Prod-IQ® successfully in use:

The solution for multiple objectives

A 2.5% reduction in material used and a 6% increase in production speed without sacrificing quality – is this wishful thinking? Not at all. These are realistic goals that can be achieved when all the available data of a wood based panel-board plant's production process is used to its full potential. Siempelkamp's solution to achieving these objectives is Prod-IQ®, a process control system.

By Gregor Bernardy

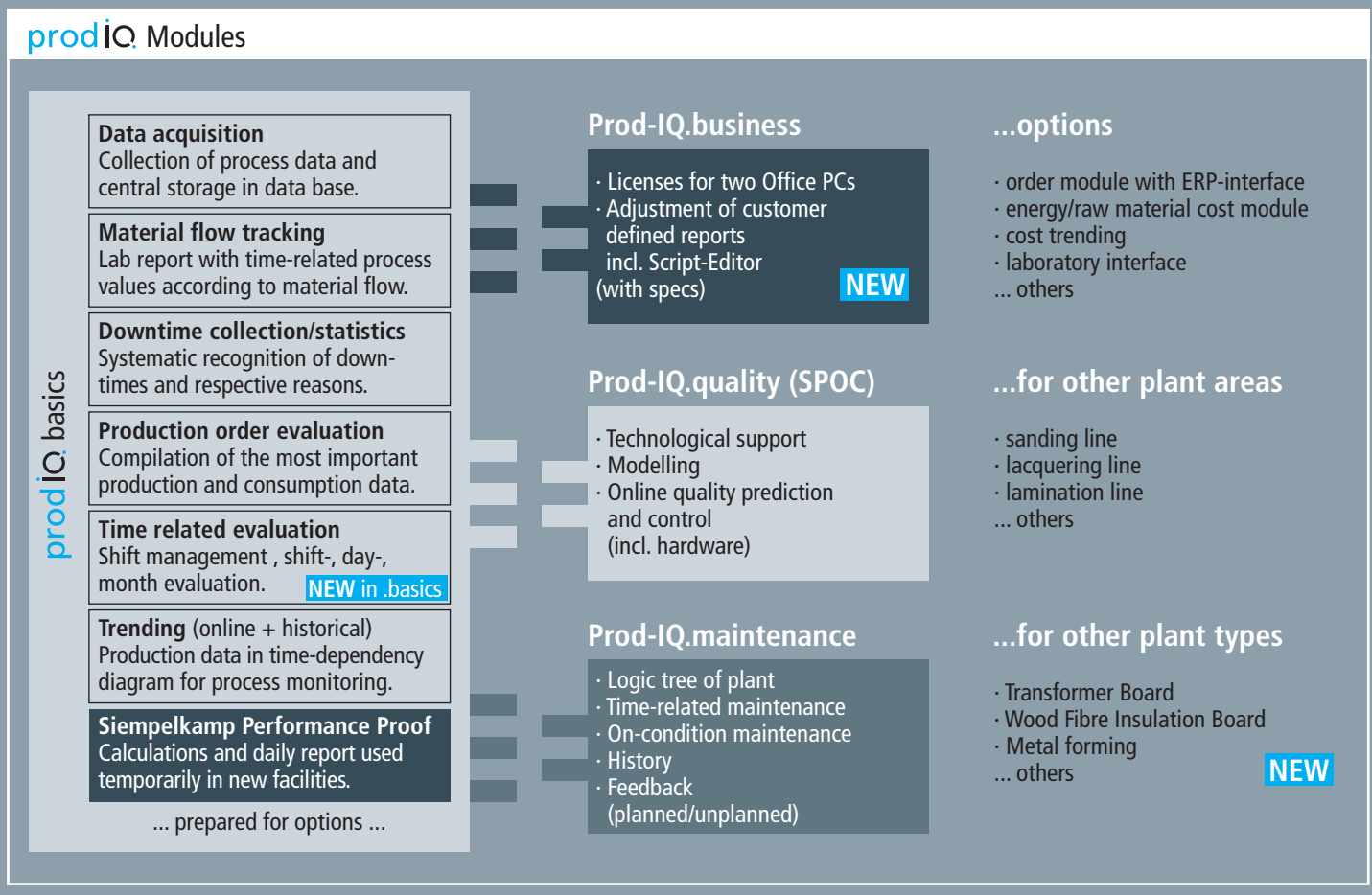

Figure 1: Prod-IQ® modules

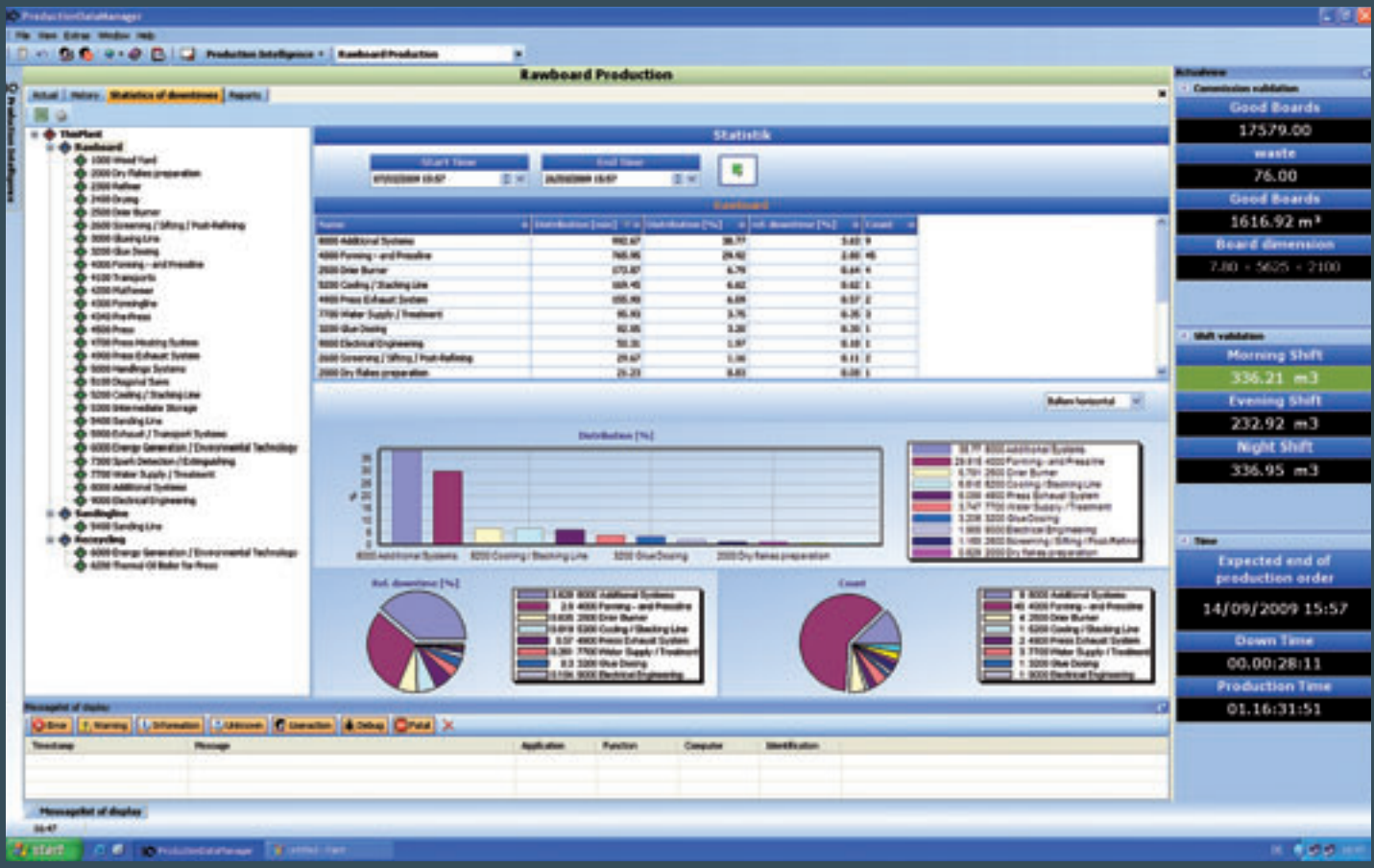

Figure 2: Down time statistics in Prod-IQ® ProductionDataManager

Prod-IQ® stands for "Production Intelligence" and has been used successfully for many years to make Siempelkamp plants more efficient. With the help of cause studies, the process control system makes information usable and the production process becomes more transparent and reliable. The advantages of Prod-IQ® became especially apparent when the global economic crisis hit in 2009. During difficult economic times it is important to make the most of a plant by using all available process and production data effectively.

Every new Siempelkamp ContiRoll® press is equipped with the basic package Prod-IQ.basics. This standard version contains modules that collect, evaluate and assess all process and production data from the wood yard to the cooling and stacking line (figure 1). With regard to the "Total Cost of Ownership," the plant operator is provided all consumption and performance data for a performance analysis.

An example: The position of the mat reject nose in front of the press is monitored. When the nose opens, Prod-IQ® detects that production has come to a stop and that no board is produced. When the nose closes, production resumes. From this information alone, Prod-IQ® draws valuable, automatically collected and unerring conclusions: When did the plant come to a stop? How reliable does the plant operate? What part of the plant causes the most down times? The benefits are obvious – if the weak points are known, they can be improved and the reliability of the plant can be increased.

Another example: Prod-IQ® collects data from the board counter of the cooling and stacking line as well as from the consumption counter for wood, glue, gas, oil, dust or electricity of a plant. The process control system uses the data to calculate how many cubic meters of board and waste are produced with each shift, day, month and order. Thus, the system documents clearly the performance of a plant and helps to obtain the efficiency statement at the time of the acceptance test. How much glue and how many other resources are used? The system helps to

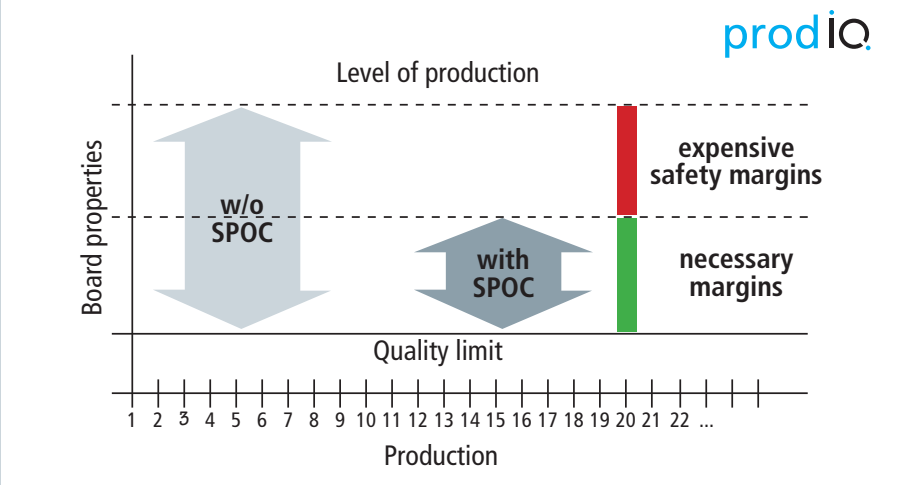

Figure 3: Reduction of necessary safety margin with Prod-IQ.quality (SPOC)

determine the specific values needed to evaluate the production in regard to production costs.

All evaluations regarding the availability, performance and consumption of a plant are available to the user in automatically created MS Excel reports and can be analyzed via a user interface, the ProductionDataManager (figure 2).

From Prod-IQ.business to Prod-IQ.quality: Realize the possibilities!

Prod-IQ.business is the tool for customers that wish to use the information outside the control room on office computers and want to edit standard reports. The scope of supply includes shift, day, and month evaluations as well as special evaluations such as management, formaldehyde, and dryer reports.

Prod-IQ.maintenance helps customers perform and systemize the condition-based maintenance and servicing of a plant. In this way, maintenance costs can be reduced.

Material flow detection and laboratory data management help to document and demonstrate in a traceable way which parameters lead to certain qualities. This aids technologists to better understand the process, analyze the causes, and improve the process. Furthermore, with each new laboratory sample, the system learns more on how certain production parameters influence board quality.

Prod-IQ.quality (also called SPOC) is able to "learn" and calculate which processing conditions lead to certain product quality. This can be done with high precision as many applications confirm. Tensile and bending strength as well as thickness swelling can be forecast with a 95% reliability; the raw density even with 99% reliability. The users of Prod-IQ.quality also profit from speed. They do not have to wait for time-consuming laboratory results

to find out what quality their boards have. They know the quality of their boards the moment the board leaves the press.

This peace of mind can be used to focus on minimizing margins (figure 3). Thus, the material usage (raw density) of the boards could be reduced by more than 20 kg/m³, the glue usage could be cut by up to 2% and the production speeds increased by up to 6% – all this without sacrificing quality.

Focus on the essentials: SAP connection

Another highlight is the new SAP connection which contributes to further streamlining production processes and optimizing time. Prod-IQ® receives from SAP a list of orders to be processed. When the operator selects the order, its data is automatically written into the control system by Prod-IQ® without any effort on the operator's part.

Once the order is finished, Prod-IQ® notifies SAP automatically and without any manual input by the operator of all production stops, outputs, waste and consumption quantities. Our customers appreciate this error-free process. One customer said: "I can proudly announce that the direct data transfer from Prod-IQ® into SAP has been a great success. The new data transfer is a great benefit especially for the production team. Because the manual input of data is gone, our operators are gaining more time to concentrate on the process and are able to reduce their set-up times during changeovers."

These days managers know that their decisions can only be as good as the information given to them. Nobody can do without transparency in production. Prod-IQ® is Siempelkamp's answer for this – not only for customers and not only for the wood-based materials industry. The advantages of Prod-IQ® are also used in metal forming plants and on Siempelkamp's own production floor (figure 4).

Machine run-time collection via Prod-IQ®