
Reducing starch by applying virtual online strength sensors

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The RDM Group is the largest Italian and second largest European producer of coated recycled carton board.

The mill of Santa Lucia produces annually 200.000 tons of high quality white lined chipboard (WLC) continuously investing in energy efficiency and adoption of the best available technologies.

Companies, just like living organisms, can only grow within an open system of exchanges, relationships and collaborations with partners.

Based on the successful references of Cristini microwave meters in other mills, RDM decided to invest in a measuring system, aiming for superior board quality by the control of the web consistency in the forming section and the exit of the press section.

As a computer cluster, the measuring system can be seen as a set of tightly connected sensors that work together so that, in many aspects, they can be viewed as a single system.

It is well known that the rate of water removal in the forming section, as well as the direction of the water removal, will affect the distribution of the fines in the z-direction of the sheet. Quantifying that rate is not an easy task without the proper measuring tools.

The objectives are to demonstrate the versatility of new microwave consistency gauges for multiple machine configurations in order to show how changes to sheet properties can be achieved. Real time data from microwave gauges are used as a source for cost savings in the forming section.

Vacuum is an important factor in the forming section of a paper machine as it is a huge component in the mill energy equation. Continuous control of sheet dryness is the major task in order to optimize this energy consumption.

In board machines, the dewatering distribution inside each individual ply has a direct impact to the quality properties of the final product. Ideal conditions at top formers and bonding leads to better fibre distribution and cohesion.

Today, this is more than ever under control thanks to the microwave measuring system.

Further more, the contactless microwave sensor in the first dryer group has helped to dispel the myth that higher dryness in the forming section leads necessarily to better press efficiency.

The adoption and the daily use of the measuring system has significantly boosted a retro-commissioning process within the optimisation program of the mill. Nowadays the board machine of Santa Lucia has a great flexibility concerning the production of different grades, switching from 2 to 3 layer configuration in order to cover all requirements.

The paper will describe how quality and energy efficiency are therefore not contradictory but go hand in hand in the big picture of sustainability.
