A realization of 1Point2

Designation: **Testing Production Capacities**	
Client: Elkem Silicones, Lionel Arras	Date: 2020

Brief description of the project:

A global manufacturer of integrated silicones, Elkem is studying here a silicon-metal transformation workshop, which manufactures in batch production 4 products belonging to 2 different families, on 4 mixers. The objective is to define a compatibility matrix between mixers and product references, knowing that cleaning or reconfiguration times must be counted in the event of switching from one reference to another.

Different product mix assumptions, associated with a desired production duration, are submitted as input, in order to determine the workshop's production capacity, having in mind a planned production increase, accompanied by changes in product priorities.

The model calculates algorithms and schedules by combining the assumptions, and suggests an ordered list of batches to be produced, allowing to get as close as possible to the desired mix over the requested duration, while optimizing the cleaning of shared resources to increase the strict time of production. These are long and complex manufacturing programs, where each step calls for resources (mixers, tanks, volatilization equipment, etc.) described in a database of around twenty tables.

One of the challenges is to measure the consequences of either dedicated or versatile mixers, and to see where the bottlenecks are located, especially on certain unique resources.

In addition to tracing each batch sent to the mixers as well as the utilization rate of each equipment, the model produces at the end of the simulation a Gantt chart allowing all stages to be viewed as a function of the time spent using the different resources