

SENSORS BRING TRANSPARENCY TO CHEMICAL AND PHYSICAL DATA

HIGHER PROCESS STABILITY, FEWER CHEMICALS

Many manufacturers would like to have greater clarity than they do at present in monitoring levels of dissolved substances in the paper machine wet end. Because the consequences of inadequate laboratory data are greater levels of broke and costly overdosing of chemicals. But now there is a solution: the new Advanced CT Control System. Its Online CT Diagnostics module continuously monitors the precise chemical and technical status of all processes in the wet end and provides data for automatic control of individual sub-processes. This therefore allows the addition of chemicals in real time to be improved and significantly reduced. ▶



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Member of the Board
of Management of
Perlen Papier AG

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In a situation where a machine may have been stopped for an hour due to a web break, there are a number of questions to be answered prior to restarting the process. For example, how much anti-foaming agent is now necessary for the next few hours? How much fixing agent will be needed at short notice in the higher amount of broke? How many bacteria have been generated in the vats in the meantime, to what extent has the pH value been lowered and how much oxygen consumed? How quickly does the stock now need to be processed to avoid discoloration? It is not just in these situations that the chemical and physical baseline values have to be available during the production process itself so as to adjust chemical feed in real time. This is equally crucial when using recovered paper and in the event of grade and grammage changes.

The new Advanced CT Control System is the answer. As the latest component of the Integrated EcoMill (IEM), it provides a new basis for chemical feeding: a demand-driven dosing using accurate readings instead of approximate empirical values. To do so, the online CT diagnostics module continuously measures the current values of individual chemical and physical parameters in the paper machine wet end and represents them in a readily comprehensible format. As a result, paper producers obtain data that would take 120 man-years if collected manually by laboratory personnel.

On the basis of the transparent measured values, the amount of chemicals used can be adjusted immediately to fit the process. This not only avoids incorrect dosing of chemicals, but also prevents the production of broke. By adapting the chemical feed to the respective baseline values, considerable amounts of chemicals can often be saved, protecting the environment and reducing costs as a result. At the same time, the quality of the paper improves thanks to consistent process parameters.

For the first time, future process characteristics can be predicted. But the new analysis system offers even more. Apart from the current status, it also shows the situation from four hours ago and the likely process characteristics in four hours' time. To do so, it calculates future development based on the previous pattern and deduces the process water quality from the corresponding chemical and physical values. To this end, Voith quantitatively recorded several hundred measured values and correlated them with the corresponding paper quality. This sophisticated forecasting technology is unique to date and allows the timely adjustment of chemicals. In addition, the online CT diagnostics store the data for a period of one year so that subsequent complaints about paper quality can be processed and dealt with more easily.



02-04

Seamless sensor integration:
OnQ FormingSens,
OnV FlocSpotter and
OnC ConSens 700
(left to right).

The seamless integration of a large number of established CT sensors into the existing mill data network suitable for industrial use supplies measured data for control purposes around the clock. At Perlen Papier AG, a large European papermaker, the sensors have been in operation for approximately one year. “We would never have thought that the interaction between the CT sensors could be so consistent and reliable,” says Jörg Michel, member of the Board of Management of Perlen Papier AG, Switzerland. “But we have been totally convinced by the online CT diagnostics, which represent an ideal addition to the Integrated EcoMill.”

Ideas for the paper mill of the future. The Integrated EcoMill is Voith’s holistic concept for an economic and ecologically compatible paper mill, in which all relevant sub-processes inside and outside the paper mill are integrated to save resources and reduce costs. This approach also includes the entire fiber, energy and water systems. The Advanced CT Control System is the latest component of the IEM. Using real-time measurements and stored process data it determines trends, allowing events caused by chemical and technological influences to be accurately predicted for the first time. This enables paper manufacturers to avoid problems before they occur and to intervene in the process without waiting on laboratory results, or to have this done by controllers specially developed by Voith for the system. In the unlikely event of problems, Voith offers comprehensive support for all systems from a single source, including remote maintenance.

These services are complemented by CT Service, individual system analysis of the chemical system and advice on how to use it efficiently. In addition, Voith’s FlowJec system offers a high-performance, system-compatible dosing device. “Thanks to FlowJec and CT Service, our sheet formation has improved. At times we can save up to 10% retention agent and improve PM uptime,” explains Jochem Meier, Head of Production at Smurfit Kappa Zülpich Papier, Germany. And he goes on: “In an integrated paper mill it is extremely important to use optimal chemical mixing with a reliable dosing technology. This allows the additives in the approach flow system to deliver the required results and prevents them from causing picking in a downstream machine section such as the dryer section.”

Voith is working systematically on expanding the systems and on fundamental issues of chemical use. In future, for example, controllers that are even better coordinated with one another should be available and will automatically add the ideal amount of chemicals – yet another step towards efficient and sustainable paper production. //



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