

PPG OPTIMA SOLUTIONS™ – AiM DIGITAL

# Real-time data delivers world-class performance



We protect and beautify the world™



# The PPG difference



By integrating AiM, you commit to an elevated standard in paint line operations. As the premier coatings supplier to the automotive industry, we have utilized our vast experience and know-how of the paint shop to develop a range of digital products ideally suited for total paint shop data management. Like you, we continue to grow, with future modules currently in development to complete this range of offerings.

## Software, automation, and digitally enabled solutions

Like most organizations, finding and implementing cost-effective improvements to quality, performance, and sustainability are a top priority. You might be unsure about how to approach upgrades to your paint shop operations and undoubtedly, you'll have many important questions. You may be asking:

# AiM

- How do we improve our quality control?
- Where are we encountering film-build challenges, and why?
- Why are we having color match problems on this model?
- Where are we consuming too much material?
- How can we identify and eliminate defects and other contaminants?
- What steps can we take to reduce material and process costs without causing issues?
- How can we reduce energy and water consumption?

### The good news is that the PPG Optima Solutions team can help.

By transforming paint shop performance with **Actionable Intelligence Modules (AiM)**, you'll be utilizing specialized software to optimize processes such as data management, real-time reporting, and quality measurements. Many of these offerings can be coupled with automated equipment, eliminating the need for manual entry which improves reaction times and expedites a solution to keep you moving forward.

## Actionable Intelligence Modules (AiM) Digital:



### PPG AiM SmartPaintline™

Software modules allowing for the optimization of paint shop processes through advanced data management, reporting, dashboards, and quality control

- Defect Module
- Color+ Module
- Electrocoat Module
- Mix Room Module

Future Solutions:

- Paint Booth Management
- Pre-treatment

### PPG AiM Automate

Automated data collection allowing for real-time monitoring

- AiM Automate – Electrocoat

Solutions through third-party partnerships:

- Defect Detection Tunnels / Robots
- Color, thickness, gloss, and wave measurements

Future Solutions:

- AiM Automate – pre-treatment

### PPG AiM Analytics

Our future vision using AiM Smart Paintline:

- Advanced analytics software solution
- Provides real-time insights and intelligence into paint shop process
- Predictive and prescriptive analysis

### PPG AiM Services

Advanced Process Consulting service utilizing data output to improve paint processes.

### Leading the way

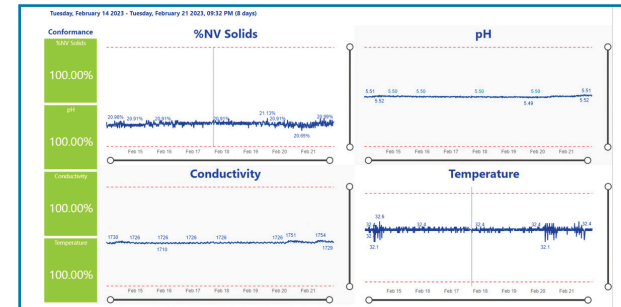
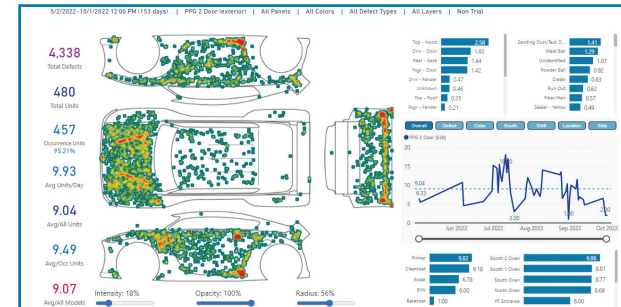
The AiM Digital approach and its suite of offerings are the first comprehensive digital components of a platform engineered to help automotive OEMs (Original Equipment Manufacturers) and part suppliers utilize an array of Big Data solutions to increase paint shop compliance and performance. The software and solutions team will collect, organize, and analyze data to produce fact-based insights that match your unique needs. Then, the high-efficiency process goes to work on delivering exceptional results.

### Next-generation benefits

- Increased process and quality control
- Elevated control of color complexity
- Quick and accurate identification of issues/root causes
- Convenient operation due to stable, all-in-one software
- Simplified integration due to configurability
- Improved data integrity and consistency
- Enhanced equipment and operational affordability
- Reduced environmental footprint/impact



Our current software optimizes your paint shop process through modules such as Color+, Defect, Electrocoat, and Mix Room Management. All modules are housed in the cloud enabling maximum flexibility, security, insight, and collaboration.



**The Color+ Module**

The Color+ Module is a colorimetric, process optimization software for paint shops. Easily connectable with commonly used measurement devices, it seamlessly combines color, wave, gloss and thickness measurements in one software. You can import/export data to and from other solutions, create a range of comprehensive reports, and utilize the integrated dashboards for advanced analysis and trouble shooting.

**The Mix Room Management Module**

The Mix Room Management Module improves data collection and analytics as customer-specific parameters are applied and real-time alerts enable operators to take immediate action to combat errors. With remote, tablet operation managers can easily monitor additives, container levels, and paint purity, and intervene in the case of a tainted mix to prevent the eventual use of a defective batch. This technology can help to reduce downtime and avoid costly mistakes by providing remote data access to the history and evolution of the product during production.

**The Defect Module**

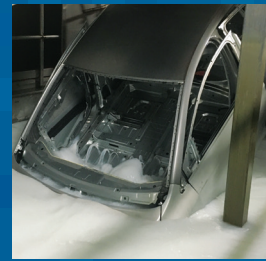
The Defect Module assists in the classification of all defects found at any stage of production. Through heatmaps, defect pareto, color, and location, this module allows for the tracking of the evolution of defects while hot spot analysis identifies key areas of concerns to be addressed.

**The Electrocoat Module**

The Electrocoat Module provides full monitoring of pH, conductivity, temperature, viscosity, density and %NV Solids. As part of the AiM Automate solution, this module enables continuous monitoring of key electrocoat specifications allowing for rapid reactivity.

*An additional benefit is that the Color+ and Mix Room modules can be combined to track paint batch changes and manage the quality of results to further streamline operations.*





## Partnership solutions



**AiM Automate – Electrocoat** provides immediate response times and informative alerts through its integrated sensors in the electrocoat tank. This robust and easy-to-use solution enables sensors to continuously collect and process data through a PLC and into a predictive model.



**AiM Automate – Defect Detection** provides, through partnership solutions, an automated, in-line process defect solution using AiM software together with a robot or tunnel system. Led by cutting-edge capabilities, the user – or even the system itself – can accurately respond to necessary demands faster than ever before. Key features include configurability, cloud-based remote acquisition of data, event feedback, and automated alerts and reporting.

### AiM Automate will help:

- provide a complementary alternative to potential human error in data collection.
- improve process control by allowing immediate reactivity and higher product quality.
- save time by reducing external analysis and manual testing.
- significantly lower the need for consumables.



# Make Actionable Intelligence work for you



## The data evolution



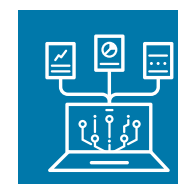
### AQUIRE

Data feeds are collected manually, through mobile devices, automatically and remotely through sensors, robotically and by other means. If you already capture data, we can help organize this information so it can be used in the appropriate AiM Smart Paintline module.



### ANALYZE

Your data will populate the corresponding module(s), where a variety of pre-determined KPIs (Key Performance Indicators) will be tracked and analyzed on an ongoing basis to unlock valuable insights. Data also can be aggregated and anonymized to compare your paint department performance versus industry benchmarks.



### ORGANIZE

Our professionals merge Big Data with industry expertise to help customers organize critical data to improve paint line efficiency. Because our people work each day in automotive paint shops around the world, they understand which information is most important and how it should be structured to deliver tailored resolutions for each customer.



### DELIVER

Each AiM Smart Paintline offering utilizes user-friendly and interactive reporting tools including daily dashboards and easy-to-understand visualizations that drive additional analysis and the positive actions needed to meet your performance improvement goals.

Coupled with AiM Services, your process will be realigned with innovative strategies that support optimal data acquisition, productivity, and improve quality.



Users can design and launch proprietary Big Data projects targeting an array of important objectives – from reducing defects to improving appearance to cutting CO<sub>2</sub> emissions. PPG professionals work onsite with you to **ACQUIRE, ORGANIZE, ANALYZE, and DELIVER** data from multiple locations and processes within the paint department.

# AiM

## DIGITAL

**PPG** AiM Services

Optimizing data collection and reporting is the first step towards improving processes within the paint shop but action needs to be taken using the output from the modules. AiM Services provides tailored consulting services using our expert applicator network for a variety of different paint shop needs:

- Improving FRC
- Productivity improvement
- Sustainability initiatives
- Application improvements

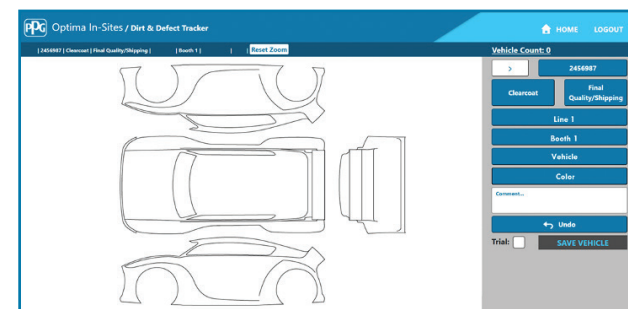


# Proven results with a combination of AiM Smart Paintline and AiM Services

## Case Studies

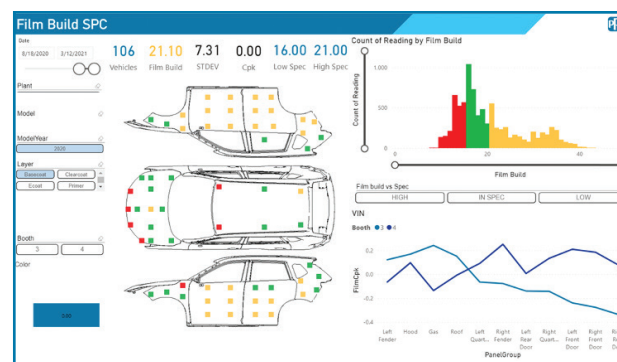
### Case Study: Productivity Improvement

The AiM Smart Paintline Defect Tracker drives significant productivity improvements by collecting, analyzing, and acting on defect data. The screen offers a heat map of all issues identified on each specific vehicle, enabling the user to quickly isolate areas that need immediate attention. The Pareto chart and Defect Counts Over Time are also updated in real time as new issues are identified.



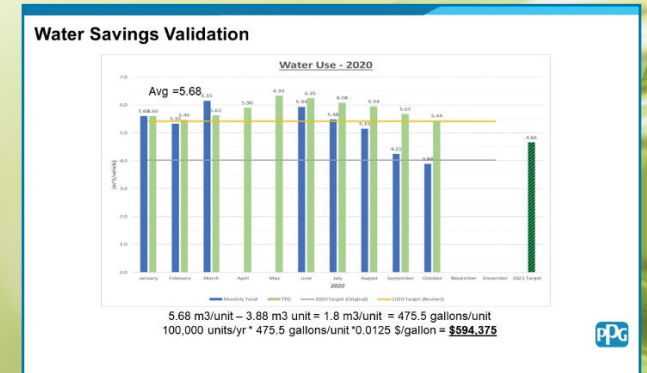
### Case Study: Quality Improvement

The AiM Smart Paintline Color+ module enables users to quickly identify variances in paint film thickness by line, booth, color, or location on the vehicle. Film builds are compared against specification – red is “Below,” green “Within” and yellow “Above.” A film build distribution shows the run history versus the specification of the selected data in the upper right corner. The visual in the lower right corner highlights differences in each panel, allowing the user to correctly prioritize work for the greatest impact.



### Case Study: Sustainability

The AiM Services solution can help enable customers to reduce water consumption and wastewater treatment costs through a comprehensive strategy. This includes a detailed assessment of equipment, processes, waste elimination, and the use of improved water treatment products and practices.



Our vision is to use our current platform to enable artificial intelligence and machine learning through advanced analytics to provide insights and intelligence into paint shop operations with predictive and prescriptive analysis.

Optimizing paint shop performance starts with careful observation of defects, appearance, film build, color match, and other variables that affect the quality of the vehicles. AiM Analytics will use technology-based problem identification and resolution to eliminate manual intervention, avoid inconsistent results, and reduce operating costs. Put simply: data drives results.





We protect and  
beautify the world™

#### CONTACT US

##### USA

PPG Industries, Inc.  
755 W. Big Beaver Road  
Suite 2150  
Troy, Michigan 48098

##### EUROPE

PPG Industries Europe Sàrl  
Route de Gilly 32  
Rolle, Vaud 1180  
Switzerland  
Tel: +41 21 822 3000

##### ASIA PACIFIC

PPG Coatings Co., Ltd.  
No. 192 Huanghai Road, TEDA  
Tianjin 300457  
China  
Tel: +86 022 25323470

For more information please visit  
[OptimaSolutions@ppg.com](mailto:OptimaSolutions@ppg.com)