

Preactor enables SAP to deliver Customer Service for Klabin Industrial Sacks



Klabin group is the largest producer, exporter and recycler of paper in Brazil. It is the market leader in packaging paper and board, corrugated boxes and industrial sacks, and also produces and sells timber logs. Founded in 1899, today it has 17 plants in Brazil and Argentina and is organized in four business units – Forestry, Paper, Corrugated Packaging and Industrial Sacks. In 2007 it had gross revenue of R\$ 3.4 billion (US\$ 1.8 billion) and a net profit of R\$ 621 million (US\$ 345 million), an increase of 31% over the previous year.

The industrial sacks unit is market leader in multi-wall and SOS sacks, and is recognized for the quality of its products and personalized customer service in areas such as construction, food, chemical products and agribusiness. All of Klabin's industrial sack plants have the chain of custody certification from the FSC (Forest Stewardship Council).

This business unit has 4 plants: two in Lages – Santa Catarina (South Brazil), one in Goiana – Pernambuco (Northeast of Brazil) and one in Pilar, Argentina. Backed by the most recent research into the raw materials used and the most up to date processing equipment, Klabin Industrial Sacks offers its customers high technology, high strength, packaging products for the domestic market as well as Latin America, Africa and the United States. It boasts a wide variety of machinery which makes it possible to produce sacks of many different shapes and sizes, all to the highest international technical standards. It has a complete line of solutions which can be printed using flexography in up to eight colors, drawing attention to the customer's product at the point-of-sale.

The Company is the only Brazilian manufacturer of high consistency bleached extensible sacks and also the only one to offer up to eight-color printing or four-color printing for all its products. It also makes low density polyethylene-coated papers for moisture-sensitive products. Its logistical operation benefits from the company's proximity to managed forests, which supplies raw materials for the production of pulp, paper and sacks. In simplified form, the production of sacks can be divided into three stages.



The first is called the pre-press, a first printing of information containing the main label on coils of paper that will be used in production. This stage is optional depending on the type of printing and the number of colors in the final product. The second stage is to manufacture the sack. Here the reels go through a production line containing a printer, a

machine to manufacture the sacks (Tuber). The sacks then go to the third finishing stage where machines are used to complete and pack the final product.

Production takes place in a make-to-order environment based on the demand of each client. The challenge for Klabin was how to be able to respond quickly and efficiently to variable demand up to 1,600 orders every month. Fast and interactive production scheduling was seen as a key requirement in maintaining a good quality of service.



The challenge

The company had tried to use their ERP (APO module of SAP R/3) for scheduling but they could not create scenarios with good visibility on the use of its resources and due dates. Using spreadsheets the task of planning of the production lines demanded the exclusive dedication of 4 people in an activity that was very manual, time-consuming and complex.

Marcelo Oliveira, Klabin's Industrial Sacks Scheduler described the problem. "With the SAP scheduling tool we only could deal with Tuber resources. We were 'blind' when it came to other resources and this caused several problems on deliveries and costs."

This complexity was due to the number of operations that needed to be sequenced. On average, about 1,600 orders every month generated approximately 4,800 operations in accordance with over 70 different routes that vary with product specification.

In addition to the number of operations, each product and order has different requirements in terms of the machines that could be used. For example, if a specific order needs to be delivered on pallets, it must go through a production line that has an automatic pallet machine. The same happens with the technical characteristics of the product, ranging from the number of colors, even the size and number of bag layers which in some cases can reach up to 3.

In total there are more than 25 variables that influence the allocation of the machines that form the production line - in other words the options of production are set according to the combination of a number of technical characteristics the product and the production line. Some of these features are also responsible for determining the rates of production depending on the chosen machine. This means there is a big and complex puzzle to solve every day.

In addition to the challenges of production scheduling, which were many, Klabin required the scheduling tool to be fully integrated with SAP. Like any other ERP system, SAP works with transactional information for production however their scheduling module has

limitations in dealing with detailed scheduling in environments such as Klabin. Hence the integration needed to take into account that SAP would be responsible for providing all information relating to a production order and still allow the confirmation of orders with dates provided by the scheduling solution. Thus, the goal was to complement, enable and reinforce the investment made in SAP, providing a fully integrated and flexible solution.

In addition to eliminating manual analysis of the variables for machine loading by the inclusion of automatic allocation rules and the integration with their ERP, Klabin also presented a series of goals and expectations that the solution needed to provide.

- optimize the use of production capacity to synchronize with demand;
- provide accurate information on the delivery dates to ensure better service to customers;
- sequence the production, considering the largest possible number of constraints in the process given the specifics of products and conditions of production;
- carry out the sequencing of orders, production, using business rules and policies of the company;
- allow rapid adjustment of production plan, depending on changes in demand on the conditions of production and policies of care;
- monitor the execution of the plan and allow fast access to the actual progress of each production order;
- synchronize the production between the various departments;
- facilitate the assessment of resource load over the plan horizon;
- examine the consequences of re-scheduling, and
- improve the analysis of the requirement for additional capacity, extra hours, shift patterns, equipment.



The solution

The solution was identified after Klabin contacted TECMARAN, the Preactor Network Partner for South America, via the internet. They were invited to the User Group meeting in Brazil where they met many other Preactor users.

Marcelo Oliveira remembers that experience. "We were very impressed not only by technical solutions presented in the Meeting, but also by TECMARAN's credibility and confidence with its customers. Seeing the case studies presented by users was extremely positive and ended up accelerating the whole process! We decide go forward with Preactor and TECMARAN"

The Preactor 400 APS implementation process started in January 2006 and within 7 months the system was fully installed and integrated with SAP and ready to go live. It was configured to carry out the centralized scheduling across 3 separated plants (two in Santa Catarina and one in Pernambuco), taking into account all constraints and variables, and allow better loading of customer orders in accordance with the priorities and delivery dates.

Marco Baptista, director of TECMARAN and part of the implementation team, commented on the application. "Normally Preactor already considers the efficiency of machines and operators, shift patterns, needs, tools, setup times among many other factors, but the Klabin model was structured to allow the variables involved in the production process to be easily connected with the machinery of each production line considering the customer order attributes. Thus, according to the combination of these variables, Preactor automatically indicates the lines that a particular customer order should be scheduled. About 27 different attributes (width, number of colors, type of paper, type of pallet, number of layers, etc.) was created in Preactor to meet Klabin's needs. This is the largest number of variables we have worked with before but Preactor was able to handle it."

To meet the optimization requirements TECMARAN developed a custom scheduling rule that groups customer orders with similar characteristics within a time period and incorporating the intelligence allocation of resources (based on technical characteristics) and balance demand in accordance with Klabin policies ensuring the delivery date while minimizing setup time. The solution is fully integrated with SAP, from the receipt of customer orders until the completion of the process. Any demand for production originates in the ERP and is received by the Preactor through specific interfaces. After scheduling, information is returned to SAP with the adjusted production plan (orders with delivery dates and which machine will do each operation). At this stage, the Scheduler may also determine the horizon of scheduling that will be used to convert the Planned Orders to Production Orders, effectively releasing them to the production area.

Results

Just a few weeks after the system went live Klabin observed a very important reduction in work-in-progress due to better synchronization between resources. The system also allowed the company to see the utilization, identify bottlenecks in advance, and try 'what if' scenarios to smooth production flow.

Antonio Andruccioli, Commercial Director of Klabin Industrial Sacks described the benefits. "Preactor gave us a fast scheduling response allowing the creation of alternative scenarios which has enabled us to control all stages of the production process - from the customer order by date, through choice of production lines, until the release of the product for the customer."

Marcelo Oliveira is most enthusiastic about the results. "We believed that Preactor could deal with our scheduling needs but what we did not know was how deep it could deal with our constraints and our desires."

At the recent 2007 User Group meeting Marcelo Oliveira presented their case study. "We have absolute confidence that we have found an excellent tool but also a highly competent partner to work with. It was with great pleasure that we present our case study at the TECMARAN event!"