

SAP® Certified

Integration with SAP NetWeaver®



TRUCK & RAILCAR LOADOUT SYSTEM

Overview

The plant uses lignite coal to produce synthetic natural gas utilizing a coal gasification process. The plant processes 16 thousand tons of coal daily. Coal is oxidized to coal gas, which is then converted from a mixture of carbon monoxide, carbon dioxide and hydrogen to methane, by hydrogenation over a nickel catalyst. The synthetic natural gas is pipelined to the Northern Border Pipeline which transports gas from Canada, Montana and North Dakota to the Ventura, Iowa area, where the pipeline interconnects with many other pipelines supplying the eastern United States. The company ships generated byproduct carbon dioxide via a high pressure pipeline to an oilfield in Saskatchewan in Canada where it is used for enhanced oil recovery.



The plant also produces ammonium sulfate, anhydrous ammonia, phenol, cresylic acid, methanol, and naphtha. These materials are by-products of the coal gasification process and are sold as feedstock to specialty chemicals companies. All these by-products are separated and stored in large storage tanks prior to being sold and transported. The products are transferred from storage tanks to trucks or rail cars via load-out systems.

The Challenge

This customer initiated a project to replace an existing HMI (used to control a pelletized fertilizer load-out system) with Wonderware InTouch. The old HMI connected to SAP via a web services interface that required a lot of programming and was not as reliable as they would have liked. Worse, when any of the web services calls failed to operate properly nobody at the plant could figure out what the problem was or how to fix it. A second load-out system in use at the plant connected to SAP via an intermediate SQL database and some custom code in SAP. The HMI accessed the SQL database, (rather than SAP), whenever it needed to send or receive data but this convoluted method sometimes introduced delays of several minutes. Since neither of these approaches was operating satisfactorily, the goal was to find a superior SAP interface method that could connect the new HMI to SAP reliably, in real-time, without any custom code, using a method that was easy to troubleshoot at the plant-level, and without having to purchase or license any additional SAP components or modules.



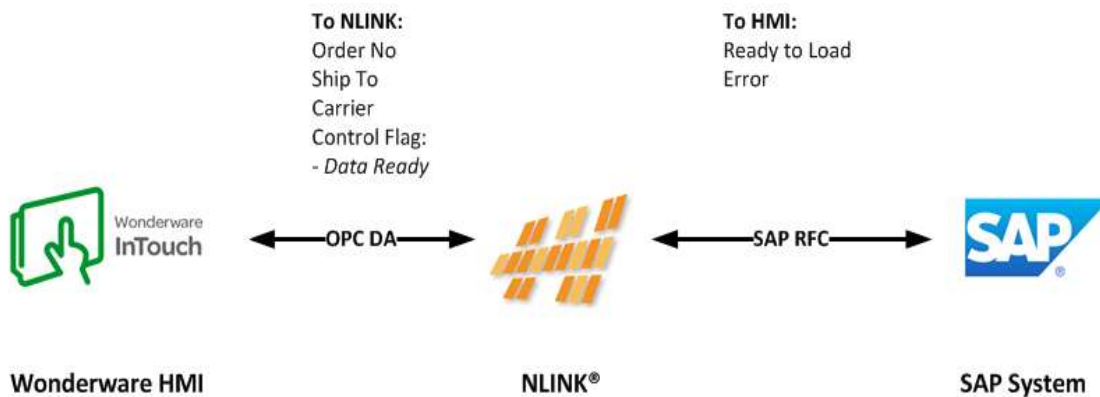
The Solution

The process starts with a truck driver arriving at the facility with a specific customer order to be filled. In this context, an End **Customer** purchases the goods and contracts a **Carrier** to haul the goods from the coal gasification plant to the end customer's facility. The system first allows operators to select the **carrier** and enter their **customer order number**. Based on the **validated** customer order number, the shipping information is automatically populated with data from SAP. The operators can then override the shipping destination (in some cases, the billing address on the order can be different from the actual delivery address or the customer may want delivery to a different location). SAP then validates that the carrier is indeed authorized to (re)move the goods and also verifies that the carrier's insurance is valid.



Once the destination is confirmed and the carrier validated, the operators are then allowed to enter the actual desired quantity of goods to be loaded and the loading starts. Once the loading is complete, the final (actual) loaded quantity information is gathered, (via an automated weighing scale), and sent to SAP. SAP verifies that all the information is correct and generates a bill of lading (BOL), and any other necessary documents, for the driver.

Whenever the operator clicks on a specific button on the InTouch HMI, NLINK is triggered (via an OPC tag value change) to retrieve, from SAP, (by calling several custom RFCs), the details of the valid Orders, Customers and Shipping locations. This information is passed back to InTouch via a set of pre-defined OPC tags and the operators are presented with this information so that they can select data that is already in the system.



Once the data is selected in InTouch, it is immediately picked up by NLINK, using a predefined set of OPC tags. NLINK then formats the received data so that it is compatible with the custom RFC and NLINK then calls the RFC, sending the data to SAP. The response from the RFC call is then sent back to InTouch using a different set of OPC tags.



Benefits

The NLINK OPC to SAP Solution was used to provide a configuration-based decoupled environment between the Load-out System HMI and SAP using an industry standard interface method. NLINK's ability to act as a flexible and nimble buffer between two much more rigid and structured systems allowed the project to progress to successful completion in a smooth and timely manner despite the inevitable design changes and project challenges encountered along the way. Commercial off-the-shelf OPC servers can be purchased cheaply for virtually any PLC, SCADA, DCS or HMI system on the market today and the NLINK OPC to SAP Solution provides a simple and cost-effective way to connect their data, whatever it is, to SAP.

All services work performed by Junot Systems professional services group was done remotely without any Junot Systems personnel required to make an on-site visit. This approach greatly reduced the overall cost to the customer while simultaneously speeding up the time to deployment.

This customer now has a reliable, scalable, nimble and supported solution to facilitate the load-out process. The system has been operational for several years and has been so successful that it is being expanded to support a new load-out system for a new by-product of the coal gasification process.

About Junot Systems

Junot Systems, Inc. is a specialist provider of SAP integration solutions for the manufacturing and process industries. Headquartered in Houston, Texas, Junot Systems, Inc. has deployed and supported its NLINK product suite for over 20 years in a variety of vertical markets, both in the US and overseas.

About Junot Systems' Solutions

NLINK® is a configuration-based product suite that installs in minutes and requires absolutely no custom coding to be deployed. NLINK's patented and SAP Certified Interfaces work with any version of SAP and require no additional SAP components to be purchased or installed into the SAP landscape.

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