The *Independent* Solution Provider for Smart Digital Transformation

Collecting, Contextualizing and Sharing Production Data

ATS was approached by a customer looking for a solution to an intricate production data problem. The applications within ATS ADOS provided all the answers.

A Complex Data Challenge

ATS was approached by an automotive customer that was setting up a new facility. They wanted to know how they could capture all the data they generated, no matter the type or source, and produce actionable reports that allowed them to analyse the combined data all in one place.

For this reason a pilot was carried out to show the customer how ATS ADOS could help them.

The Goal

The specific goal was to allow the customer to validate the quality of their welding and painting processes in an automotive manufacturing setting.

This required recording the voltage used to create the weld, the oven temperature when the vehicle was painted and the Overall Equipment Effectiveness (OEE) of these processes.

Welding Data Collection

Let's start at the beginning. When a vehicle arrives at the Robot Welding line, ATS Bus collects its identification number. Then it obtains the voltage used to create each weld for that unit from the PLC controlling the robot.

Welding Area
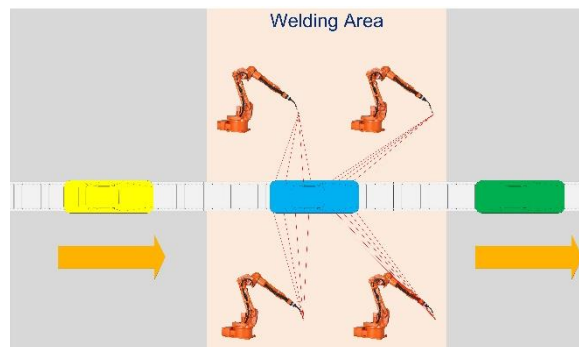
At the same time ATS Bus collects the running time and downtime of the machines carrying out the welding. This will be used to calculate the OEE later.

Check Voltage is within Limits

The data is transferred to ATS Inspect by ATS Bus. ATS Inspect stores the voltage values against the unit serial number and checks that each voltage is within tolerance.

If a voltage is out of tolerance then a defect is raised against that weld. This defect flags the vehicle for repair - the vehicle now can't leave the facility until the defect is repaired.

Check Voltage is in Control

The second important check is to ensure that the robot carrying out the work isn't slowly drifting out of control. This is a good preventative measure as it allows changes to be made before the welds become unfit for purpose.

To achieve this, ATS Bus transfers the voltage data to ATS CM4D. Each voltage is then plotted on an SPC control chart to monitor whether the process variation is in or out of control.

If the voltage is going out of control then an alarm is immediately raised to the appropriate party who can apply the necessary counter-measures to resolve the issue.

Check Oven Temperature

Similarly, in the paint area, the temperatures within the oven are recorded and sent to ATS Inspect. If a temperature is out of tolerance then a defect is raised and the vehicle will be unable to leave the plant until it has been checked.

As with the voltages, ATS CM4D can plot the temperatures on an SPC control chart to monitor whether the process variation is in or out of control and raise alarms to the appropriate party when necessary.

Complete Traceability

One of the big advantages of using an ATS ADOS solution is that you get complete traceability throughout your plant for every unit you produce.

The quality for each component will be individually evaluated and recorded. For full traceability, the history of the component will be associated to the unit, so the complete history of the final product and its components are available from one single place.

For every unit you can see where it's been and when, together with any attribute, dimensional and operational data that was stored against it.

Let's say that a customer files a warranty claim for a defect in paint after one month in service. With the serial number, the manufacturer can learn whether the oven temperature was out of tolerance. If so, a report can indicate the serial numbers of the units that went through the system before and after it and take proactive measures to maintain customer satisfaction.

Integrated Reporting Solution

A key benefit for the customer is that all of their data is available in one place. The KPI's, OEE, variable data and attribute data can all be accessed through ATS Advanced Reporting Services (ARS).
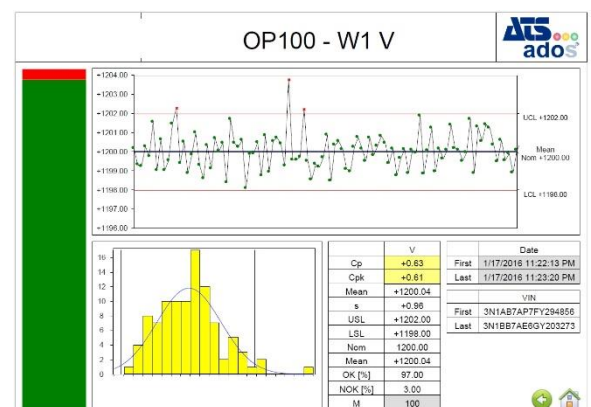
This not only saves time by preventing them from having to check between different systems, but also gives them endless opportunities for combining the data.

For the pilot the customer was presented with an overview page that listed statistical values, highlighting whether the voltages at each weld and the temperatures within the oven were keeping within the required limits.

They could also view several units before and after the unit they'd selected in order to review variations.


If the customer then clicked on one of the values they were taken to another report containing more detailed information.

Quality Validation of Welding and Painting Processes

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Application Interactions

The graphic below gives you a simple step through of how the different applications were used. ATS Bus was used to collect all of the data from the production line as well as transfer the data between the other applications.
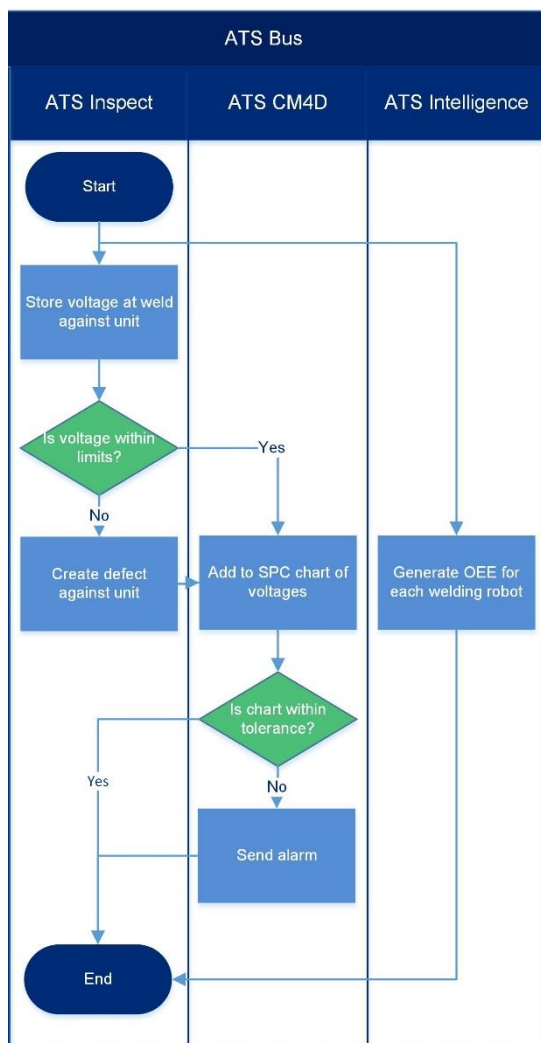
Automated Decision Making

With all of the information available to ATS ADOS it has the potential to make key decisions without the requirement for human interaction. Has the voltage been creeping up over the last few units? Then the data can be fed back to the welding robot to make the appropriate adjustments.

With Industry 4.0 and Smart Manufacturing knocking at the door this is the kind of solution customers can confidently answer with.

A Successful Pilot

ATS ADOS was able to present the customer with a complete data collection, analysis, alarm and reporting solution and at the end of the pilot they placed their first order for the system.

It's a system that can now be adapted to all of their data and analysis requirements throughout the plant and as the plant grows ATS ADOS will be able to grow with them.

An Award Winning Solution

Thanks to the pioneering nature of the ATS ADOS software suite the TechniShow jury awarded it the status of *INNOVATOR* at the TechniShow Innovation Awards 2016.

ATS ADOS was also awarded Frost & Sullivan's 2014 Global Plant Data Management and Quality Optimization Solutions for Discrete Industries New Product innovation Award.

ATS is an *Independent* **Solution Provider**, with over 30 years' experience in the manufacturing systems arena and a wealth of experience undertaking Continuous Improvement initiatives and Manufacturing IT solution design, deployments and 24/7 support assignments.

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