

Case Study



Magnys Emulation Made Launch More Efficient For Global Automaker

A global automaker turned to Magnys to help it save time and money on a tire and wheel program. Our team was tapped to validate PLC code in a lab setting before production began, in order to help generate an on-time, high-quality launch.

By our customer's own analysis, the partnership with Magnys was a success. Our emulation of controls systems validation:

- Saved several man-weeks
- Eliminated the need for conveyor integration shops
- Validated logic and magnetics 100% for manual functions and fault conditions
- Corrected all problems without disrupting normal operations
- Identified problems that would have occurred only at full line speed

Validating controls in advance of the build means that any problems during production startup will be fixed faster because engineers will know that the issues are with the hard wiring –not the logic. Furthermore, representations of actual plant floor equipment were placed in a “library” that can easily be utilized again. This will generate tremendous savings on future projects.

What is the difference between Simulation and Emulation?

Simulation is a category of virtual validation that presents a “model” of real-world behavior. Simulation can predict outcomes, based on a model of the PLC that may or may not operate in the exact fashion that the real device would.

Emulation, on the other hand, is a category of virtual validation that actually replicates a real-world device's exact behavior. We created an emulation for this automaker that behaved exactly as a PLC would –without any shortcuts. The technology "emulated" the PLC, then ran the engineers' actual ladder logic code to determine the PLC's behavior.

How did Magnys help?

Using Magnys emulation, controls engineers and simulation engineers worked more efficiently than was possible with prior programs. Controls engineers were able to evaluate major changes in their ladder logic directly in the emulation, while simulation engineers had more time to engage in new projects –instead of spending 40% of their time repeating previous analyses.

Our approach meant there was a definitive end to the simulation phase of the project, which allowed controls engineers to manage the project without the priority conflicts that can occur between controls and simulation engineers. A managed collaboration among the developers of the ladder-logic software, Magnys emulation, and HMI screens resulted in the verification of the entire software approach and solution in the lab environment.

Many manufacturing projects have traditionally required an integration phase, in which conveyor equipment is installed and tested off-site before being dismantled and shipped to the final assembly point. Eliminating this time-consuming and costly process is one of the primary goals of an emulation project whenever there is no overriding mechanical reason for it.

However, removing the integration shop step required our customer to feel confident that the emulation program accomplished what it was designed to do. On the tire and wheel program, the company was able to eliminate the integration step, saving the company significant time and outside expenses.

Finally, because controls engineers were able to exercise 95% of input and output configurations, a number of software errors were discovered. Finding these errors sooner in the process validation allowed equipment commissioning time to be reduced by 50%. And, additional cost avoidance was achieved because minimal personnel were needed to execute the equipment launch. To-date, our customer has successfully utilized Magnys emulation to commission more than 70 systems around the world.

To learn about how Magnys can help your company save time and money, please contact Joe Hugan at (248) 449-2600, extension 125 or email him at jhugan@magnys.com.



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