

The IRIS Pipeline X-Ray Inspection System – manufacturing efficiency through innovation

The IRIS is one of a number of high quality inspection machines from Sparc Systems. It promotes systematic product flow and delivers optimal detection of contaminants, while reducing the amount of product rejected. The Iris is designed to specifically address the unique requirements posed by products flowing through a pipe, as well as helping manufacturers comply with stringent HACCP protocols and food safety requirements.



Already renowned for their innovative approach to machine building, when Sparc Systems sought further enhancements to reduce cost and improve operational performance, they turned to machine safety experts elobau to assist with simplifying the complex electrical system.



Sparc's innovative solution was a new design of a comprehensive printed circuit board (PCB) which would replace the entire control panel 'hard' wiring. The PCB would be required to have mounting facilities for key machine control and safety components which would have simple 'plug & play' features. The key design elements of the new PCB were that it should be robust, safe, simple and enhance machine reliability and operation.

The key benefit of this PCB design is a significant reduction of the wiring time by around 10 hours. Material costs are also significantly reduced as a number of cable sizes and colours can be completely removed from the system, and by using simple, specific plug and socket harness wiring connections, initial component connection, and subsequent field failure exchange is minimised. Overall, the new design is expected to reduce the number of man hours in building and testing by up to 50%.

Once the PCB is fitted and populated with its DIN rail mounted sub-element components (safety relay, Ethernet module, motor starter etc.), ie 'plugged up', it's ready to go. As the PCB has already been 'circuit approved' during the design phase, every PCB produced will effectively be 'pre-tested' for functionality, which helps to eliminate wiring faults and reduces electrical and functional testing by around 2-4 hours. Once the pre-wired looms connecting the PCB to the main operational components of the machine (motors, encoders etc.), have been plugged in, full machine testing can be completed.

As every machine is fully tested for functional and operational performance before leaving the factory at Sparc, they are effectively commissioned prior to dispatch, once again making it 'plug & play' for the customer when installing, commissioning and maintaining the equipment at site. For practical purposes, fault finding has been reduced to individual sub-element level, which minimises machine downtime. Incoming and outgoing connections are segregated into separate high and low power zones, reducing interference between power and communication systems.

Having worked with elobau previously, when it came to selecting the machine safety components needed to finalise the complete safe system, Sparc turned to elobau for assistance as having worked together previously, they were aware that they could provide the quality and reliability that was required. Following discussions on the design, elobau provided working samples of their recommendations to the Sparc design team so each component could be tested to ensure complete compatibility. After rigorous testing, four distinct elobau products were chosen to facilitate the simple 'plug & play' approach required for the new machine:



- The 171 series M30 PBT safety switch, having an integral M8 socket. Used where basic safety functions were required.
- The 122MSV series M12 stainless steel safety switch, having an integral M12 socket and IP 6K9 rating. For use where the switch may come into contact with the processed product, and be subjected to high pressure and high temperature cleaning.
- The 363 series 'intelligent' safety switch interface unit, allowing up to 4 safety switches to be connected to each relay safe input, whilst also providing 4 individual control outputs for PLC monitoring.
- The 470 series safety relay, with plug and socket connection, completes the safe system.

Through the innovative application of their products, elobau helps their customers build machinery that sets the industry standards for performance, their ease of use, and reliability and safety. Sparc Systems is a global leader in the design and manufacture of Weighing, Inspection, Counting and Bespoke Systems for the Food, Pharmaceutical and Packaging industries. Both Sparc and elobau, recognise the true value and benefits of working together and supporting each other - a partnership that works.

If you would like any more information on these or any other elobau products, please contact elobau UK on:

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