







Challenge:

Geico Taikisha is a global leader in the planning and construction of turnkey automated car painting systems. As it brings its Smart Paintshop vision to life, it needed a powerful manufacturing execution solution that would provide full visibility, control, and synchronization of all paint shop operations to improve the efficiency, safety, quality, and costs of future mobility solution paint jobs.

Solution:

In partnership with Dassault Systèmes, Geico Taikisha has pre-configured the DELMIA Manufacturing Operations Management (MOM) solution to support its Smart Paintshop. DELMIA executes each step of the painting process in complete synchronization with all systems controllers (including Robots, Painting Booths, Ovens, Conveyors, etc.) and provides deep insights across the entire range of processes in the paintshop, from the production order all the way through to the finished painted car.

Benefits:

With DELMIA supporting all processes in the paintshop, Geico Taikisha can deliver customized paintshop solutions to its customers that guarantee the highest quality finish, ensure smooth production, and reduce energy consumption and running costs. Real-time monitoring and safety sensors prevent malfunctions and support predictive maintenance, and all painting stages are analyzed and tracked to support the final visual inspection.

SMARTER, GREENER PAINTSHOPS

Geico Taikisha, one of the world's leading automotive painting systems providers, is completing a paintshop in Germany which is set to be one of the most advanced high-volume electric vehicle production plants in the world. Everything about the factory's production technologies and methods will be cutting-edge, including its next-generation paintshop, which will enable the manufacturer to achieve a color-tone depth and complexity in the paint finish not usually seen in volume production cars. It will harness the company's Smart Paintshop technology, including safety sensors to prevent malfunctions, Internet of Things (IoT) to analyze and improve the painting stages in real time, and an innovative system for managing energy consumption.

Geico Taikisha is on a mission to push the boundaries of innovation and harness the latest automation technologies to improve product quality while also meeting ambitious sustainability and energy efficiency goals. The company achieved a world first when it successfully developed an entirely energy self-sufficient paintshop. Today, its systems can reach 70% less energy to paint a car body compared to competitors while using renewable energy sources. "We decided to invest heavily in Industry 4.0 technologies and offer our customers innovative solutions that allow them to manage their paintshops in a more effective way, giving them far greater flexibility and efficiency," said Daryush Arabnia, president and CEO of Geico Taikisha Group. "This comes down to the ability to connect everything together and that requires a strong brain that controls and manages everything."

Central to Geico Taikisha's Smart Paintshop vision is the configuration of executable manufacturing processes for each custom paintshop, which monitor and manage every process to simplify quality control, enable predictive maintenance, and progressively improve performance and efficiency. The company turned to Dassault Systèmes to help bring its future car paintshop to life and, today, the company is using the DELMIA Apriso application to gain deep insights across the entire car painting process—managing, guiding, and documenting each step with pinpoint precision to deliver the highest quality results.

"We entered into a strong partnership with Dassault Systèmes to create our own digital twin of the paintshop floor," Arabnia said. "The solution we have developed runs on DELMIA and is called PES (Paint Execution System). It is basically the operational system of our paintshops. It means we can now offer our customers a tailored paintshop solution and even a full manufacturing execution system (MES) for the entire factory needed to build a car."



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DIGITAL FACTORY SHOWCASE

To demonstrate the full potential of its smart paintshop systems, Geico Taikisha uses DELMIA to handle and monitor all plant processes in its Digital Factory Showcase at its Pardis Innovation Center, based in Cinisello Balsamo, Italy.

"For our engineers, it's basically a playground where they can experiment with new features, technologies, and designs, and we can execute them in real life," said Frank Levering, new technology and IT senior manager at Geico Taikisha. "We are using DELMIA here to replicate a real-life plant and the flow through all the processes as if it were a reality."

In the Smart Paintshop live demonstration, DELMIA controls and provides a physical representation of each stage in the plant as the car body enters the different tanks and spray booths to achieve a perfectly painted finish. The Digital Factory Showcase also reveals how manufacturers can achieve increased production flexibility, assess an entire car body's history at a glance, and make more informed decisions about the process flow, facilitated by industrial IoT, optimized HMI, and edge processing.

INSIGHTFUL ANALYSIS AT A GLANCE

DELMIA control screens on the shop floor in the Digital Factory Showcase display in real time what's happening at each stage of the paintshop process. In the control room, workers can look in greater detail at each process digitally and switch to any zone in the manufacturing plant to interrogate and see the flow of car bodies at each stage.

"The DELMIA - PES system control room provides an overview of all processes in one place, so you can see all the different key performance indicators," Levering said. "If something requires attention, it will be visible immediately in the process and flagged in the icons, allowing immediate action and the ability to zoom in on that process so you can see what is going on at that point in time. It provides a lot of flexibility and control to be fully aware of exactly what's happening in the paintshop."

Importantly, DELMIA connects all plant processes together to provide a complete view of the production facility and indicate how each stage impacts the next—critical for ensuring uptime and proactively managing maintenance issues.

"We can see which machines are connected to each process and drill down into anything we may need to know beyond what we're looking at on the surface," Levering said. "Through DELMIA, we can look at the maintenance requirements, for example, and see what maintenance needs to be carried out on the various machines and if urgent action needs to be taken, helping to anticipate and mitigate production issues before they become a problem and impact delivery times."

HIGH QUALITY GUARANTEED

DELMIA also supports quality control and the final inspection stage, allowing visual inspectors to digitally log any defects, marking exactly where they are on the vehicle complete with a full description.

"This allows us to pinpoint if there is a problem with the car and gives us full confidence to release it to the end of the line or not," Levering said. "If we do find a defect, we can mark on the system exactly where it is, what it is, and indicate the severity of the problem. All of this information is added to the individual car body logbook in the system, which ensures quality control as it enters and leaves each process in the paintshop. This unique identifier allows us to track very precisely everything that's happened at each stage and capture all useful data."



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Geico Taikisha is using the DELMIA Apriso application to gain deep insights across the entire car painting process.

Focus on Geico Taikisha

Geico Taikisha is a world leader in the design and construction of turnkey automated automotive body paint shops. The company is a union between Geico, founded in Italy in 1963, and Taikisha, established in Japan in 1949, who joined forces in 2011. Today, the company has a presence in 20 countries worldwide, with a network of over 43 locations and six production units. It is one of the first companies globally to offer a zero environmental impact paint shop, reducing consumption by 70%.

For more information

www.geicotaikisha.com/en

SUPPORTING CUSTOMER DIFFERENTIATION

As Geico Taikisha works with its automotive clients to deliver innovative, tailored paintshop solutions, its technology empowers them to differentiate themselves by going beyond traditional painting methods while ensuring they keep costs, delivery times, and energy consumption to a minimum.

"With our Paintshop Execution System powered by DELMIA Apriso, we can simplify quality control, predictive maintenance, and the management of the paintshop as a whole," Arabnia said. "To bring value to our customers, we must continue to innovate and help make their lives easier and that's exactly what we're doing with DELMIA and our Smart Paintshop."

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