Robot Coating Communication

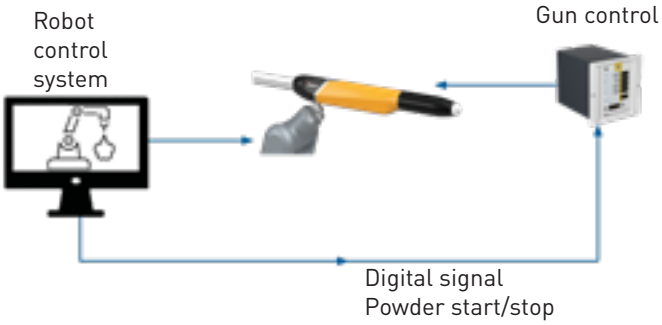
Communication solutions for robot application

The use of powder coating robots is steadily increasing as automation continues to advance across industrial manufacturing. Driven by the demand for consistent quality, high flexibility and reproducibility, robotic powder coating has become a key factor in achieving efficient and cost-effective coating processes.
Gema supports this development with an extensive portfolio of robotic application devices covering a wide range of products and system configurations. These solutions enable manufacturers to optimize coating performance while maintaining maximum process control.
In robotic powder coating systems, the robot's primary function is to precisely position the coating applicator. All movement sequences are executed via the robot controller, while the coating technology itself—including parameters and application programs—is managed by a dedicated gun control unit. A coordinated interface between these control systems ensures seamless synchronization of motion and powder application, delivering optimal coating results.

Communication Solutions
The selection of the appropriate control solution depends on a range of technical and operational factors, which also define the components used within the system. To meet these diverse requirements, a variety of communication solutions is available – each designed to support different levels of automation and integration depth.
These scalable communication concepts ensure seamless interaction between robot, control systems, and coating technology, enabling reliable performance and efficient system integration across a wide range of applications.

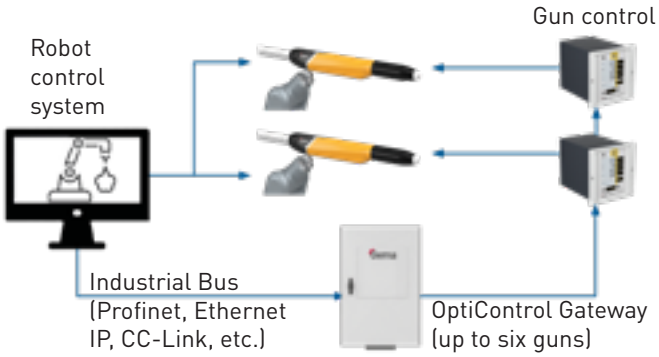
Signal Communication

In the simplest case, where there is a clear separation between robot and gun tasks, the robot control coordinates both the robot-side tasks and the timing of the coating start and stop commands by means of a simple digital signal at the gun control. The latter manages the gun parameters and the stored gun-side programs.



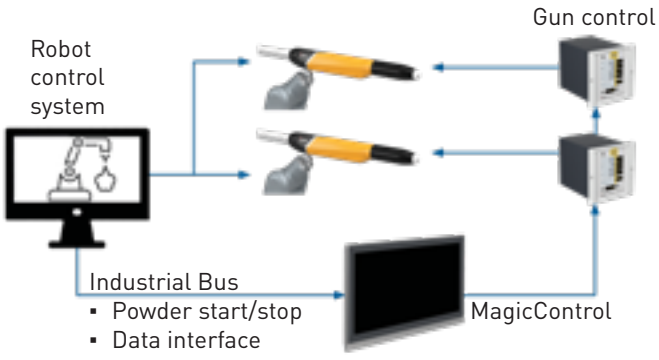
Industrial Bus Communication

The networking between robot and gun control is handled via the OptiControl Gateway. This unit works with common industrial bus interfaces and provides additional control features (e.g. fluidization air control). As a result, the robot control can directly access the coating parameters or stored programs of the gun control. All required communication objects are part of the robot control.



Integrated Process Communication

With a higher degree of automation, communication is bi-directional between the robot (or higher-level system control) and the Gema MagicControl system control via a common industrial bus (Profinet, Ethernet etc.). Coating start and stop commands, gun-side programs and further information, such as color acknowledgement, are communicated and exchanged.



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