# Case study: commissioning time reduced from 8 weeks to 5, with a mix of virtual and onsite commissioning for distribution centre machinery upgrade

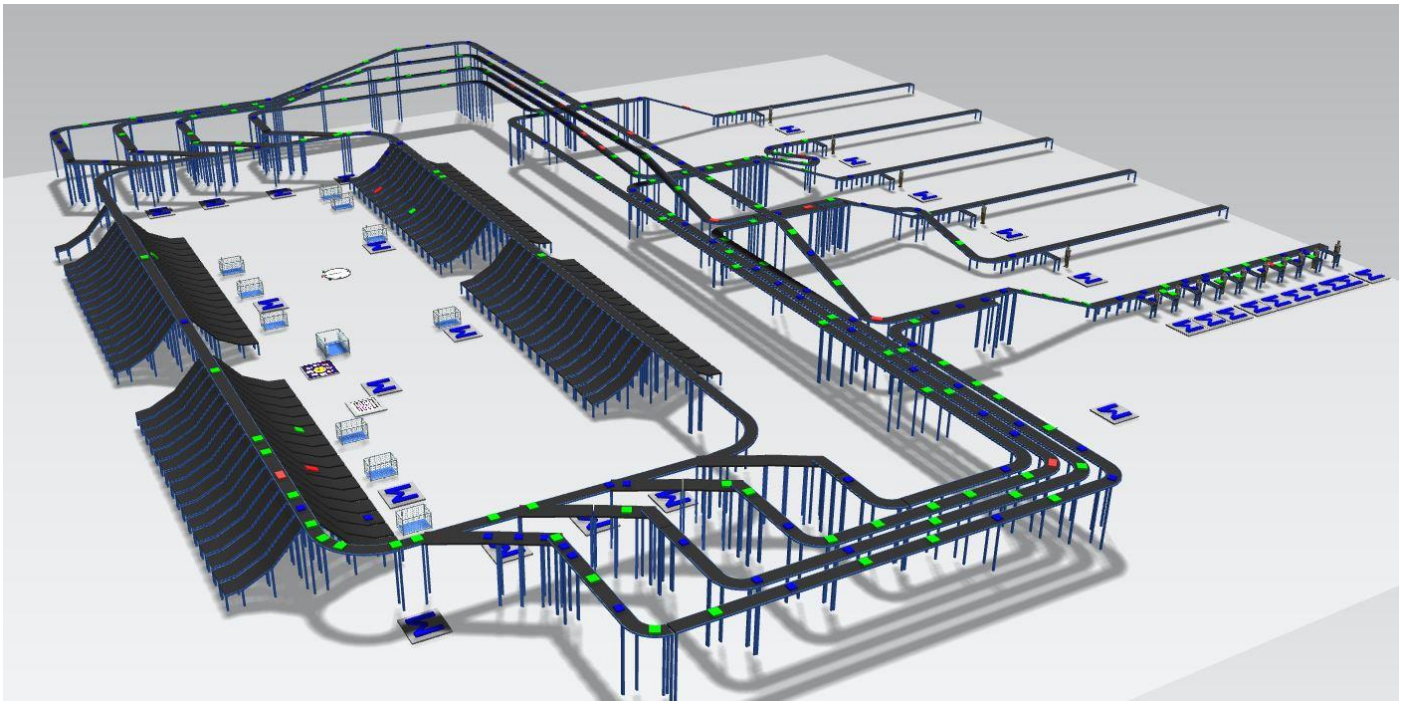
## Key achievements

- Upgrade to the controls of existing Tilt Tray sortation machine took 5 weeks in total to commission,
- The IDC team completed virtual commissioning remotely using a digital twin created in Siemens Plant Simulation software,
- Costly time onsite was limited, with overall commissioning time reduced by 3 weeks vs. a comparable upgrade using onsite commissioning only.

## Situation

Whilst machinery lasts for many years, a regular requirement is to update the control systems that operate it to maintain functionality and ensure software is still supported. IDC have specialist application knowledge of controls systems applied to warehouse distribution, logistics and manufacturing; by working with Simulation Solutions they were able to trial the use of Siemens Plant Simulation as a virtual commissioning tool for a mail order distribution centre.

The aim was to explore how much work could be completed remotely before the final onsite commissioning checks. As preparations for the seasonal peak of Christmas preparations start in July for many retail operations, the pressure was on to make the most of the slim two month window to complete the upgrade during May and June.



Model of the distribution centre created using Siemens Plant Simulation. The software is used to create a digital twin of an entire operation, enabling users to run tests, gather data and ultimately create innovation in an environment with no risk.

## The brief

To make the most of the time available, the team focussed on the more complex areas of machinery, testing the dynamics and relationships between components to ensure correct configurations. It was critical that as much of the work as possible was completed offsite using virtual commissioning, so the team prioritised simulating mechanical changes to moving parts.

> *"All systems are configured differently, so without access to the sortation machinery we have to use the standard PLC/WCS design models to construct the code. With high speed sortation systems (6000 items per hour+) there are always a few surprises when we get onsite; but with a model created in Plant Simulation we can simulate almost all aspects and know that the code has been validated against the system design, so won't need major changes when we get to site. It's good to know you have a solid foundation to work from"*
> Richard Towne, Engineering Project Manager, IDC

## The work

Using a digital twin of the distribution centre, the team were able to take into account oversized, or 'ugly' items, as they are known, generating virtual stock data, rather than going off the general rate of throughput for standard items. By factoring in a range of item sizes in line with the packages the distribution centre would be processing, the team were able to get a more realistic view of machinery performance. Being able to do this work away from site was critical to meeting client deadlines.

## The results

The team reduced the time spent commissioning from 8 weeks of onsite man hours down to 5 weeks, including time in the office spent completing virtual commissioning, plus throughput of the machine increased in the bargain.

> *"We are very happy with the time we've been able to save onsite with virtual commissioning, making for shorter launch times, as well as having the flexibility to multitask on more projects in the year. The use of this tool is set to evolve, as we find more ways to adapt it to our clients business processes. We look forward to developing this further with Simulation Solutions to continue to drive more value for our customers."*
> Peter Hadley, Engineering Project Manager, IDC

Virtual commissioning is an example of one of the stages of production processes where simulation can help engineers to test and improve their operations. Simulation Solutions work with businesses to review their end to end production processes, enabling them to progress with confidence and certainty to ultimately create innovation. As Siemens smart partners and specialists in Plant Simulation, a key benefit shared with clients is the ability to create a digital twin which gives a strategic overview of the entire operation, rather than just a cell or line, giving more opportunity to continually improve the operation.

To find out more about virtual commissioning or using a digital twin to review your end to end production processes, email support@simsol.co.uk and a member of our specialist team will get back to you to arrange a chat or demo.