

By GRAEME RODDEN, Executive Editor

## The installation of an ABB QCS on Glatfelter's PM 12, The Chief, made caliper issues disappear

# A CULTURE OF INNOVATION

**T**he mill in Chillicothe, Ohio has been an active and influential community presence since 1890. Acquired by Glatfelter in April 2006, the mill now produces more than 400,000 tons/yr of specialty papers on four paper machines. From its original 5-acre site, the Chillicothe mill has grown to become a papermaking facility covering 350 acres employing 1,300 people. In addition to the four paper machines, the mill includes a woodyard, a bleached kraft pulp mill with eight batch digesters, four boilers, a coater and converting operations.

Paper Machine 12, or "The Chief" as it is known, is the largest of the four paper machines in the complex. Built in 1980 and rebuilt in 2000, The Chief produces a wide variety of specialty products in a variety of basis weights. Since Glatfelter has owned the facility, The Chief has been transformed to produce this varied mix of products, in keeping with the corporate vision of "becoming the global supplier of choice in Specialty Papers and Engineered Products".

As the product mix has diversified and as printing and converting equipment has evolved, so has the need for more consistent quality. Variability reduction is an important part of Glatfelter's continuous

improvement efforts. Modern high speed presses demand tighter specifications to perform well.

One such property is caliper. Over the years, as the mix of products changed and chemistry improvements have been made, coating buildup on the caliper gauges began to cause measurement errors. In order to avoid poor control, the caliper gauges had to be cleaned after each full scan. As Chad Biddix, stock preparation superintendent explains, bad readings create false control actions. This results in off quality product, internal rejects and ultimately low quality yield. Quality yield is a critical key performance indicator for Glatfelter, and is one of the primary continuous improvement initiatives of the plant.

Additional issues also resulted from poor caliper control. Ridges, roping and wrinkles also increased. Operators found it necessary to actually bypass the control system and set the profiles manually. An action plan was necessary.

It became quite clear to the mill that improved caliper measurement was the primary solution to the problem. After meeting with different vendors, Glatfelter opted for an ABB 800 xA QCS that included two Network 1200 scanning platforms, one at the size press and one at the reel. The optical sensors stabilize the sheet on one side and then do a con-focal, non-contact measurement on the other. Personnel were able to see a similar system in use at the Stora Enso mill in Sachsen, Germany (PPI, January 2010)

Biddix explains that a lot of coordination was required to remove the old scanners, install the new ones and then set up the communication between the new QCS and the mill distributed control system (DCS). There is both a Modbus and an OPC link. The OPC link sends data to the historian. The existing CD actuators were not replaced.

The mill in Chillicothe has been a fixture in the town for more than 120 years





Further, extensive alignment work was required, particularly on the reel platform in order to fit all of the measurement gauges, which included basis weight, moisture, caliper LT GT, color, sheet width, ash and optical caliper.

#### IMMEDIATE RESULTS

The anticipated results were seen immediately after the May 2010 startup. Internal rejects for caliper were virtually eliminated. Mechanical defects resulting from poor caliper control were also eliminated. This also improved grade changes, which are many on a specialty paper machine. Biddix adds, "The real benefit was seen at the edges of the paper web and the reliability of the caliper measurement".

Once the caliper measurement and control was deemed to be correct work began on the other sensors to ensure a consistent product both in the machine and cross machine direction, roll to roll and reel to reel. A formation sensor was also added at the size press.

As mentioned previously, grade change time is an important performance aspect of a specialty paper machine. Randy Dittman, superintendent of The Chief, notes, "Working with ABB and our own controls group, we developed an automated grade change process. We can now make grade changes with no losses. Even with the most challenging of changes, we can be on specification within seven minutes. Now, grade changes have less than a 1% impact on efficiency. The number of grade changes we make is very challenging, very dynamic. We need to perform and we rely on the system to deliver for us".

Since the installation of the ABB 800 xA QCS on PM 12, caliper issues have been eliminated



Dittman also adds that the winder on The Chief is one of the most productive winders in North America, even with all of the grade changes that this machine makes. "Paper must be perfect going to a winder that runs at 8500 feet per minute. If it runs well on this winder, we have confidence it will run well for our customers".

Glatfelter's people are a key component to the success that the mill has enjoyed. There was some understandable skepticism at first with the new equipment, given what they had to work with previously. Biddix says, "This has allowed the operators to spend less time focusing on only caliper and more time on keeping all important variables center-lined, which leads to an even more consistent product for customers".

A well designed training program included simulation. One operator (the backtender) was put on special assignment for the project, taking ownership of the project. Overall, due to a solid plan and employee involvement and engagement, the project went very smoothly, with excellent communication at all times. All operators who were involved in this project from its inception still feel a high level of ownership and are key to the ongoing success.

Operations are much more in control, and continuous improvement is key. When operators determine something that they would like to see on the screen to assist them in making quicker decisions, they are able to make this happen. In the past, it was difficult to change any part of the system.

ABB has five people full time in the mill on a full service contract for the platforms. This includes maintenance, tuning and optimization.

"The ABB system was the right decision for us. The service relationship is the best I've seen in my career. The system is very reliable and if an issue arises, the local service team is very pro-active and quick to resolve the problems" says Dittman.

#### FOCUS ON CONTINUOUS IMPROVEMENT

To meet the vision of becoming the global supplier of choice in specialty papers and engineered products, Glatfelter is not resting on any laurels it may have garnered with this project. Dittman stresses, "Continuous Improvement is part of our DNA, thus there is constant focus to drive variability out of the process."



The ABB system also allows the mill to study the frequency of disturbances in The Chief. "It has allowed us to link changes in performance to process upsets," Dittman adds. "So, we have been able to eliminate the sources of variation. We can test as much as we want to test. The on-line spectral analysis has been a big help in all of this".

As an example, the mill has also eliminated smoothness, color and ash content variability issues.

Biddix also believes that a lot of the benefits achieved on The Chief can be replicated on the other three paper machines in the complex. While these machines are smaller in scale, there is a clear opportunity to utilize the engineering approach that has been used on The Chief to obtain similar results.

For example, on The Chief, due to the changing grade structure, the headbox will need to operate differently to accommodate the wide range of basis

weights. Currently, headbox control and jet angle adjustments are made manually, but, he adds, "The mill is working with ABB to further automate the grade change process, as we are beginning to see new variations in the jet to wire ratio. By landing the jet correctly, we are seeing a decrease in the energy needed in the fan pump. We are able to land in the same space for all grades at all times. We can now increase the throughput in the headbox in terms of flow, which leads to fewer breaks and holes. Once again, this leads to higher quality yield and greater customer satisfaction."

Dittman notes that this project has just started. "We like to challenge ourselves to innovate." **PPI**



To read more articles on Automation & IT, visit our Automation & IT Technology Channel at [www.risi.com/technologychannels/automation](http://www.risi.com/technologychannels/automation)

### Quality control system architecture Glatfelter PM12, Chillicothe, Ohio, USA ABB System 800xA QCS

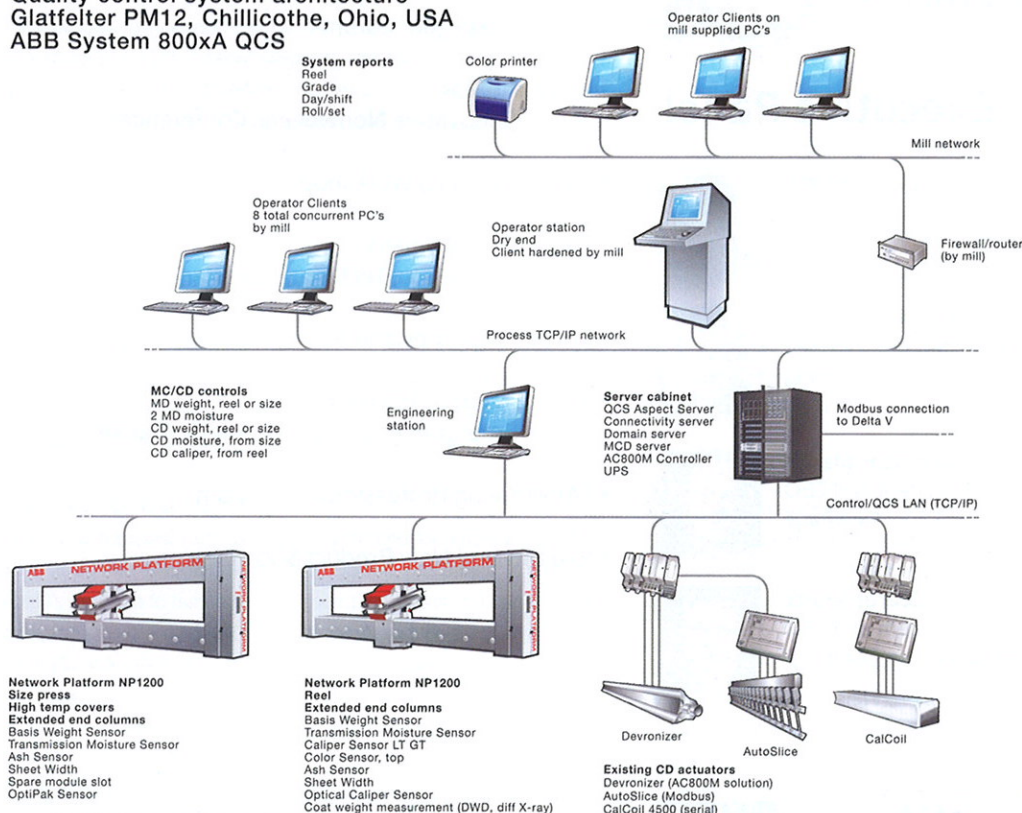


Fig. 1