

Scheduling Electronic Components with Preactor at Teikon

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Teikon was founded in 1996, and two years later started operations in Porto Alegre, Brazil. With the slogan "The Strategic Alliance in Manufacturing of Electronic Products", Teikon seeks to place themselves among the 70 largest ECMs (Electronic Contract Manufacturer) in the world in 2008.

The focus of the company is EMS - Electronic Manufacturing Services, taking over the logistics and industrial chain of their customers, allowing them to focus on their core business, in product development, marketing, sales and promotion of its brand.

Their services include all the industrial processes of automatic assembly, integration, testing and packaging, and delivering the product ready for marketing anywhere in Brazil.

The manufacturing site of Teikon now totals 13,500 m² of built area, with plants in Porto Alegre (RS), São José dos Pinhais (PR) and Manaus (AM), capable to assemble 600,000 SMT components per hour. Each unit has its own inventory, PTH and SMT assembly, testing, completion and shipment of boards and final products. This multi-plant operation enables Teikon's customers the choice of manufacturing its products with a better local logistics, tax incentives (state and federal) and expertise of each manufacturing plant.

Among the sectors served by Teikon are commercial, industrial and building automation, cells, energy, entertainment, IT and telecom. Companies like Ericsson, ThyssenKrupp, Altus, Positivo Informática, Aeroeletrônica, Bematech, Autotrak are part of their clientele.



The Problem

In this context of operation, Teikon had trouble balancing its production load and optimizing its production capacity - without compromising customers's deadlines. In addition, the company was expanding fast with a forecast of a significant increase in production and installation of new plants.

Another problem they faced was to monitor the progress of production to enable quick adjustments in the production plan. As a result, the company could not generate a production schedule in a systematic way and at the same time simulate alternative scenarios. Teikon scheduled some sectors, but did not have a tool that covered the whole factory. Thus, the production plan generated was unrealistic in many cases.

For these reasons, Teikon hired in July 2006 ACCERA Supply Chain Solutions, a Preactor Solution Provider based in Brazil, in July 2006, to deploy Preactor APS.

Microsiga, the supplier of Teikon's ERP system recommended Preactor for this very complex application.

The requirement was to replace other tools the company used in the industrial area, particularly Excel spreadsheets, thus enabling the systemic management of production. The objectives were to overcome the difficulties experienced, to expand the horizon of firm planning and to improve the planning capacity and future investments.

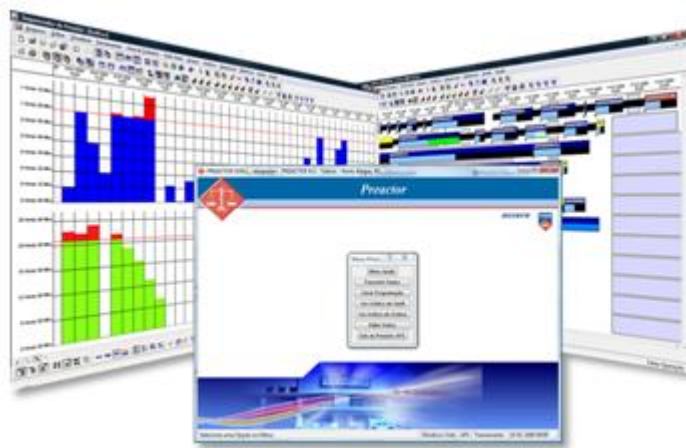
The Solution

Before the implementation of Preactor, ACCERA made a pre-project analysis in order to diagnose the actual state of Teikon's PCP. The idea was to obtain an accurate analysis of the company's situation, precisely understanding their problems and alternative solutions. Subsequently, ACCERA prepared the project for the final implementation of Preactor, including ACCERA's analysis added to the expectations of the customer.

Therefore, Teikon acquired the license of Preactor APS 400 and started its implementation from the integration with the ERP Protheus provided by Microsiga and the ACD data collection system.

The integration with both systems was very simple and fast. The implementation project lasted three months, and involved the stages of specification, development, operational simulation and start-up of the tool. ACCERA created special customizations for TEIKON that were highly valued by the customer. It is important to highlight the simulation features of order consultation to determine delivery times, the loading of demands planned for the design of capacity, and the conception of production reports with bar codes to facilitate the logging of activities on the factory floor.

Another application was also created for the separation of operations to ease the scheduling of production batches, ensuring the occupation of each machine at the correct time.



After implementation Teikon began to take control of its production again, with the sequencing of the day to day, hour by hour, minute by minute, machine to machine. They could predict events in the factory, and in the case of a variation from the planned schedule on the factory floor this could be quickly identified and the system was then rescheduled. In fact, the design of Preactor and the tool

for data collection and notes worked well together. The precise information in real time, and the possibilities of simulations have brought confidence to delivery promises.

The ability to see larger horizons should be also be highlighted. Planned orders for months ahead were loaded into the Preactor model to enable an analysis to be made of future factory capacity and labour requirements to be made.

Hence, a master plan of production was created for Teikon, providing an overview for the medium and long term. Also, it was possible to see that in certain times of the year, it would be worth transferring production from one factory to another. All investments in machinery, contracts, etc.. are now simulated and analysed in Preactor.

Results

With PREACTOR, Teikon dropped the "input" in the manual generation of schedules for each workcentre reflecting the availability of greater accuracy and reliability. Through this the company reduced its intermediate inventory by 50%, also decreasing manufacturing lead-time. Moreover, Teikon reached greater speed, strength and reliability in the generation of schedules and re-scheduling.

As a result, in the first half of 2007, Teikon in Porto Alegre, broke its record in on-time delivery performance reaching 86% of orders delivered on time while decreasing delays to production by 80%. Finally, the forecast of demand is now focused on production (capacity), based on sales expectations of their commercial area in horizons of up to six months.

The table shows the summary of the main results.

FACTOR	BEFORE	AFTER
Collaboration amongst the company's sectors	<i>New demands analyzed with exclusive focus in raw material acquisition</i>	<i>Integration between commercial, supply and production with fast flow of information</i>
Planning of Capacity	<i>Small horizon, 1 month maximum</i>	<i>Advanced, detailed and realistic, with horizons of up to 6 months</i>
Planning of Materials	<i>Held by purchasing sector and informed to production</i>	<i>Planning associated with programming, determining minimum dates to programming in the basis of materials</i>
Simulation of Scenarios	<i>None</i>	<i>Assessment with different algorithms and rules of prioritization</i>
Delivery Time	<i>Average time and requirements of clients</i>	<i>Consulting order determining delivery times according to the real utilization of resources</i>
Delays	<i>Frequent</i>	<i>Minimum</i>
Sequencing	<i>Focus on resources</i>	<i>Focus on delivery time, WIP minimization, balancing and optimization of resources</i>
Firm horizon of planning	<i>Three days</i>	<i>A week – minimum</i>
Response to unforeseen and reprogramming	<i>Slow, with low reliability</i>	<i>Fast, with the same quality and reliability of initial data</i>
Stock in process	<i>High</i>	<i>Reduction to almost zero</i>

Graziela Aragones is Teikon's IT Manager. "Today, Preactor is an indispensable tool to ensure the maximization of the use of resources and optimization of Teikon processes."