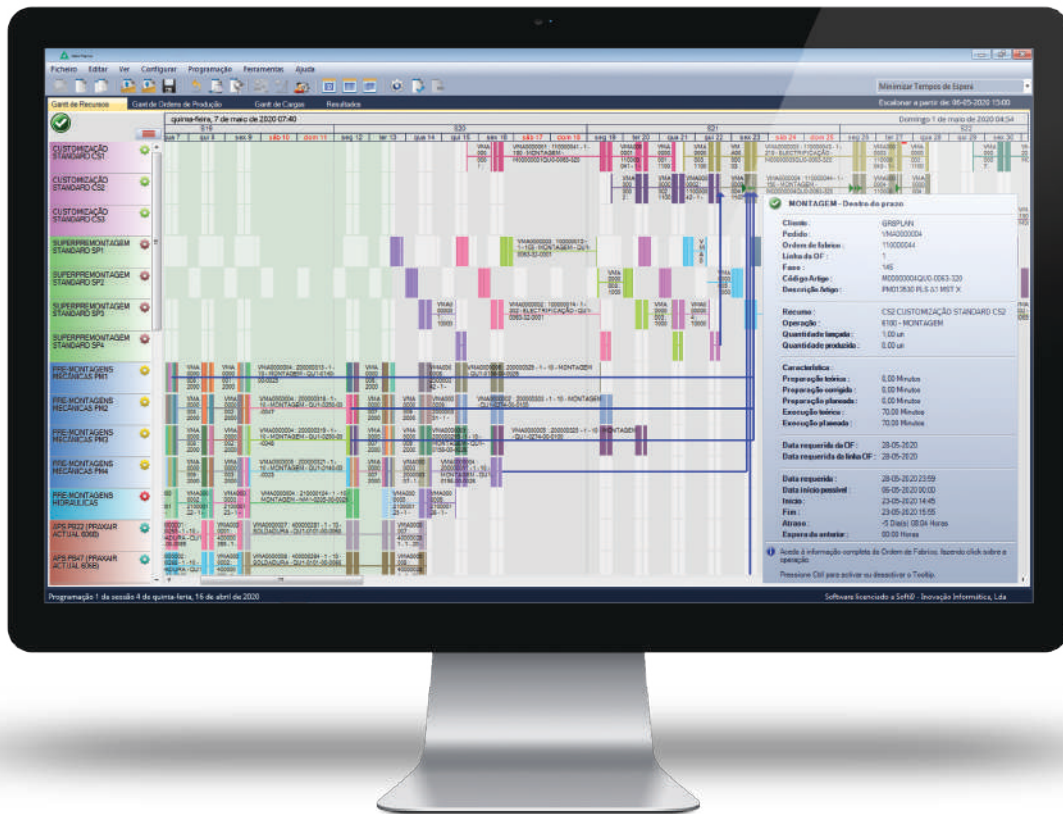




Stello
Planner

We optimize your production



Intuitive and easy-to-use graphical interface

In order to plan the production and evaluate different scenarios, Stello Planner provides an intuitive and user-friendly interface. From this interface the user can access different configuration functionalities, search and interact with the planning, as well as compare different simulations and their indicators (KPIs). This way, the user can, in a consistent way, decide which simulation can be approved and sent to production.

Advanced algorithms which help manage production

Stello Planner incorporates flexible and efficient algorithms based on meta-heuristics (relatively general techniques for combinatorial optimization problems), its multi-objective variants and sophisticated decision support systems that reinforce the role of the decision maker and its interaction with the entire system. The algorithms are developed in constant collaboration with INESC TEC, having already been subject to several scientific papers and academic thesis.

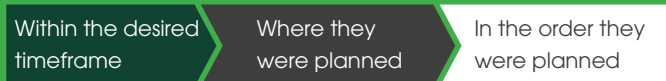
Easy integration with other systems

It is important that Stello Planner is fed with reliable information about production-related data. Communication with other systems is done through XML files.

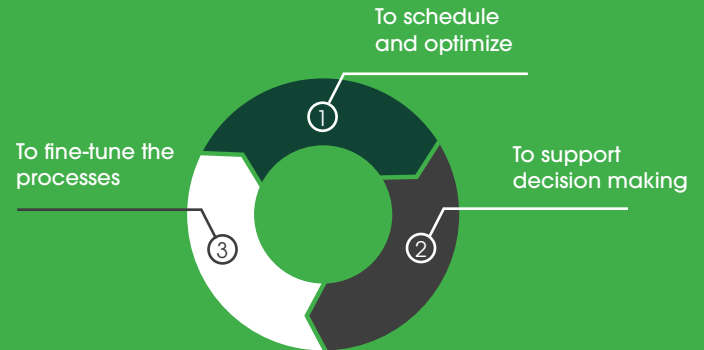
APS

Advanced Planning and Scheduling

Planning, in a first analysis, is to resolve conflicts of interest between commercial and production departments. The need to monetize available production capacity represents an opportunity to optimize resources and improves the process:



The Stello Planner stands out as an indispensable tool for production, with the goal of contributing to the increase of productivity and competitiveness of the company's production process. To achieve this, its way of working is focused on three basic pillars:



Stello Planner's main goals and features

- Meet delivery deadlines; Minimize setup time, downtime and stoppages; Maximize the use of resources and subresources; Manage parallel operation overlaps.
- Use of mathematical algorithms to obtain, in a timely way, the optimum solution, enabling the use of various optimization criteria at the same time.
- Providing a graphical interface to support the user in navigation and decision making, intuitively, easily and comfortably.

Track the simulations using several charts

- **Gantt chart of Resources**
Allows the interaction and visualisation of plans, with all operations by resource and time, links between them, general and specific data, delays, and other features.
- **Gantt chart of Subresources**
Allows the view of their usage over time associated with the resources where they are needed.
- **Gantt chart of Production Orders**
Allows the view of their temporal arrangement, as well as the information about them.
- **Chart of Loads**
Allows the view all the information related to the different types of loads placed on the resources.

Commercial Department

- Requested Dates
- Order priorities

Warehouse

- Stock of components
- Stock profile
- Internal logistics (components)

Maintenance Department

- Preventive maintenance plan
- Corrective maintenance

HR Department

- Operators' information
- Availability of workforce
- Skills

Department of Production and Engineering

- Required dates (POs and operations)
- Material availability dates
- Product characteristics
- Main and alternative work center
- Bills of materials
- Production routes
- Product files
- Priorities of production orders
- Work centers blocks
- Overlaps and wait times
- Machine setup and execution times
- Internal logistics (planning)

Shop Floor

- Internal logistics (transportation)
- Execution logs
- Machine events
- Tool control
- Work in progress (WIP)



Workflow diagram

Planning Department

RETURN INFORMATION

- Operations status
- Expected dates and times of start of operations
- Expected dates and times of end of operations
- Duration of setup times
- Duration of execution times
- Work centers for executions
- Operators and tools (if needed)

ACCEPT

REJECT

EVALUATE

Using the decision support system

REPLAN

TAKE PHOTO

SITUATION AT PRESENT

Factory digital photo

ADJUST GOALS

Scheduling criteria

- Minimize setup times
- Minimize wait times
- Minimize delays (medium)
- Maximize resource load
- Minimize maximum delay
- Minimize deviations from delivery date
- Maximize priorities
- Maximize value
- Maximize energy efficiency

ADJUST MODEL PARAMETERS

Capacity model

- Work centers
- Specialized tools and workers
- Working calendars
- Stoppages
- Capacity changes

Optimization elements

- Product and work centers' characteristics
- Change time matrices by work center
- Energy labels
- Energy characteristics
- Energy change cost matrices
- Capacity classes and compatibility arrays for batches and tunnels
- Overlap rules

SITUATION IN THE FUTURE

Digital photo of the factory
Quantitative KPIs

SCHEDULE

Multi-criteria scheduling and optimization

Importance and weighting of KPIs

- Production time
- Downtime
- Stoppage time
- Brought forward production orders
- Delayed production orders
- Average delay days
- Maximum delay days
- Average anticipation of delivery date
- Maximum anticipation of delivery date
- Average lead time
- Average wait time
- Subcontracting time
- Priorities satisfaction levels
- Billing in a given period
- Percentage of energy efficiency transitions in resources
- Percentage of energy efficiency transitions in operations

Project with CIN



In order to optimize the production process of CIN, we implemented together with INESC TEC our Stello Planner solution in one of its factories, in order to obtain a greater profitability of its resources and subresources.

Main project highlights:

- Collaborative work between project teams of CIN, Softi9 and INESC TEC, were fundamental to characterize CIN processes, existing problems and goals to be achieved;
- Mapping of complex processes in capacity models and engineering information;
- Restrictions and variability management
- Integration with ERP;
- Raw materials checking;
- Priorities management;
- Link between production and packaging orders;
- Use of historical information to determine adequate execution times, considering variability and thus correctly characterize the capacity available in the factory;
- Multi-objective solutions.



Reference

"The result of the work has numerous advantages for CIN:

- A complete overview of the state of the factory (with eye-visual graphic appearance and intuitive navigability);
- Efficient use of resource and subresources capacity;
- The option to develop alternative scenarios in a few seconds to support the decision.

In short, faced with a complex challenge, the consulting team presented an efficient working method with a collaborative attitude of enhancement, achieving all the proposed objectives."

Pedro Cruz, Manager of Industrial and Production Information Systems

Developed by:



Stello



www.stello-software.com
sales@stello-software.com

Co-financed by:

