in favor of BST ProControl.

The first contact with the experts for the measurement and control of flat materials was already established in the nineties. Daniel Pongratz recalls: "I was able to gain the first impression of the systems while directly operating a machine". The positive impression persisted for so long, that even years later while looking for a suitable technology partner for the Filzfabrik Fulda, the company from Wenden crossed his mind. After the first steps were taken,

and the cooperation was established, the delivery of the systems took place.

Contactless x-ray sensors < 5kV are used for the basis weight measurement in the non-woven production in Fulda. These are combined on a product line with a contact measuring solution and a non-contact x-ray sensor solution – the latter ensures the thickness measurement from 10 mm. Determining the material thickness on two further plants is ensured solely by the contact sensors for up to 10 mm thickness. Due to the state-of-the-art technology of BST ProControl, the thickness as well as the basis weight measurement are joined together during one measuring step, and can be read off an industrial PC at the production line. Pongratz adds: "The systems allow me access to the statistics and measurement processes from any location – therefore also from my office. In this way, we can overlook everything at a glance."

Prior to the implementation, it was specified by the Filzfabrik Fulda, that the sensors shall be used for weights from 150 up to 4,500 g / m<sup>2</sup> and thickness of 30 mm – the individually tailored arrangement in accordance with the required data posed no problem for the experts from Wenden! The x-ray sensors are based on a transmission process. The emitter and the detector are mounted opposite each other. The needle felt material is processed between them. The measured material weakens the rays between the transmitter and the receiver. In this way, the basis weight is determined. An ultrasonic sensor on the other hand executes the thickness measurement. The sensor works using the impulse-echo measurement method: an ultrasonic impulse is transmitted, reflected by the material and received back. The distance between the sensor and the material is determined by the runtime of the impulse, enabling the calculation of the material thickness.

The entire system installation took place in close cooperation between BST ProControl and the persons responsible of the Filzfabrik Fulda. The team leaders were given special trainings, matching the new technology. In the production they act as so called key-users. These key-users provide the direct users with operator trainings, explain the now available possibilities within the processes and the access to the measurement data with the means of user-orientated software. Pongratz recalls: "A high level of acceptance of the measurement technology settled in very quickly. Even employees, who were quite skeptical at the begin-



ning, can't imagine working without it anymore." The companies are currently working on a remote maintenance solution, allowing the BST ProControl team to access the software quickly and easily in case of breakdown.

### **Measurement and controlling led to significant product optimization**

Needless to say, that for the Filzfabrik Fulda the quality has to be very high in the interest of the customer. Furthermore, the sensors exceed the standards concerning sustainability and efficiency. The non-destructive and non-contact inspection of the material web takes place before the non-woven fabric is wound to rolls. The fabric is at this point tensioned evenly and can therefore be measured with the default parameters. The set points are already stored in the system at the beginning of the production. Due to the fibrous material, deviations from +/- 10 % are tolerated. If the measured value differs from the given parameters, it is corrected automatically and the entry gets changed. This check takes place as soon as the material passes the measuring head. At this point, the relevant information is placed in the control loop and necessary changes are carried out if needed. In the next step, the material's basis weight is regulated by the intake speed of the raw material, and subsequently controlled by the control loop in accordance with the defined set points.

Significant waste reductions follow this process. Daniel Pongratz explains the benefits created by the measurement: "Specifically



said, the waste rate was reduced by more than 50 % since we are using BST ProControl's systems. The deviation from the set point was even reduced by 80 %". This also involves consequently a conspicuous reduction of customer complaints as well as an increase in cost-efficiency. The importance of the material quality shows itself particularly based on the strict criteria set by the buyers: In the automotive industry for instance, standards are set which has to be met in the use of technical textiles. Thus, the delivered materials have to be absolutely compliant to be processed.

The plant manager gave an overall positive feedback concerning the service and the entire course of the project. "Especially the fact that BST ProControl offers wide-ranged basic equipment systems, in contrast to every other alternative, has reaffirmed us in our choice." He furthermore praises the regular and competent contact and the quick service of the company. The longer operation time of the production plants and thus the cost-efficient advantages speak for themselves. Daniel Pongratz sums up: "We have, both technically and commercially, nothing to complain and are therefore sure that nothing stands in the way of a future collaboration."

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BST ProControl is specialized in the planning, production, implementation and modernization of instrumentation, control (e.g. coating thickness, layer thickness or basis weight) and automation (ICA) components.

Sensors designed for specific applications, combined with sophisticated automation and visualization systems, ensure precise registration, complete monitoring and analysis by basis weight measurement.

All measuring solutions by BST ProControl are applied in very different production processes, starting with plastic and metal sheeting, paper and textiles. The productions of foams, floor coverings, non-woven fabrics, metal sheets as well as products for the automotive industry are also important areas of application.

## SERVICE NEEDED? JUST CALL US!

Do you have any questions or wishes concerning our service offer? The head of our service centre, Ms Heike Wachlinger, is looking forward to your call or email.

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## We are happy to help!

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