MatrikonOPC

Case Study MATRIX TECHNOLOGIES

AK Steel

CHALLENGE

As process technology moves forward, high-capacity data infrastructure is moving from being the next big thing to being the expected norm. Systems that have been reliably running processes for years or decades are unable to support the data-intensive optimization programs that are driving plant competitiveness, and without reliable high-density data acquisition and storage, many plants can struggle or fail to meet strict environmental emissions reporting requirements.

Figure 1 – Matrix Technologies, Inc. HQ

Toledo, Ohio

That's the situation Matrix Technologies Inc. faced when they were contracted to upgrade the Level 2 Supervisory Process Control system for a basic oxygen furnace at one of steel giant AK Steel's mills.

The purpose of the system is to capture information in real time about oxygen being blown into the vessel during certain points of the heating process, and to transmit information that is a result of model calculations and strategy calculations by models on the Alpha system to the PLC.

"It's a batch process," says Steve Goldberg, of Matrix Technologies "where they'll add certain fluxes and alloys to make certain grades of steel, but the large process of that is blowing oxygen into the steel. As part of that there's an off-gas system, a negative-pressure system sucking off the bad gases, scrubbing them and cleaning them to meet certain EPA guidelines for contaminant."

Those EPA standards were a large part of the force driving this upgrade. Reporting requirements call for a massive amount of data to be recorded in specific detail, with a high degree of reliability – missing data can lead to major regulatory trouble, including heavy fines.

"They were upgrading to meet emission standards," Haman explains, "and they didn't feel they could meet the goals of the emission standards by trying to make changes on the old system. The HP platform at the supervisory level was considered to be obsolete. They also had a combination of older model Square-D [PLCs], which ControlLogixs replaced.

"They had serial ports coming out of the old HP that were clocking about 9600 baud directly to a serial port on one of the Square-Ds. They had another serial port that was connected to an intermediate system, and the intermediate computer was connected to a different Square-D PLC."

While the legacy system was functional, it didn't have the bandwidth required to meet AK Steel's data-collection requirements, couldn't support two-way communications, and furthermore lacked the capacity for future expansion.

AN OPC-POWERED SOLUTION

Matrix Technologies' solution involved an OpenVMS Alpha computer that needed to share real-time data with PLC devices: ControlLogix or Square-D PLCs. So, after considering their requirements and those of the client, they contracted with MatrikonOPC to write the MatrikonOPC Server for OpenVMS that was then implemented using the GenCS component in a Windows environment. MatrikonOPC Data Manager was then used to provide an OPC bridge between the RSLinx, a PLC server for Rockwell computers, and the Intellution modbus Ethernet driver.

Matrix went with OPC in their solution because they did not want to incur the time or expense of writing custom protocols: OPC was as close to an off-the-shelf solution as they could find. The solution in a nutshell was to allow two-way communications between the OpenVMS system and their plant floor.

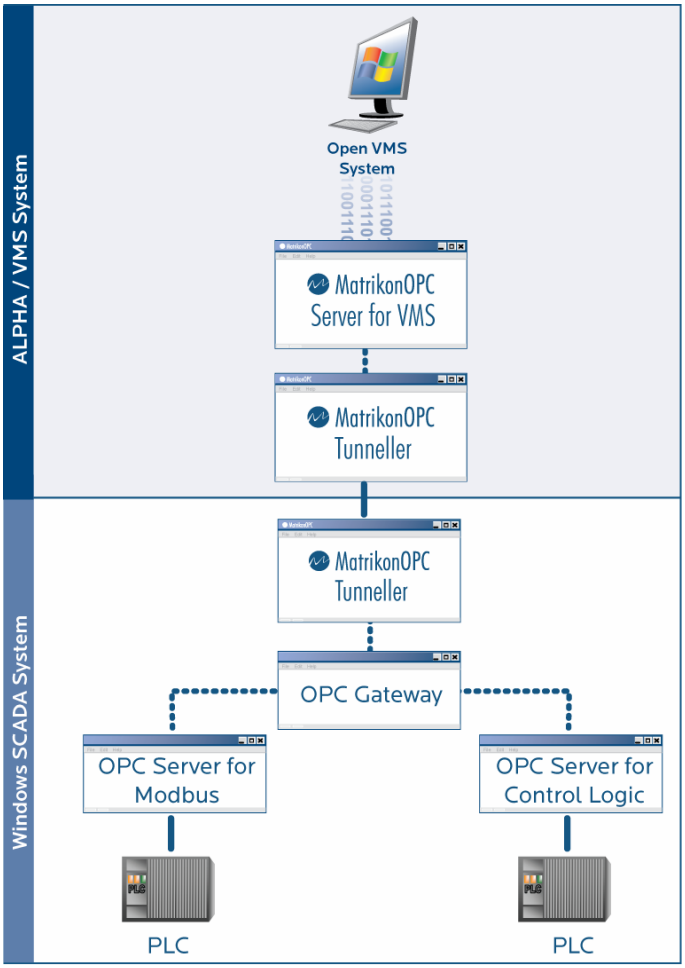

Figure 2 - MatrikonOPC OpenVMS Solution

THE BENEFITS OF OPC

"We've got a lot more bandwidth this way," says Haman. As well as being able to deal with multiple data types the OPC GenCS can handle 2,500 updates per second, more than enough to ensure the mandated detail and integrity of data collection and storage.

"The alternative," he says, "was to sort of have a SCADA system sit in the middle between the PLCs and the Alpha, so you would have had some latency. This solution helped us bypass that so you could go pretty much direct from the VMS to the PLC."

Beyond the latency concern, says Haman, AK Steel didn't want the SCADA to have that much involvement in control. "It's really, to them, an operator interface," he says.

"That was the other nice thing about the MatrikonOPC driver for OpenVMS, that the VMS could write a value into a global data variable that would be a tag that could be displayed on a SCADA screen. [With OPC], any application could get access to the data pool."

"I think we believed it was an excellent technology that was open, and that it would be a good way to lead AK," says Haman of the OPC standard. "Many other vendors have OPC compatible communications, and it seemed like it would be a good thing to go from and OpenVMS to an OPC connector.

"We looked around quite a bit for somebody that could write the code. To be frank, when I was asking for guesstimates on how much it would cost, Matrikon was the most reasonable." Goldberg estimates that by using OPC rather than having custom drivers written, about $20,000 was saved on the project bottom line.

The open nature of OPC will lead to further benefits to AK Steel as Matrix continues to make infrastructure upgrades. "Being that they have many OpenVMS systems within their mills, right at the outset they established that they plan to reuse this at other locations," says Goldberg.

About Matrix Technologies

With over 25 years of experience in the industrial marketplace, Matrix has achieved a well-respected position as a leader in control systems, and process and facilities engineering services. Our varied industry experience offers a wide range of complementary services to our clients.

About MatrikonOPC

MatrikonOPC is the world's largest OPC company. MatrikonOPC is a charter member of the OPC Foundation. With a collection of more than 500 OPC products and interfaces and over 100,000 installations worldwide, MatrikonOPC is the world's largest developer, trainer and distributor of OPC products. For free downloads or more information about MatrikonOPC visit **www.matrikonopc.com**.

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