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# Creating digital twin helps meets 4-day swapover for major system upgrade

#### Industry: Food

Location: UK

#### **Challenges:**

- Limited to 4-day swap-over
- Complex process routing
- Perishable product, with limited stock buffer
- Short install and commission window required high confidence in FAT outcome

#### **Solutions:**

- Creation of Emulate3D Digital Twin by AutoLogic
- Significant Factory Acceptance Test (FAT)





### Background

A blue-chip client in the Food Industry needed a major upgrade of a process control system on critical plant — and they wanted a 4-day install and commission window.

### Challenges

The tight install and commissioning timeline was the result of the process itself; a complex network of pipes provided material delivery of a perishable stock between mixing, storage and production tanks, with limited stock buffer. We needed a way to be able to test the system extensively offline to provide confidence in the software.

### **Solution**

Creating a digital twin vastly reduces the risks associated with implementing a new process or packaging line, or even modifying an existing line. It leads to quicker start-ups, fewer errors and the flexibility to test various scenarios without incurring significant cost of materials, energy or labour.

An Emulate3D Digital Twin developed by AutoLogic provided visibility across the plant and the ability to rigorously test the controller upgrade. The model made use of Process catalogues developed by AutoLogic that allow tanks, pipes, valves, pumps and fluid flow to be simulated within Emulate3D.

Using the model, our Actemium Automation Nottingham team was able to conduct an extensive and risk-free validation of the process during a significant Factory Acceptance Test (FAT) schedule. Process catalogues allow discrete, process and hybrid applications to benefit from confidence provided by simulation and emulation.

The model works within a single framework that encompasses the process from design and development through to site validation. Viscosity of fluid, head pressure, pipe diameter, and distance travelled were all modelled, and tank fill rates were validated against known site benchmarks.

#### Results

We were able to run the model in simulation mode to fully test new capacity options. As a result, we had a successful FAT, and production was fully available after the 4-day shutdown. Our customer now includes emulation in all new upgrade specifications. We at Actemium Automation were so impressed, we invested in training for our engineers to be able to fully deliver Emulate 3D models for any client, from concept through to final commissioning and beyond. The model developed for this client has proven itself to be an excellent training tool.



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