

Case study

## OPT800 Cook/C

### Optimizes continuous digester operations at Mondi, Swiecie



Mondi Swiecie S.A., a member of the Mondi Group and Europe's leading manufacturer of corrugated case materials, turned to ABB for optimizing the operations of the two continuous digesters at their pulp mill in Swiecie, Poland. ABB's state-of-the-art continuous digester optimization system OPT800 Cook/C was implemented, resulting in 52% improvement in pulp quality while maintaining uniform production rates.

In 2011, Mondi embarked on a project to look for ways to improve pulp quality and chemical usage, enhance production and reduce cost for its two pulp production lines. The first step towards achieving these objectives was to optimize the operations of the continuous digesters in the two production lines, the contract for which was awarded to ABB.

The successful implementation of OPT800 Cook/C in 2013, through the fruitful collaboration between ABB and Mondi, has resulted in significant benefits to the customer. "...through their (ABB) APC, new and effective solutions have been implemented which are stabilizing the processes of the cooking and pulp washing lines further beyond conventional methods of DCS control." said Mr. Tomas Katewicz (Member of Management Board & Production Director)

#### Objectives

The specific objectives for the optimization of the continuous digesters in fiber lines FL1 and FL2 were to:

- Reduce Kappa variation
- Reduce residual alkali variation
- Maintain digester chip level
- Reduce variations in actual production rate

#### OPT800 Cook/C – Advanced Process Control (APC) for Continuous Digesters

In order to achieve Mondi's objectives, the OPT800 Cook/C (Figure 1) implementation consisted of the following components:

- Chip and pulp tracking function
- Chip level control (MPC)
- Kappa soft sensors for "soft" measurement of cooking zone Kappa
- Kappa and residual alkali control (MPC)

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The OPT800 Cook/C implementation was carried out between 2012 and 2013, in close partnership with Mondi and all primary objectives were successfully achieved.

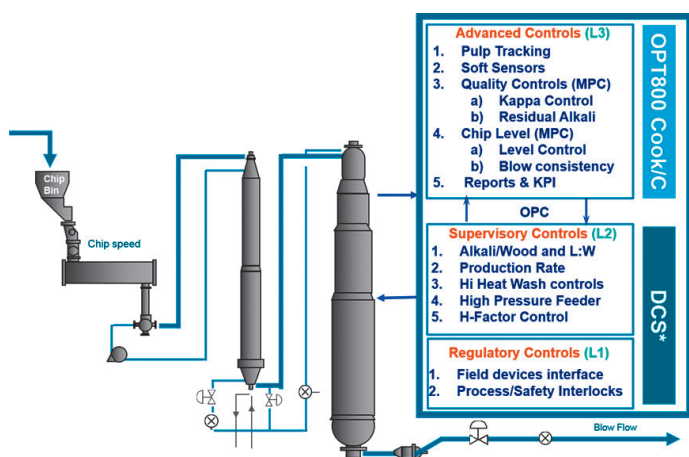


Figure 1: OPT800 Cook/C

### Results and customer benefits

The OPT800 Cook/C system was able to achieve all objectives the customer had set out by optimizing the continuous digesters on both production lines. During the implementation, Mondi's engineers and operators were kept fully engaged to make sure they were confident in using the APC and were able to adapt their working and training practices to make best use of it.

After the system was up and running for a few months, it was possible to arrive at some quantitative measures of performance and the specific benefits achieved were:

- Variations in the Kappa (measured at the blow/discharge line) were reduced by 56% (Figure 2). Thus, OPT800 Cook/C helped produced pulp of a consistently high quality.
- The residual alkali variations fell by 48% (Figure 3), implying a better utilization of white liquor in the cooking process.
- OPT800 Cook/C was able to tightly control the chip level and reduced the level variations by 40% (Figure 4), resulting in reduced variations in the blow flow (Figure 5). This led to better stability in the cooking process and in the subsequent brown stock washing area.

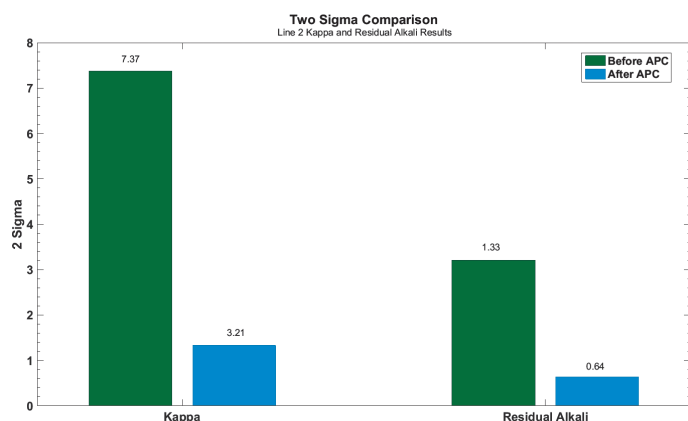


Figure 2: Reduction in Kappa and Residual Alkali Variation (2 Sigma)

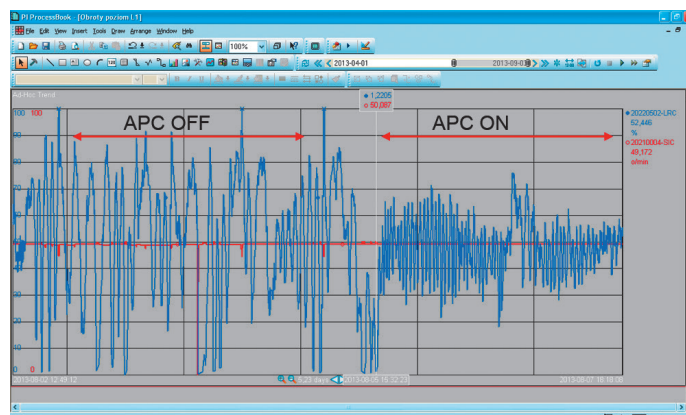


Figure 3: Chip Level is stabilized

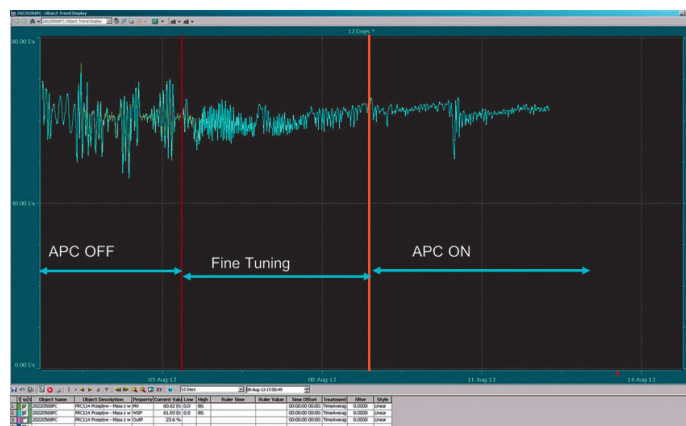


Figure 4: OPT800 Cook/C stabilizes blow flow

### Customer testimonials

"We do believe that the implemented APC system will allow us to increase production output in a stable way ..., I would like to express our appreciation to ABB for the successful implementation of APC ..." said Wojciech Jazdziewski, Pulp Mill Assistant Manager.

A senior operator who has worked for more than 20 years at Mondi exclaimed, "I have never seen in my life the chip level stabilize so beautifully!"

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