Food Production Plant: Sizing a new implantation

SUCCESS STORY N°12

1Point2

⇒ ISSUES

- Dimensioning row material stocks and intermediate stocks.
- Dimensioning cleaning product stocks (water + products).
- Estimate the number of packing line required .
- Test several production schedules.

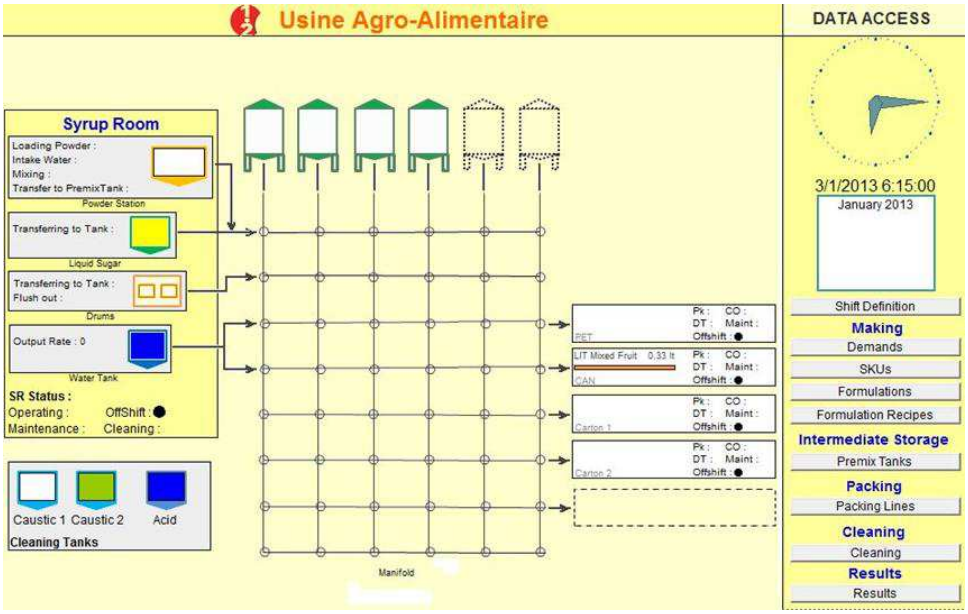
⇒ SOLUTIONS

A simulation model including the manufacturing of product following recipes, and a production schedule taking into account the material stocks and the cleaning of the various equipments — according a planning or a product change.

⇒ ADVANTAGES

- Validation of raw material stocks.
- Reduction of the number of tanks for intermediate storing before packing.
- Validation of cleaning procedures.

In the food industry, we find questions common to all kinds of industry, plus very strict constraints of hygiene/sanitation. The managing rules must take into account the aging of products during each step of the process .
ExtendSim, with its Rate library dedicated to flow processing, is able to precisely reproduce these constraints. The model, both realistic and customizable, gave answers beyond the initial specifications.



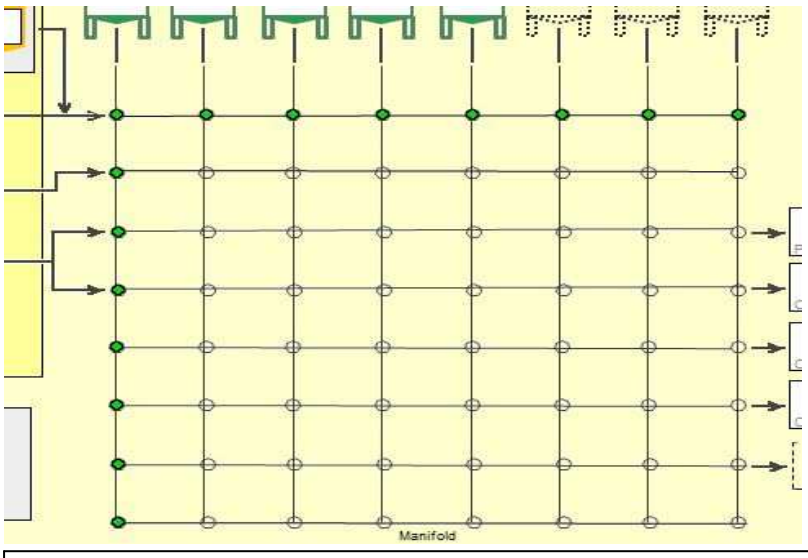
The dynamic study was conducted with two steps.

First step for dimensioning the future installation, integrating all manufacturing rules:

- Raw material management (consumption, cleaning and replenishing)
- Intelligent product transfer between stocks and equipments (manifold)
- Packing lines management (manufacturing speed, failures, maintenance, etc.)
- Dealing with the aging of products in intermediate stocks (tracing products, disposing waste, cleaning)
- Equipments cleaning management (scheduled maintenance, cleaning for product change)

Once the model validated, second step was to test future production schedules (increased production), and add new products with different recipes and different cleaning rules.

With a very modular model, the customer could study new layouts for equipments (packing lines and intermediate stocks) when production increases and the manufacturing installation enlarged.



Manifold

The Manifold is a piping system, controlled by valves, and used for transferring liquid products between equipments and interim storage.

The Manifold includes a grid pattern representing all the possible connections between equipments.

When one equipment feeds a stock or another equipment, it books all the connections of the relevant line and column, thus being sure to feed the target equipment.

In food industry, flows are sometimes controlled by Manifold, so the model had to reproduce both the decision algorithm and the actual actions on the valves routing flows.

Flow simulation is one of the most powerful tools used to analyze complex systems:

- **Understanding** the system's dynamics: how long (minimum/maximum time) does it take to get from one point to another? Where and when may long queues appear?
- **Anticipating** the operation of a new system, or **improving** the functioning of existing systems. Simulation can avoid making small or big mistakes!

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We support industry managers with simulation to assist their decision-making process.
Trained in flow simulation in the United States and France, the 1Point2 team has been providing services, quality software, training and methodological assistance since 1987.
1Point2 is the exclusive distributor of ExtendSim in France, Belgium, Switzerland, Italy, Spain, Portugal and Greece.

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