

Siemens' partnership with Clean Motion on path to a digital product and distribution model

Siemens' partnership helps enable development and production excellence in deployment of Clean Motion's Micro Factory model globally across all factories via utilization of the digital twin for product, process and factory.

As a result of its partnership with Siemens, Clean Motion AB, manufacturer of the electric vehicle Zbee, is on path to build and maintain a digital master factory using Siemens' technology and solutions. Clean Motion's global expansion strategy is based on distributed local manufacturing in many smaller factories close to the end customer. Work on this expansion to ensure a digitally defined product and manufacturing process, together with a centrally controlled supply chain is underway. Clean Motion is now using technology from Siemens PLM Software in its digitalization process and establishing the concept of a factory that has a fully digital twin of both the product, the manufacturing process and the factory.

As part of the digitalization strategy, a digital master factory is being built and evaluated with Siemens' product lifecycle management (PLM) software. This factory has the ability to allow adjustments for the introduction of new variants and optimization of production flows. Clean Motion is in the process of building the first independent physical plant in India. The goal is to build more around the world, where they operate in exactly the same way worldwide, by using Siemens PLM Software solutions that will maintain and manage the digital twin mirroring the Clean Motion digital master factory. Clean Motion also plans to deploy MindSphere, the cloud-based, open Internet of Things (IoT) operating system from Siemens, powered by Amazon Web Services (AWS), to enable the connected factory and create a closed loop process that monitors and feeds back live data from usage and factory to further optimize Clean Motion's business and process.

"The use of Siemens' solutions for IoT are providing opportunities to record how the product is produced and used in real time," said Göran Folkesson, CEO of Clean Motion. "With this information we are optimizing our existing business model but also developing new business opportunities. This also gives us ability to return information about usage and manufacturing, ensuring that we are constantly building with the same high quality throughout the world."

Clean Motion's business model is based on a central purchasing and logistics organization with local production units building, servicing and providing Zbee on the local market. The goal is that each micro factory will have an annual capacity of approximately 5,000 vehicles.

The concept is based on the fact that each micro factory contains all parts for the entire vehicle's life cycle, where production, sales and aftermarket are aggregated. Clean Motion is using Siemens' NX™ software, a leading integrated solution for computer-aided design, manufacturing and engineering (CAD/CAM/CAE), the Teamcenter® portfolio, the world's most widely used digital lifecycle management software, the Simcenter™ portfolio, a robust suite of simulation software and test solutions, and the Tecnomatix® portfolio, the industry-leading digital manufacturing software solutions to build and maintain the digital twin. Clean Motion is also using Siemens' Managed Services with Teamcenter on the cloud, powered by AWS, with a goal to have an end-to-end industrial software solution on the cloud.

"We are creating a closed system with a network of centrally controlled production units. This could not have been possible without a partner like Siemens," said Niklas Ankarkrona, chairman, Clean Motion.

"Clean Motion's business model provides a solid base for their digitalization journey, and our software provided as a hosted cloud service on AWS can give the end-to-end solution necessary for their critical next steps," said Mats Friberg, CEO, Siemens PLM Software, Sweden. "Collaborating with companies such as Clean Motion allows Siemens to achieve a high level of innovation and realization of these new technologies in combination with already developed working methods."

The collaboration will not be limited to the factory. Zbee is already built on a virtual product, and with the Siemens PLM Software portfolio, Clean Motion will have built a digital twin of the product, process and factory, enabling even greater opportunities to simulate, optimize and verify both product and production. Using the digital twin, Clean Motion has the ability to simulate the vehicle's entire life cycle before it is completed.