Client success

Mammoet Assures PTC Operator Safety with CM Labs Simulator

"That crane," says Mammoet's Mark Oterdoom, "is 100% our design and 100% our responsibility. So the training has to come from us. As far as liability goes, we need to know we've covered everything that could go wrong. That's why we have the simulator."

That crane is Mammoet's platform containerized twin-ring crane (PTC) 140/200 DS. The PTC has a lifting capacity of 3200 mT and a range of up to 205 meters. It is the biggest crane of its kind, and takes up to six weeks to set up before the first lift gets underway. The simulator is from CM Labs Simulations. It simulates the PTC 140/200 DS for trainee operators of the large cranes. And Mark Oterdoom is Mammoet's Project Manager. It was Oterdoom who was given the initial mandate to find the right simulator for the PTC cranes.

The question of whether a simulator would be useful was never an issue. "It's a safety concern," says Oterdoom. "It's increasingly difficult to instruct people how to use cranes like this, because you're having to train people on a piece of equipment that's just not available for training." But defining the qualities of the "right" simulator was an open question. "We're very much used to things we can touch and feel," he says. "Simulation was very new to us."

The Company

Mammoet provides solutions for lifting, transporting, installing, and decommissioning large and heavy structures.

The Situation

Mammoet was looking to select a training simulator for its PTC 140/200 DS.

The Solution

A CM Labs simulator that simulates the PTC—as well as its complex array of 14 PLCs—for trainee operators of the large crane.

The Results

Mammoet is supplying simulation-based operator training that meets the highest standards for safety and realism.

During the requirements-gathering process, Mark Oterdoom attended an educational workshop devoted to heavy equipment simulation. The session was presented by CM Labs, a company he knew already by reputation. "CM Labs has such a good relationship with Liebherr, based on findings and reports from Liebherr," says Oterdoom. "And Mammoet has had a very good relationship with Liebherr for a very long time … if it's good for Liebherr, it's good for us."

For Oterdoom, the workshop confirmed the depth of CM Labs' simulation-based training expertise. CM Labs followed up by working with Mammoet to define its training objectives, develop training scenarios, and address technical challenges such as integrating the PTC's complex array of 14 programmable logic controllers (PLCs) in the simulation. CM Labs worked closely with Mammoet to integrate all 500 PLC inputs and outputs that control everything from the hydraulic system to the winches, slewing mechanism, boom stops, and safe load indicator.

"This type of integration with the simulator is only possible when the simulation has a solid physics foundation, a thorough understanding of the equipment, and an infrastructure to exchange large amounts of data through the industry-standard OPC interface," says CM Labs System Integration Specialist Frank Jansen. "An added benefit of integrating the PLCs in the simulation is that Mammoet can now test small changes to their PLC code before deploying them on their physical cranes," he says. "Given the remote locations where these cranes are installed and the risks associated with software changes, this is a great tool for risk mitigation.

Our crane is not straightforward," says Oterdoom – "it's a highly engineered concept, and there's a lot of functionality connected to it. But CM Labs has the ability to understand what's being designed and built by another party – to live in the design of someone else, to be aware of how it's conceived, and to what purpose. They excel in that regard. No one's even mentioned the word game."

Image courtesy of Mammoet

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