3D.PaintPilot

Empowering Precision
Elavating Automation

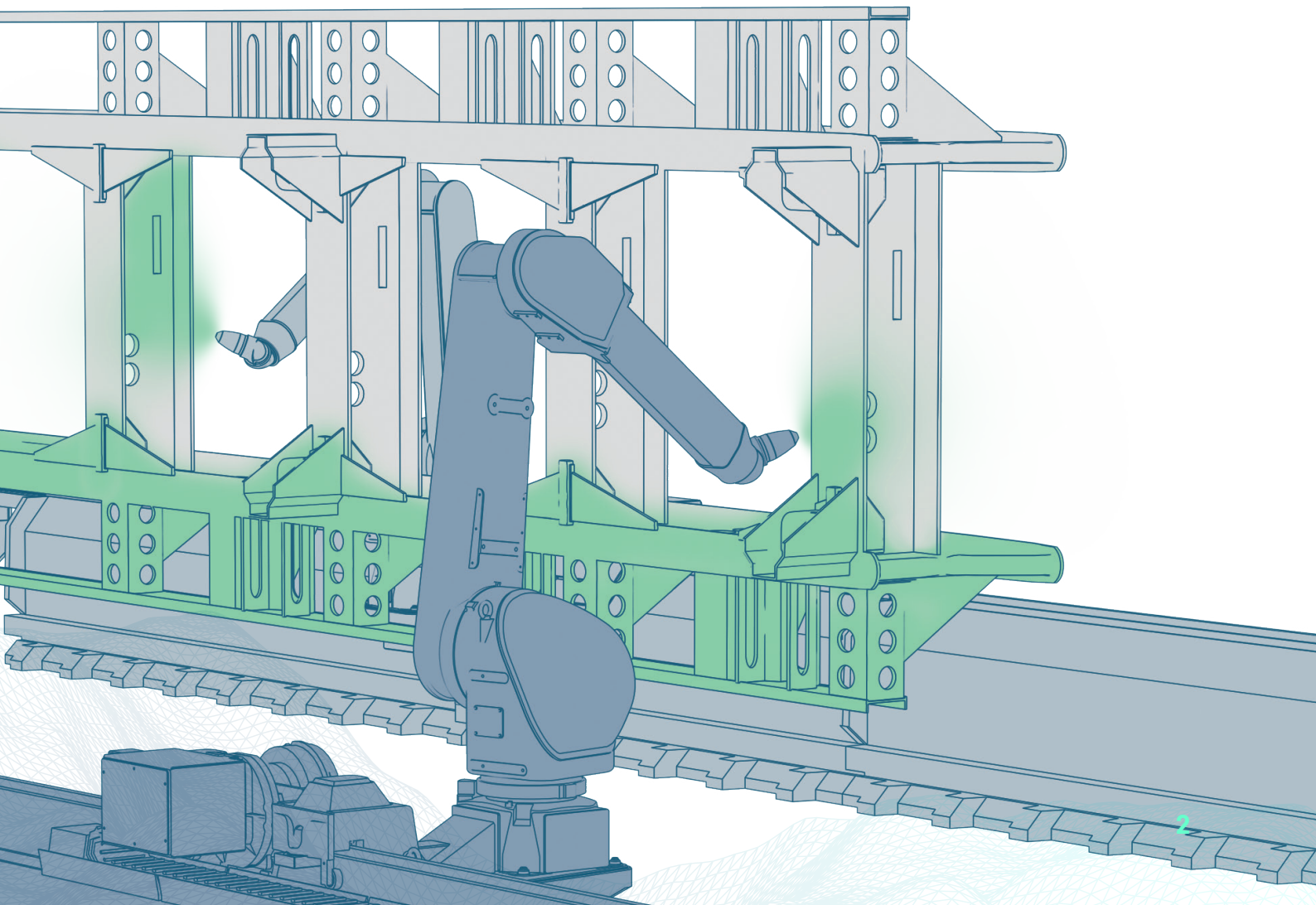
3D aero

www.3d-aero.com

3D.PaintPilot

Introduction

On the following pages, we would like to take a concise look at the current challenges in programming painting robots, compare various programming methods and finally present our innovative solution - a paradigm shift in the world of painting technology.



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The challenges of robot programming

Robots are used in many industrial sectors today. Despite constant further development, their widespread use - especially in coating technology - is associated with a number of challenges.
Important aspects are:

- The suspension cannot be standardized to such an extent that the robot can always coat the component in the same position and orientation
- It is unclear which component areas the robot should coat if Automatic reciprocators are used afterwards
- Lack of robot expertise among employees and ”fear” of complicated software
- Insufficient coating quality of the ”hand-guided” collaborative robots
- High manual effort for program generation (both offline and via teach-in)
- Economical use of robots not possible for small batch sizes
- CAD data not available (especially in contract coating)
- Component variations are not mapped in CAD, only the basic body is digitally available

Read on and find out on the following pages how the various programming methods differ and how we address the aforementioned challenges with our **3D.PaintPilot** solution.

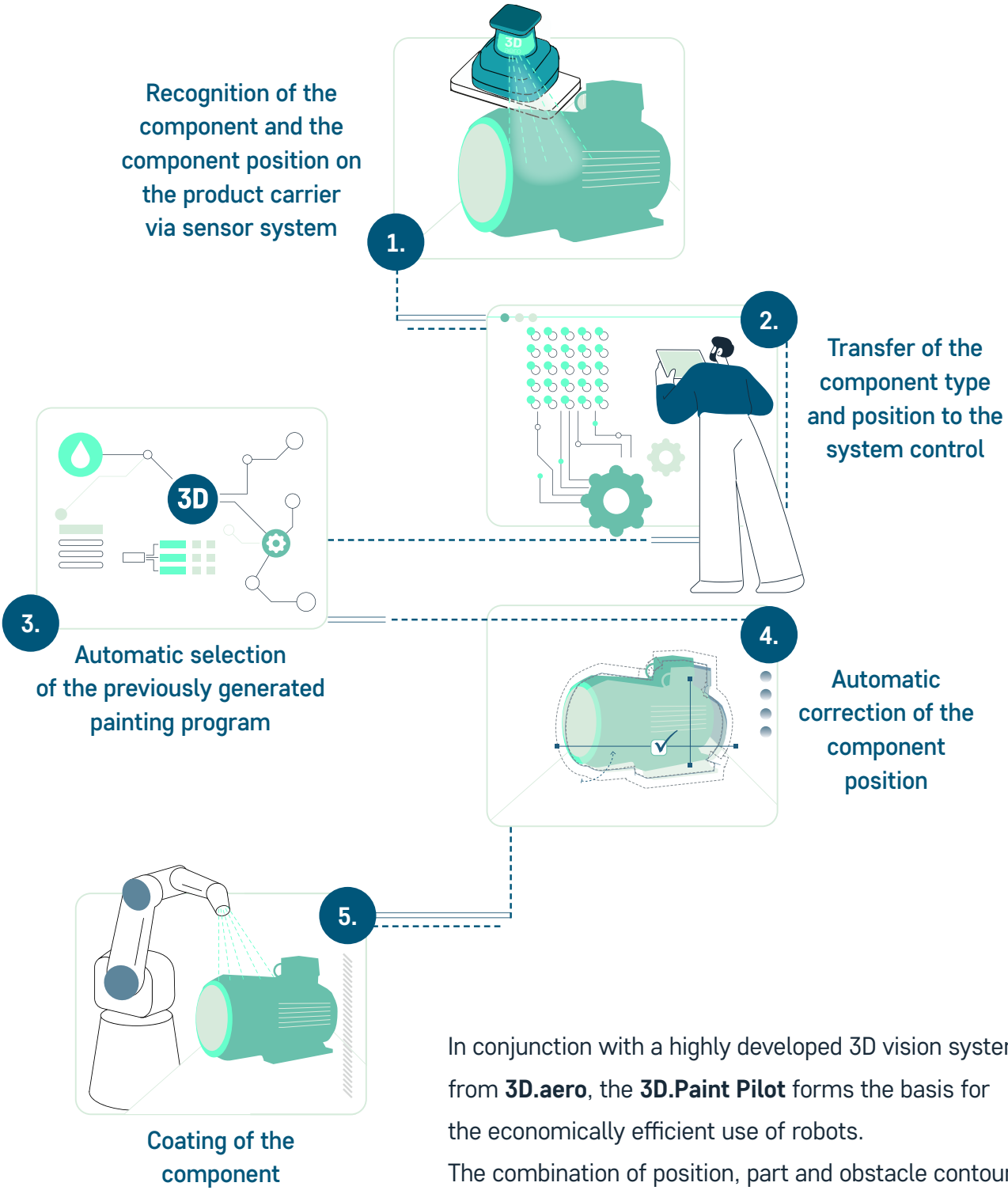
Comparison of programming methods

PROCESS	ADVANTAGES	DISADVANTAGES	APPLICATION
Teach-In	• No additional software required	• Only possible on the robot • Very time-consuming • A great deal of expertise required	• Medium to high quantities and low variety of parts
Tracking-based or hand-guided	• Intuitive operability	• Only possible on the robot • Path not robot-optimized • Additional tracking tools required in some cases • Result depends on employee • Manual optimization of the path may be necessary	• Small to medium quantities and a wide variety of parts
Offline programming	• Independent of the physical robot	• Additional software required • A lot of expertise required • Time-consuming • Manual optimization of the path may be necessary	• Medium to high quantities and low variety of parts
Automatic robot programs 3D.PaintPilot	• Intuitive operability • Independent of the physical robot • Little time required	• Additional software required • Manual optimization of the path may be necessary • Expertise required	• Small to large quantities and variety of parts

3D.PaintPilot solution

Program generation and optimization process

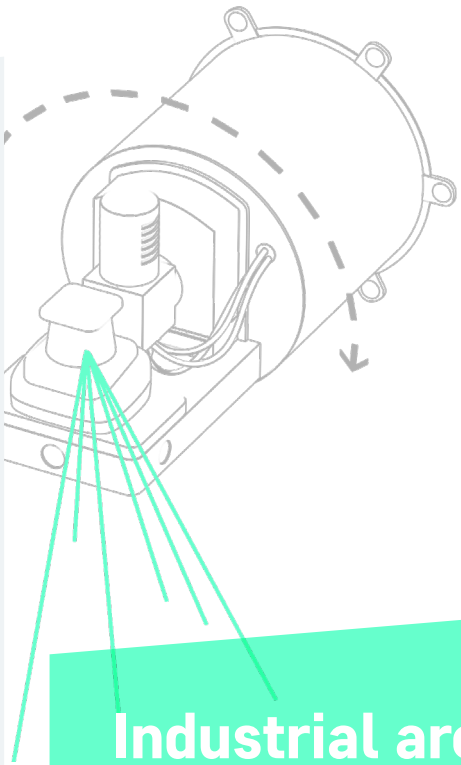
Sequence in series production



In conjunction with a highly developed 3D vision system from **3D.aero**, the **3D.Paint Pilot** forms the basis for the economically efficient use of robots.
The combination of position, part and obstacle contour recognition as well as automatic path generation enables economical and process-reliable coating, even with diverse product portfolios.

Benefits „PaintPilot“

1. Significant reduction in programming effort
2. Reduction in the amount of expert knowledge required
3. Cost-effectiveness of robot-assisted painting is already given for small quantities
4. Reduction in labor costs at coater level
5. Combinability with LC-X and MC-X systems



Industrial areas of application:

- Agricultural machinery production
- Construction machinery production
- Rail vehicle production
- Automotive industry
- Aerospace industry
- General mechanical engineering

Component application areas

GEOMETRIC SHAPE	SUITABILITY	EXAMPLE
Frame-type components	++	Window or bicycle frames
Profiled components	++	Extrusion components
Two-dimensional components	++	Aircraft side shell
Complex 3D components	+	Trailer frames
Large components	++	Wind turbine rotor blade
Small Parts	++	Tool bodies

Please contact us to configure the right and economical solution for you.
We will be happy to send you further information material.

Why should you choose 3D.aero?

YOUR CUSTOMER BENEFITS:

- High productivity through intelligent and innovative automation solutions
- Comprehensive "**3D.OS**" software framework that has been tried and tested for many years in aviation and automotive industries: sensor integration, image processing, artificial intelligence, visualization, soft PLC, comprehensive communication interfaces, logging and audit trail, user management, remote control, user-friendly HMI
- High level of ergonomics thanks to sensible arrangement of the operating elements and ergonomic design of the workspace
- Avoidance of operating errors and cleaning effort by observing the poka yoke philosophy
- Maintenance and TPM-friendly design
- Use of well-known, reliable and durable components
- Satisfied operators thanks to the opportunity to influence the design process, unbureaucratic support in daily operation and premium documentation

As a long-standing partner to the aviation industry and the associated expertise in the field of large component measurement, we know your challenges and quality requirements.

Do you have a different application in mind? Then challenge us and benefit from our expertise in measurement technology and quality assurance.

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