



The Company and Project

Waste Management and Waste Disposal Business System for the safe and effective processing of batteries

With over 400 staff, this organisation processes a wide range of waste, recycling over 1,000 different waste streams from commercial and industrial sectors. It has a track history of recycling over 60,000 tonnes of waste material each year for over 20,000 UK-based organisations and putting clients at the centre of the operation.

One product this organisation processes is batteries which contain many harmful chemicals and materials that are unsuitable for recycling. However, batteries also contain valuable components (such as zinc, copper, cadmium, manganese and magnesium) that can be recycled and reused. As a result, separation plants have been developed to process and segregate the valuable materials found in all kinds of batteries.

The Challenge

To develop a unique control mechanism to ensure the company operated consistently and safely.

It was Bensons' responsibility to design the software programme and manufacture the control panel to operate the system.

A system was required to incorporate an extensive control network with various sensors, actuators and alarms for the safe and effective processing of batteries. They also required a bespoke multi-architecture software program to collate and analyse data from the control mechanisms, plus full control of a battery waste process line.





To achieve the exacting level of control required, every sensor, actuator and alarm must be linked, creating an extremely complex network, with additional key data tracking reports.

The battery separation process uses a range of mechanical and physical separation techniques to isolate individual materials. These methods include magnetism, centripetal force, vibration and mesh screens. Due to the intricacy of these processing lines, unique control mechanisms are required to ensure they operate consistently and safely.





The Solution

Software development, simulation of the process line to enable operational efficiencies.

Bensons' development team began by analysing the battery separation process. The team conducted research into each machine to determine which control measures were required. After analysis, all essential data was gathered and the project advanced to its next phase. Before implementing the hardware throughout the battery separation line, Bensons developed the overarching software program which would provide the foundation for the entire network.

The Waste Management and Waste Disposal organisation needed to know what would happen to the line if unexpected scenarios occurred. To facilitate this, Bensons developed and executed a full simulation of the process line to allow any weak points to be identified and addressed prior to delivery to site.

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The software developed by Bensons responds to inputs from the various sensors and alarms throughout the separation process to govern and regulate the operation of the waste processing line.



The Result

Space saving – simplified installation – reduced assembly and testing time

The motor control centre control panel was built in line with the designs collaboratively developed between Bensons and their client.

In parallel the software was developed and tested. The finished control panel and software were integrated at Bensons facility and a comprehensive factory acceptance test completed without issue. This enabled the system to be delivered to site, installed and commissioned on site with full confidence in its functionality.

During the early stages of prototype operation, various enhancements and up-grades to improve the system performance were identified.

As a result of having comprehensive hardware and software documentation, it was possible for Bensons to implement complex software up-dates to the system and associated physical modifications with the minimum of disruption to production. As a result, this flagship battery separation process line is now in full production.

