



A Rockwell Automation Company

## Louisiana Pacific – Swan Valley OSB Swan Valley OSB Mat Weight and Former Fill Control

### The Client:

Louisiana Pacific (LP) is a premier supplier of commodity and specialty building products serving retail, wholesale, homebuilding, and industrial markets. LP has over 40

manufacturing facilities in North America including the Swan Valley OSB Mill located near Swan River, MB, which has operated since 1996.

### The Requirement:

The Swan Valley OSB mill was seeking ways to improve productivity at the mill. One of the most challenging aspects of operating an OSB mill is accurately controlling the mat weight before the boards are pressed. The mat weight is a critical parameter, since it directly affects the density of the finished board and thus the quality of the finished product. It was common for the operators to continuously tweak the forming belt speeds in order to keep mat weight within limits. There were also significant problems whenever a board thickness change occurred on the line which would result in many mats being rejected until the mat weight was within tolerances.

Typically, the set point for mat weight had been 4% to 5% above the ideal target weight to allow for variations without having the finished product below minimum standards.

In addition to the quality control issues, a significant cost savings could be realized by being able to more closely control the mat weight. With better control, the margin of excess material required to guarantee that minimum density standards are met would be greatly reduced. What was required was a system that would allow exactly the right amount of material, and no more, to be placed on the mat, regardless of variations in belt speed, product thickness, and variations in moisture content of the raw materials.

Closely tied to a successful mat weight control system was a means of controlling the former fill levels. The relatively small size of the former bins, and the speed with which they can be emptied, places significant pressures on the system to maintain constant levels despite variations in product flow.

### The Design Solution:

Hinz was commissioned to develop a control system which would be capable of maintaining a constant dry mat weight regardless of other factors. Hinz was able to accomplish this task using the original control system hardware, and the existing instrumentation in the plant. Thus there were no capital costs incurred by Louisiana Pacific. A proprietary strategy developed by Hinz engineers referred to as 'Mass flow Compensated Control' has been implemented on the forming line. This proprietary strategy takes into account variations in all measured parameters such as moisture content, line speed, bin levels, target mat weight, etc. All of these parameters are typically already measured and trended, but not actively used for control purposes. Complete ratio control was also maintained so that surface and core weights match precisely the recipe for the board being produced.

A significant problem that is typically encountered in implementing mat weight control has been that of the long transport delay time inherent in the system. By the time all of the flakes have been deposited on the forming line, enough time has elapsed to make the use of traditional PID

control loops almost impossible. They end up being tuned so 'loosely' in order to be stable that they are incapable of reacting to fluctuations in product flow. Hinz has developed a proprietary means of addressing these issues so that the control system can react instantly to fluctuations, and at the same time remain stable without oscillations.

The Former fill control algorithms use much of the information developed for the mat weight controls to predict product throughput requirements. Very uniform bin levels are achieved regardless of variations in product flow.

The mat weight and former fill control systems as installed by Hinz has allowed the operators to use a set point for mat weight that is only 2% above the level. This ensures that minimum density standards are met, which has resulted in a significant savings in raw materials (between 2% and 3% savings).



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### System Specifications:

- Modicon Analog Input and Output Cards
- Modicon Ethernet Communication Interface
- Milltronics AirRanger XPL Plus
- Moisture Meters
- 3 Wood Scales
- 2 Forming Line Scales
- 4 Former Bed Bottom DC Drives

The entire control system has been implemented in the existing Modicon Quantum PLC equipment already controlling the plant. The operator interface for the new Mat Weight control system is implemented in Wonderware.

For further information or to contact a Hinz office near you, please check our website at:

[www.hinz.com](http://www.hinz.com)