

Case Study



UPS protection in modern vehicle manufacturing

Electric Vehicle Manufacturer Case Study



REQUIREMENT

Modern electric vehicle manufacturing is heavily automated meaning the downtime costs of any sudden and complete loss of power to a production line can be catastrophic.

Power outages resulting in tens of millions of dollars in losses were not uncommon in modern car manufacturing. But with the right UPS and energy storage technology they can be made a thing of the past.

The effects of power quality issues or sudden power loss down-time span scrappage, and time and effort required to reset the production line which impacts welding robots, robots performing casting of car parts such as the chassis, and body part press and stamping machines.

Such factories require solutions that allow for controlled shut-down of hundreds of manufacturing robots which in turn enables fast restart when baseload power returns.

Active Power is almost unique in the UPS market among the leading suppliers due to its approach of building around the client and maintaining that relationship between the customer and across technical sales, manufacturing and deployment and commissioning teams.

In one recent project this proved vital for a major electric vehicle maker, where Active Power was able to hit every milestone during the entire process from Sales, Manufacturing, Shipping, Installation Assistance, Startup and Commissioning.

For the customer making the right choice extended beyond the technology to engaging a partner who understands and delivers against every aspect of the project from the technical needs for efficiency and resilience to the physical constraints and challenges of deployment, commissioning and ongoing operation.



Active Power's solution was to provide the car maker with a Kinetic energy store backed UPS comprising 2 x 2.4MW CLEANSOURCE® PLUS MMS UPS's, each protecting a 3000A production line.

The Active Power solution was being deployed in an original building facility that dated from the 1960s.

Subsequently a previous owner had since added an extra floor where the power infrastructure was to be housed. This customer's very specific needs ranged from weight and fire risk to seismic protection.

What had been the roof was now a floor with a 4" concrete pad with very thin roof decking. This meant the option of battery storage was ruled out due to the weight and fire protection requirements.

PROJECT TIMELINE

Sticking to the full project timeline was critical to the success of the overall project.

In this case the installation had to take place during a scheduled closure over the New Year period. The factory schedules a shutdown once a year at midnight on New Year's Eve and restores power at 3am on January 2nd.

Work in this shutdown window meant cutting into the existing 1960's busway and install transition sections to cut over to the new Eaton busway. After continuous work over the shutdown period Active Power's team began the startup process at 5am on January 2nd and by the end of the day on January 3rd one 2.4MW UPS was online and protecting production loads. The second 2.4MW UPS was online and protecting load by January 4th.

The customer commented that Active Power was the only supplier on the project that was able to meet all commitments.

TIMELINE	
January 2022	Active Power contacted with a request for a solution
August 2022	Order placed for 4x CleanSource XT MMS 1200kW UPS
November 2022	Client engineers and facility staff attend Active Power Factory Witness Testing in Austin
November 2022	Active Power shipped and delivered the UPS to site
December 2022	Active Power provided installation assistance
January 2023	All 4x CleanSource PLUS MMS 1200kW UPS commissioned and online protecting load

ACTIVE POWER'S SOLUTION

- 4X CLEANSOURCE® PLUS MMS 1200 UPS, 1200KW 480V, 60HZ, UL, 4-WIRE
- 1X CLEANSOURCE® PLUS SMS, 333kW, 480V, 60HZ, UL, 4-WIRE



Figure 1. CLEANSOURCE® PLUS MMS 1200 kW / 1333 kVA System



Figure 2. CLEANSOURCE® PLUS SMS, 333kW, 480V, 60Hz



OUTCOME

Incorporating the Active Power flywheel solution would eliminate 99.9% of all unplanned outages at the site. This impressive reliability led the customer to make a strategic decision—eliminating the necessity for an ATS and Diesel Genset for long-term outages which resulted in huge cost efficiencies.

The Active Power flywheel UPS system now provides uninterrupted power to the manufacturing robots providing ample time for a safe shut-down in the case of an extended outage, enabling swift production resumption within a few hours, compared to the previous 26-28 hours of downtime required for robot reset and recalibration in the event of control power loss.

In addition, the customer acquired an Active Power CLEANSOURCE® PLUS SMS 333kW flywheel UPS to replace a 15-year-old battery UPS that failed during the project. Active Power's agility and responsiveness were key in delivering this UPS within the customer's tight timeframe. This installation replaced a cumbersome ~12ft wide UPS setup, eliminating the need for a separate battery room.

This project serves as the potential inaugural step among eight planned total 4.8MW installations for this EV manufacturer.

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