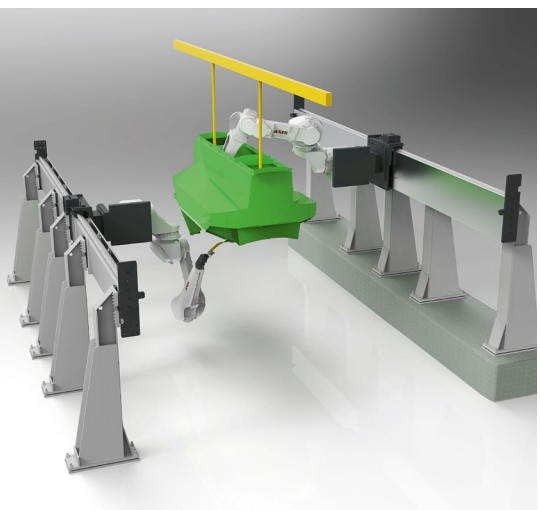
# More Efficient Coating of Agricultural and Construction Machinery

Many existing painting facilities in the agricultural and construction machinery industry are not optimally designed to meet today's requirements and incur high costs. A system provider for automated systems in surface technology is opening up an intelligent way to modernize existing facilities and raise the level of coating to a new level with retrofit solutions.

Matthias Gröll

Many existing painting facilities in the agricultural and construction machinery industry are not optimally designed for today's requirements and incur high costs. Traditional manual painting processes are time-consuming, subject to quality fluctuations and present manufacturers with challenges due to the shortage of skilled workers.



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An elevated position of the robots in combination with rails creates a high degree of mobility and improves accessibility of the application technology.

## Challenges in the coating of mobile machines

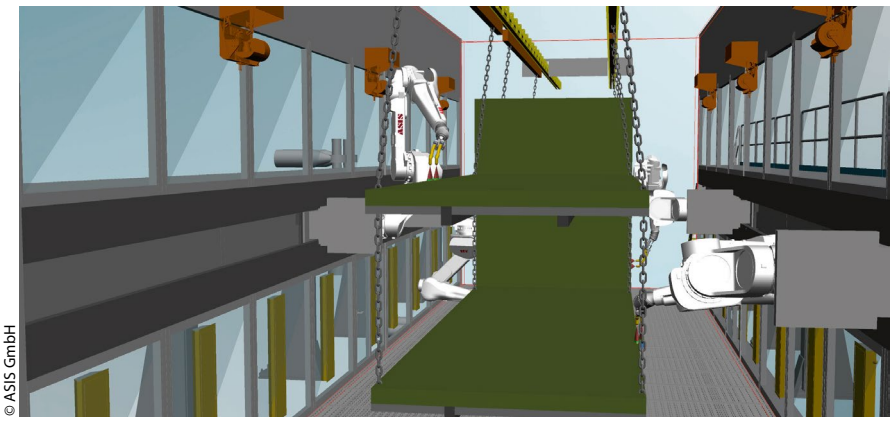
The coating of agricultural and construction machinery must withstand extreme environmental conditions. UV radiation, mechanical stresses and weathering strongly affect the surfaces. In addition, there are varying component geometries, large dimensions, constant layer thicknesses and the lowest possible material consumption. Existing plants with manual application often reach their limits here. Companies can make their painting processes more efficient by retrofitting. Retrofitting painting robots and digitally connecting existing systems can significantly improve process quality and reduce operating costs. Automation also helps to mitigate the shortage of skilled workers by taking over manual tasks with the help of precise and reliable robot systems. This frees up in-house personnel, who can be redeployed elsewhere.

## Robots for higher quality and productivity

By using painting robots on a seventh axis, even large components can be coated evenly and efficiently. ASIS (Automation Systems & Intelligent Solutions) GmbH combines high-precision robotics with intelligent application technology and digital process control to modernize existing painting facilities. Robots ensure a consistent layer thickness, reduce material loss and minimize overspray. Thanks to 3D position detection, the systems automatically adapt to different component geometries and positions, which increases the quality assurance and flexibility of the painting process.
In addition, automation reduces downtime because color changes are fast and automated, and predictive maintenance increases uptime. Companies benefit in the long term from significantly lower material and energy costs.

## Paint supply systems and associated processes

A reliable and adaptable paint supply is essential for a stable painting process. The paint supply can be adapted to the respective needs in terms of paint volume and color variety in the paint shop. Thanks to modern pigging technology and optimized rinsing processes, material loss is reduced, and color changes are automated and fast. The integration of digital control systems allows paint consumption and process parameters to

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Cabins for large parts can also be automated with robots – for a repeatable application with constant layer thicknesses.

be monitored and optimized in realtime. ASIS also has the expertise to automate peripheral processes such as component handling and masking. In particular, automated masking prior to powder coating is a unique selling point. Special component carriers and masks, as well as suction techniques developed by ASIS, allow targeted areas to be kept free of coating. This is particularly advantageous at mounting points, for example. The laborious manual insertion of plugs or the application of masks is now a thing of the past, which considerably reduces both the process time and the amount of work involved. By integrating these additional processes into a retrofit, the entire painting line is optimized, resulting in increased efficiency and reduced costs.

## For powder coating too

A retrofit also offers significant advantages for powder coating systems. Where it makes sense, combining linear axes for large surfaces and robot applications for complex geometries is a very economical option. Especially for large components with a high degree of complexity, the accessibility of the robots must be ensured in advance. Digital studies are used to check the optimal coating of all areas by means of an accessibility study. The recovery of excess powder also contributes to the cost-effectiveness and sustainability of the coating.

## Digital control and networking for more efficiency

With the integration of modern control technology and the Surface-Analytics 4.0 process data monitoring, all process parameters can be recorded and evaluated in realtime. This gives companies complete transparency over their painting processes – from OEE analysis and energy consumption evaluation to predictive maintenance. The optimization potential is considerable and enables a long-term reduction in operating costs. Each component is fully traceable. //

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## Advantages of painting facility retrofits

- Greater process reliability: robots ensure even layer thicknesses and minimize paint loss.
- Cost savings: optimized color change processes and material recovery sustainably reduce operating costs.
- Flexibility: adaptation to various component geometries through 3D position recognition and intelligent control.
- Compensate for the shortage of skilled workers: Automation reduces the need for manual coating processes and increases efficiency.
- Integrate peripheral processes: Not only coating, but also handling and masking processes are modernized.