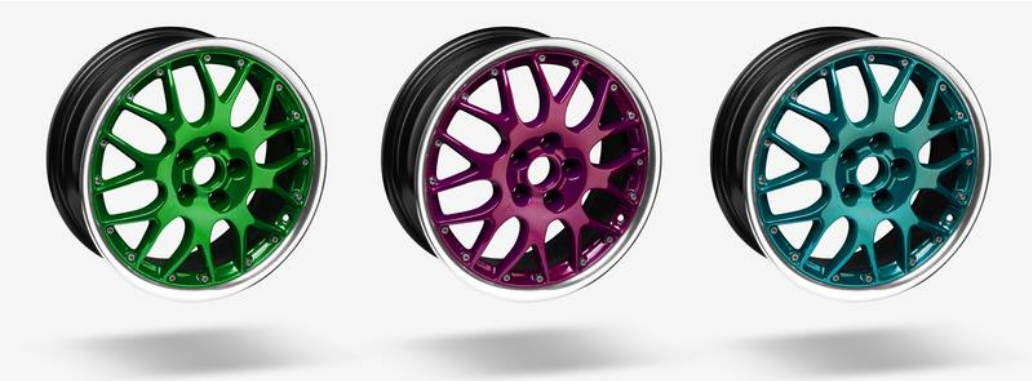
Increased competitiveness at global manufacturing company through an **automated wheel rim painting line**



Introducing a new product line for the North American market

Every day, millions of people drive to work without ever giving a second thought to the very important component that they are rolling on – the wheels!
A global company in the chemicals, synthetic materials, ceramics, and metal products business with operations in Europe and Asia decided to develop and implement a “state-of-the-art”, highly automated plant in North America to produce **Automotive** alloy rims.
Being their 1st plant of this kind in North America, certain challenges were a given fact from their typical off-shore plants, for example: electrical standards, specifications, different technologies and industry regulations.
Committed to certain delivery time with their brand-new clients, the company relied on an exclusive selection of partners to bring experience, know-how and a history of completing projects on time and within budget.

Real Time Systems Inc. (RTS) was the chosen Major Automation Contractor (MAC), among a hand-picked group of companies selected to work on this project.

Automating a Wheel Rim Painting Line

Specifically, RTS’ task was to provide **control system PLC and SCADA software programming, electrical controls design, control panel fabrication, commissioning, start up support and production training** for the entire line.

The overall project involved a wide variety of interconnected processes and systems that were successfully automated by RTS, including:

Multiple robotic material transfer systems

Material load and unload between conveyors was done in a seamless “on-the-fly” motion by robots.

System wide air handling and conveyance

The line used three separate material handling conveying systems, one overhead and two in-floor conveyors.

15 stage chemical pre-treatment and rinse stations

The line prepares the rim's alloy metal surface for liquid and powder painting using a 15-stage pre-treatment system, supported by 10 chemical dosing, mixing and storage vessels, all with their own pumping, flow and temperature control systems.

Automated multiple coating (spraying) application

A variety of alloy rims with different dimensions (17"–22" inch diameter) had to be accommodated at a production rate of 300 rims / hour.

Coating, curing ovens & rim cooling tunnels

Temperature control and energy management were critical to the controls architecture to ensure cost optimization for the process.

Productivity + Quality = Competitiveness

Once in full production, the control systems operated the continuous line completely in automatic mode. Operators only needed to provide uncoated rims to the loading robots and receive the coated rims for quality inspection prior to palletizing.

The system automatically starts and stops daily according to a pre-programmed weekly schedule.

RTS' ability to complete the project on time and within budget, in a professional manner, was critical to ensure productivity and quality on every single rim that was manufactured.

This fully automated line increased the customer's competitiveness as an automotive supplier to the North American and ultra high-end European luxury car market.

RTS Consulting-Automation Inc. has over 27 years of experience providing control system engineering services and leading software solutions while assisting companies adopt new technologies and achieve Operational Excellence. RTS has been instrumental with large organizations driving their "Digital Enterprise" transformation. Our background and expertise in Manufacturing Execution System (MES) implementations, shop floor automation control systems integration (PLC's, SCADA, IOT and Historians) and shop floor asset connectivity gives RTS a strategic advantage when developing and implementing IT/OT solutions for our customers.

We welcome you to connect with us to discuss your current manufacturing challenges and concerns when it comes to transforming the way you do business.

CONSULTING - AUTOMATION