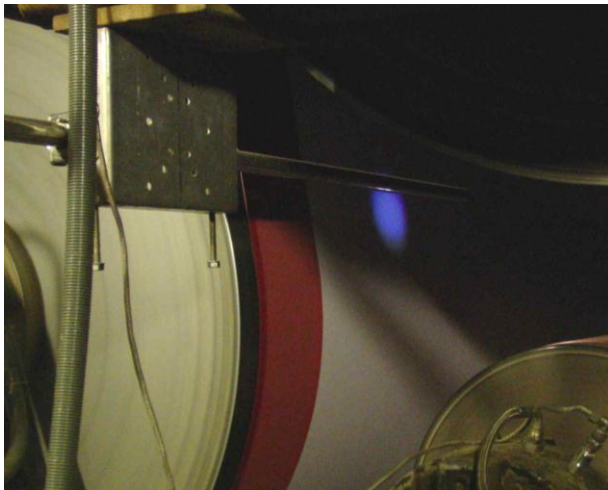


RGB COLOR SHEET BREAK DETECTION AT A PAPER MACHINE

Sheet break detection may be demanding task, because of different application (environment) in paper machine wet end compared to dry end. Traditionally photo cells are used for web break detection since they perform satisfactorily in applications where visual contact from one side of a machine to another can be arranged and the ambient air is clean. However this is not always the situation. In many cases rolls, cylinders, wires or felts block the light path and photo cells cannot be used. Steam inside a machine also prevents the use of photo cells, especially at the press section. The air around a paper machine contains dust and oily fumes which quickly stain the cells and make detection unreliable causing false alarms or missed breaks. Photo cells require continuous attention and maintenance.

Therefore fiber optic break detectors have been used in difficult applications and in cases where the sheet is supported by fabrics. The most of the current units use infrared light or red laser. The disadvantage of these two lights is that they cannot separate between the web and a new fabric – especially when the wire or the felt is of red color.



KB² in the last dryer section. The wire color (red in this case) does not affect reliability.

KPM, Kajaani Process Measurements Ltd, has further developed a sheet break detector for demanding applications, using RGB color measurement. The KB² Sheet Break detector has two alternative light sources for

maximum performance – the conventional IR light and a new RGB color measurement. With the RGB color measurement the best of the colors red, green or and blue or any combination of colors can be selected for the break detection. The break detection becomes reliable even with different fabric colors. KB² Sheet Break detector utilizes proven fiber optics which makes it usable in hot environment such as at dryer sections of a machine. Air purge arrangement expands applications to very humid and dirty locations.



Automation specialist Pekka Greus says KB² is very easy to set up and operate.

Stora Enso, Oulu Mill, has more than 20 sheet break detectors at Paper Machine. All original sheet break detectors delivered with a Paper Machine has now been replaced by KB². The speed of the PM6 is over 1000 m/min and the web is approximately 9 metres wide. Mill has now been using KB already five years and no regular adjustments have been required.



KB's start-up and monitoring is easy.

The KB²-12 Sheet Break Detector was installed to the PM6 in the middle of dryer section, where the red wire supports the paper sheet.

First KB installation was done in May 2006 and after one week of monitoring the alarm signal was connected to the automatic logic to cut the sheet as the break is detected. Since then the unit has been on automatic without any problems.

Automation specialist Pekka Greus has been monitoring and using the KB Sheet Break detector since it was installed. He has been working with the sheet break detectors at the mill for years and has now replaced all of the old sheet break detectors by KB.

Totally Oulu mill has purchased 20 KB break detectors. All detectors on the both PM6 and PM7 have been changed.

"With KB's color measurement the reliability of break detection has improved significantly compared to the older models" says Pekka Greus. The user interface of KPM's Sheet Break detector is very easy, and so is the setup. Mr. Greus likes the Sheet Break detector's large display and clear menu, Sample button makes it easy to store reference values (BREAK and PAPER) in memory which helps setup.

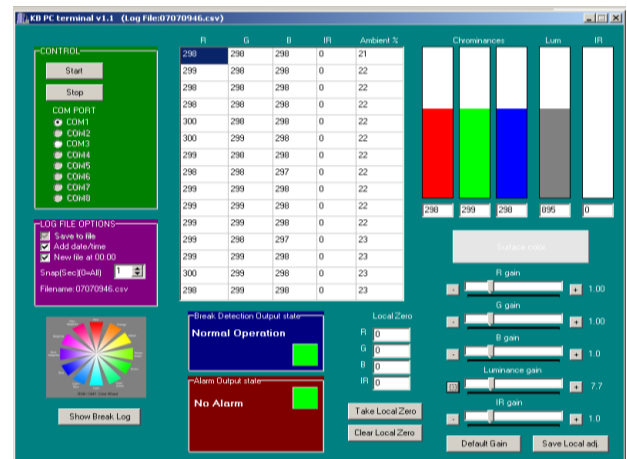
PC terminal program which visualizes the set up and monitoring. In the beginning he used its data logging feature to monitor the long term stability of the KB. "Because there was no drift at all on the signals we quickly connected it to the automatic sheet break detection system", he says.

Mr. Pekka Greus prioritizes the reliability of the break detection as the number one feature for the equipment. Secondly, he points out the easiness to monitor the performance of the detector.

With the KB's data collection feature he can easily download the data to a computer and evaluate it. No other sheet break detector has this kind of maintenance feature.

KB's are set up to use the blue or green color for measurement, which gives the biggest difference between the white sheet and the red fabric behind it. In some cases ratio signal gives best difference over time since fabric color may change when getting dirty.

The signal difference between the paper and a break is very clear. The break alarm trigger point has been set to the middle of the paper/break signal levels. KB has an additional maintenance alarm which has been set to a slightly higher level than the break alarm. It is to alarm the user if the unit's self diagnostic finds a need for maintenance, such as cleaning.



Mr. Greus likes the KB PC terminal program, it makes monitoring the performance very convenient.

According to Mr. Greus, the adjustable mounting rack makes the sensor position adjustment easy. It also has "position memory" in case sensor has to be removed.

KB² can be configured to any application because of two light sources, which allows reliable sheet break detection against any surface. KB² extended measurement distance allow also longer installation from web.

KPM has sold over 400 KB units since introduction of the product 2007.

For further information on how solutions and products from KPM and Lorentzen & Wettre can help your company become more profitable, please contact your local sales office, www.lorentzen-wettre.com or www.prokajaani.com