

Case History – Marine Industry

The background

Italy has a very proud history as being one of the most exclusive countries producing yachts and super yachts across the globe and, to gain market penetration amongst the numerous prestigious brands, nowadays cost control and rightsizing are as important as product or process innovation.

The manufacture of luxury yachts is complex, and the quality of the final finish and craftsmanship cannot be compromised.

The manufacturing process requires a huge amount of person hours for each yacht and uses a mix of different highly skilled ‘trades’ through a high number of manufacturing tasks, some of which can be completed in sequence and others that are mutually exclusive.



To add to the complexity, the process is constrained by space, both in terms of how many yachts can be in the factory at any one time - at over 60 ft, the logistics associated with moving a yacht around the factory isn't easy- and in terms of how many people can be working on the yacht at once -it's impossible to have a horde of people working within the same hull at the same time!

The challenge

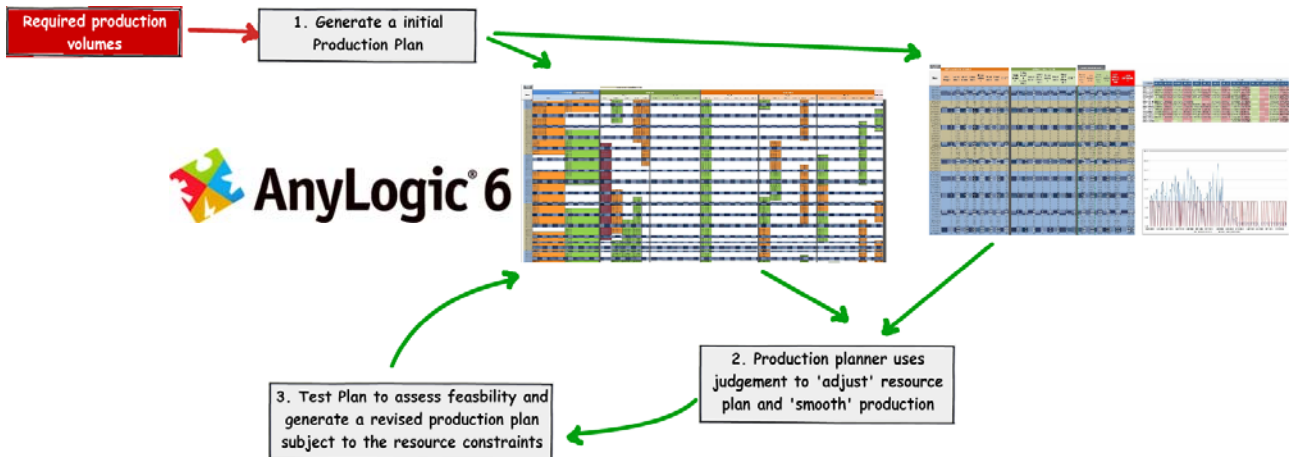
The managers of one of the most important Italian players needed a new intelligent approach that would make the planning process simpler. FD was approached to develop a radical new tool for simulation support planning.

The objective was to give the ‘real’ production planner ‘exceptionally rich’ planning information which would allowed the person to ‘test’ and ‘refine’ a plan before its implementation. The concept of tool is guided decision making and it means that the individual can easily refine ideas and test a plan's feasibility over multiple simulations before rolling it out to the factory.

The solution

The solution is a simulation based decision support tool developed through AnyLogic using its unique hybrid approach.

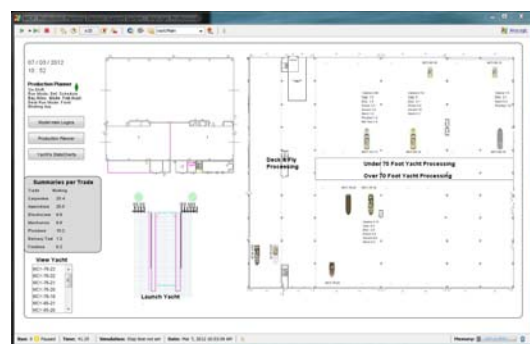
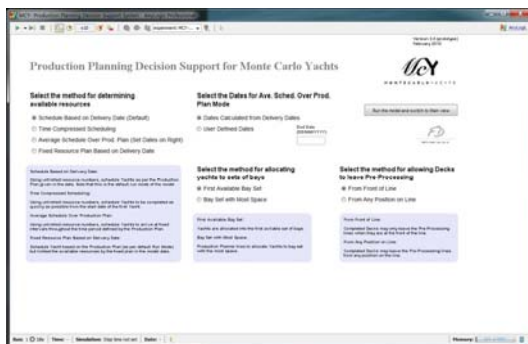
Discrete events are used to model the physical layout and the manufacturing process; Agent Based are used to model the production planner complex and adaptive “day-by-day” decision making.



This tool can easily simulate both automatic (Agent Based decision making) and human guided planning solutions as an integral part of a 3 step aggregate planning process:

1. Automatic unconstrained scheduling
2. Human guided review of both the master plan and the resource plan adjusting parameters.
3. Constrained production planning: Using the updated data from stage 2, to tests its feasibility.

Thanks to the efficient Anylogic Java engine, the entire simulation process of a production season lasts few seconds!



The business Benefits

- Strong increase of resource planning process productivity;
- Efficient distribution of resources tasks;
- Human resource cost saving;
- Managers time saving;
- A better management support to resource allocation concerns.