



Custom 8U industrial computer build for process control application

Background

The art of metalwork has advanced with human evolution - the Iron and Bronze Age are markers in the history of humankind. Today, we can process raw ores into fine wires, wafer foils, slabs, strips and tubes. VAI is one of the world's leading engineering and plant-building companies, offering the complete spectrum of iron, steel and aluminium production technologies.

The VAI Automation Division supplies advanced automation packages for all production processes. Blue Chip Technology specifically got involved in designing the system manager element of the Vantage universal automation platform. In this instance, the 8U rack mount system manager was incorporated into the Aluminium Cold Rolling production line – controlling system start-up and data interfacing.

System Requirements

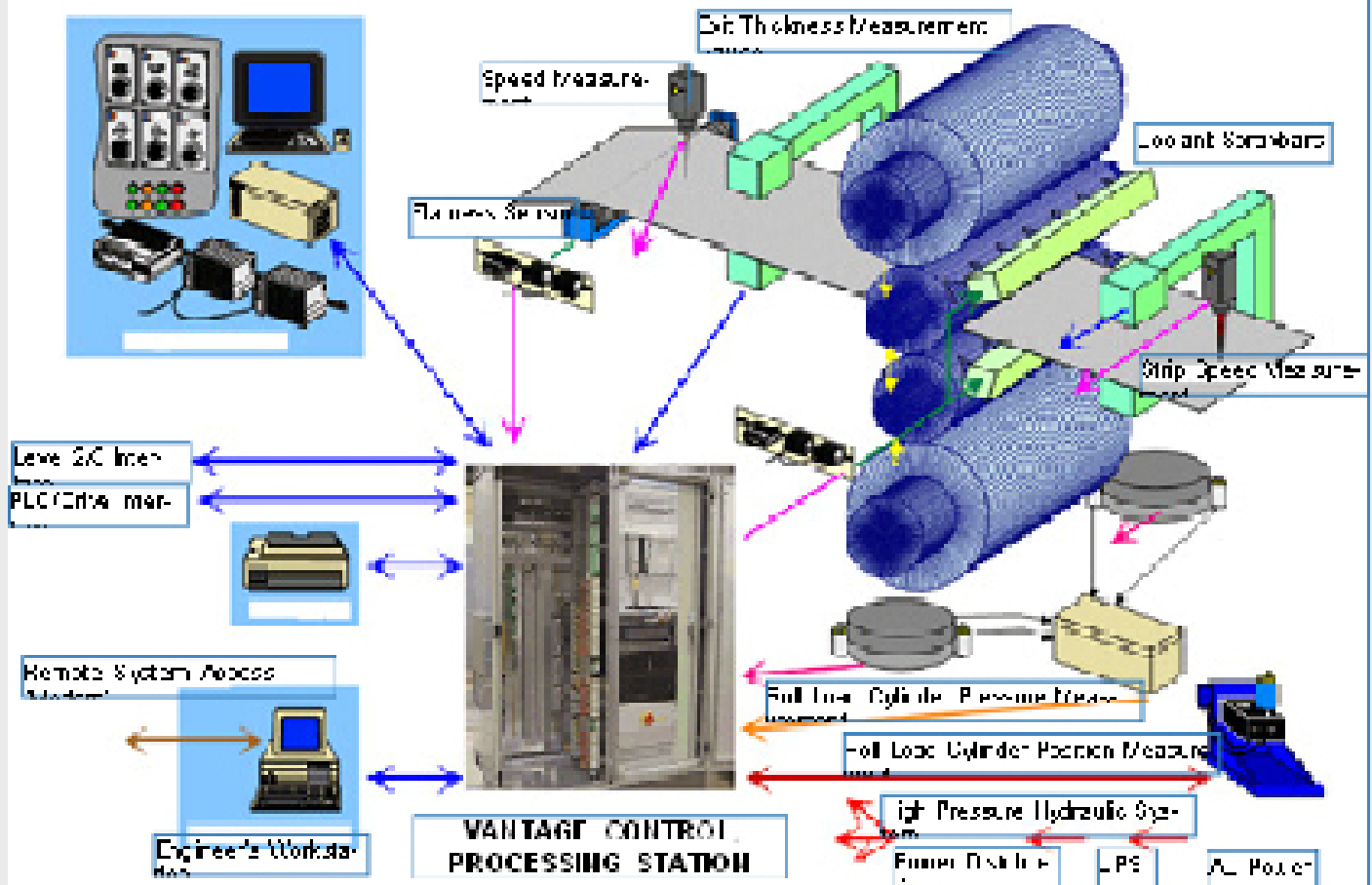
VAI were originally using two 4U IPCs running side by side to serve as the system manager. These two systems combined the requisite processing power and RAID storage. Situated at the heart of the Central Processing Unit (CPS), the system manager acts as a boot server for a bank of VME boards processing real-time system data. The unit runs Windows 2000 and performs a data logging function, interfacing into the LAN providing engineering support with production data. The system also interfaces into X Ray gauges, scheduling computers and the plant network.



VAI wanted a custom unit that would bring the combined functionality of the two IPC systems into a one box solution. By eliminating the interconnecting cable work at the system rear, the unit would be easier to build and maintain.

System Description

Working closely with VAI's hardware engineers, Blue Chip Technology designed a tailored 8U unit which incorporated the functionality of the two systems. The design also improved overall system cooling and cable layouts.



Located in a pivot swing housing, the chassis had a maximum depth of 430mm to allow full access. System integrity was paramount – the unit design included a triple redundancy power supply and three RAID drives for maximum reliability. The unit incorporated two back planes, future proofing the design with the option to run two processor boards. USB and gigabit ethernet connectivity covered interfacing with process equipment, peripherals and operators.

Why Blue Chip Technology?

Being a custom build, the attention and care put in at the briefing stage was paramount. Blue Chip approaches a customer project as a virtual team member so we clearly understand objectives. This is essential in initially working out a clear and precise specification, which can make or break a design project.

“We will work up some draft CAD designs based on the customers original criteria,” said Roy Taylor, Blue Chip Technology Hardware Designer, “ We’ll then sit down together to discuss and dynamically update the designs there and then - it’s very much an interactive process.”

From the system specification being agreed, the

design, build and test phases were completed in two months with the delivery of five prototypes.

“We had a clear idea of what we expected from this product,” commented Peter Holdroyd, VAI Hardware Engineer, “Blue Chip listened, understood and had a very flexible approach in developing a tailored solution which met all our criteria – in some challenging time-scales.”

Conclusion

The new 8U ‘one box’ solution integrates the industrial computer platform and the RAID storage, reduces cabling assembly, improves cooling and reduces overall footprint. The first volume production run has shipped and the units are due out to a large plant build project in China.