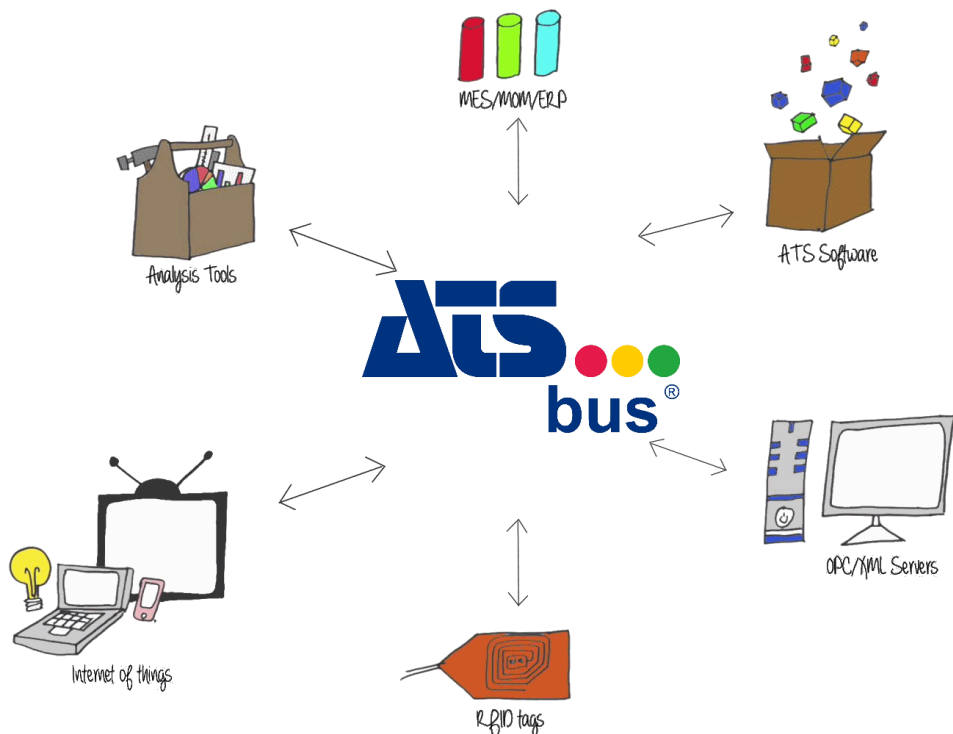




Case Study

Production Tracking and Order Handling



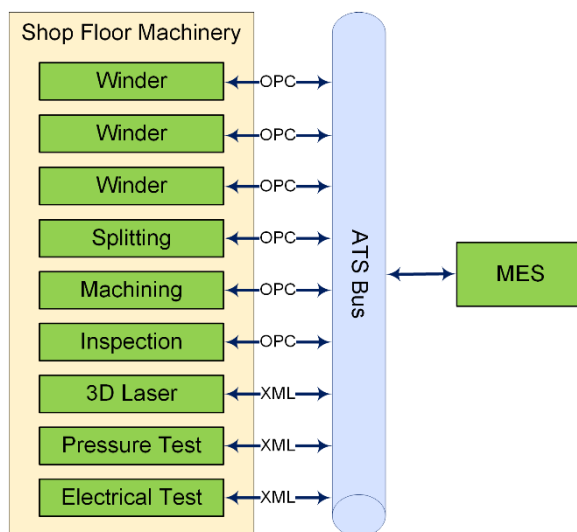
Production Tracking and Order Handling Solution

Read on to see how ATS Bus is helping this international aerospace and defence supplier to communicate between all layers of the manufacturing hierarchy.

Communication Requirements

ATS was approached by one of the world's largest aerospace and defence suppliers to implement an order management and production tracking solution that can communicate between their MES platform (Solumina) and the machines on their factory floor.

The company design, manufacture and service systems and components for aircraft, helicopters and other platforms. They are also a major supplier to international space programs.

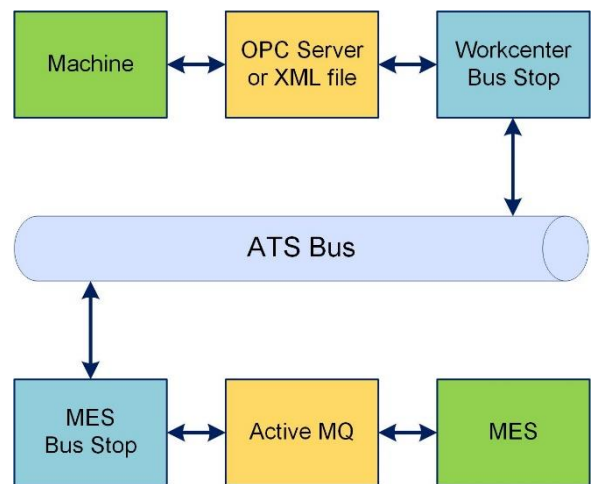


ATS has implemented ATS Bus which is handling production order information being sent from the MES layer down to the machines. The machines in turn send back production data collected during the operation and when it's complete an *Operation Complete* message is sent to MES containing all of the gathered data.

Connecting to the Bus

ATS Bus connects to the customer's plant using *Bus Stops*. Any data received at a *Bus Stop* is translated into standardised B2MML messages that are then published on the Bus.

Any other *Bus Stops* connected to the Bus can then read the messages, translate them and forward the information to where it's needed. The diagram below illustrates how the machines and MES are linked to ATS Bus at the customer plant.



Sending order information to the production line

At the customer site, MES breaks a work order down into separate *operations*. Each operation relates to a different machine on the factory floor.

MES sends an operation to the *MES Bus Stop* via a message broker - Active MQ. The MES Bus Stop then translates the operation into a B2MML formatted work order message that can be understood by anything attached to ATS Bus.

There are two *Workcenter Bus Stops* listening out for work order messages. When they see a work order message they check which operation number it refers to. If one of the bus stops reads a number that relates to a machine it's handling it places the order in a queue for the machine.

Requesting a New Order

When a new part arrives at a machine its part number and serial number are recorded by scanning an RFID tag. A work order request is then sent to the *Workcenter Bus Stop* via an OPC server or XML file.

If there is an operation open for that part for that machine the Work Order Number will be sent back, together with the recipe required by the machine, and the operation can be carried out.

Confirming Order Completion

When an order is finished at a machine an *Order Complete* message is sent to the *Workcenter Bus Stop*. The bus stop contextualises the data by collating the part number, serial number and machine ID in a single message which it then publishes on the Bus.

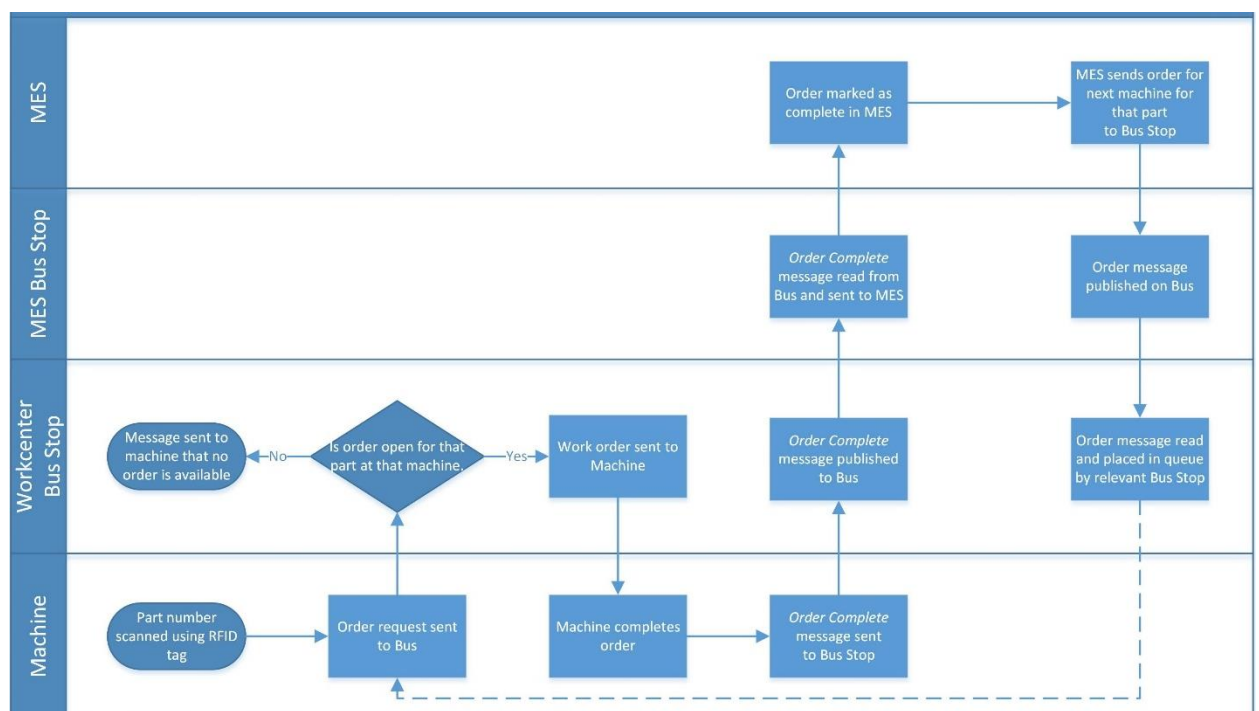
The *MES Bus Stop* is listening out for *Order Complete* messages so it receives the information and marks the order as completed.

A new order is then opened for the next operation to be carried out on the part at the next machine. This simple check prevents operations being carried out on a part in the wrong order.

A Future-Proofed System

The customer now has the ability to transfer further data between the MES layer and the machine layer as their requirements increase. For example, variable data relating to the products, such as the thickness of the side of the tube, or operational data, such as running times and machine availability, can also be transmitted, collated and analysed using the ATS Bus system.

All future machines can be linked into ATS Bus, giving them a simple, direct connection to the MES layer. And no matter what data needs to be collected and transmitted, ATS Bus can handle it and make it available to every recipient connected to a Bus Stop.

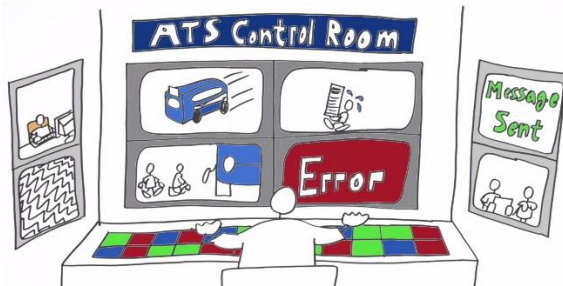


Production Tracking

By feeding back the location of each part as it passes through each machine ATS Bus provides production tracking so that a clear picture is available of what stage of manufacture every part is in.

Data Flow Monitoring

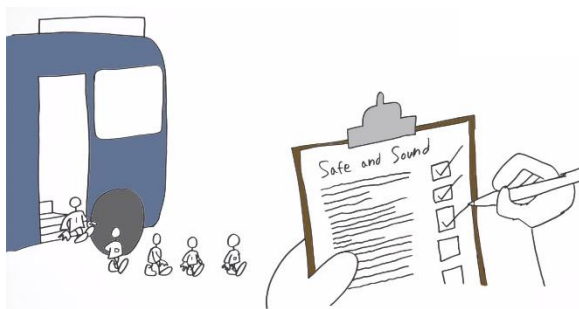
The IT team remotely monitors the message exchanges using NServiceBus, a tool that comes with ATS Bus, so that they can keep track of the health of their system, monitor for processing errors and send failed messages for reprocessing.



Built-in Resilience

A major fear of this manufacturer was the loss of data during production. This could be an order only being sent to some of the equipment due to a connection issue or produced quantities not being sent back to the MES system due to a power outage.

The customer is avoiding these issues as ATS Bus buffers data locally and utilises hand shakes to ensure that data is received correctly. This avoids data loss and overcomes any issues of network latency and power outages.



Part of the ADOS Suite

ATS Bus is part of the ATS ADOS (Attribute, Dimensional, Operational and Shared) software suite which gives you endless avenues along which to develop and expand your manufacturing potential.



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



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



Visit the ATS ADOS website [here](http://www.ats-global.com).

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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