Automation Station brings new “light” to production lines with I-7000 series modules and I-7188 controllers

Automation Station was chosen by a large pipe valve manufacturer to provide a solution to increase production throughput while minimizing employee assembly errors. Together with the help of ICPDAS-USA, Automation Station was able to deliver a low cost, scaleable, and easily maintainable LED Parts Indicator System.

BACKGROUND:

The production line consisted of over 125 parts used in combination to build over 190 different valve models (varying by size, flow characteristics, material composition, and pipe fitting style). All parts were located in individual bins on racks labeled with their respective part numbers. When an operator needed to build a specific valve, he/she would search for the correct components by reading the labels on the bins that matched the items in the bill of materials for that valve. They would proceed to assemble the valve and many times found that they grabbed an incorrect part. This would reduce the overall throughput of production and affected the outgoing quality level.

REQUIREMENTS:

The new solution should implement Lean Manufacturing tools such as production leveling and mistake proofing. Solution should be flexible enough to allow future expansion and rearrangement of parts (i.e. move frequently used parts closer to shoulder level). And software should be easy to use and able to be viewed from a distance.

SOLUTION:

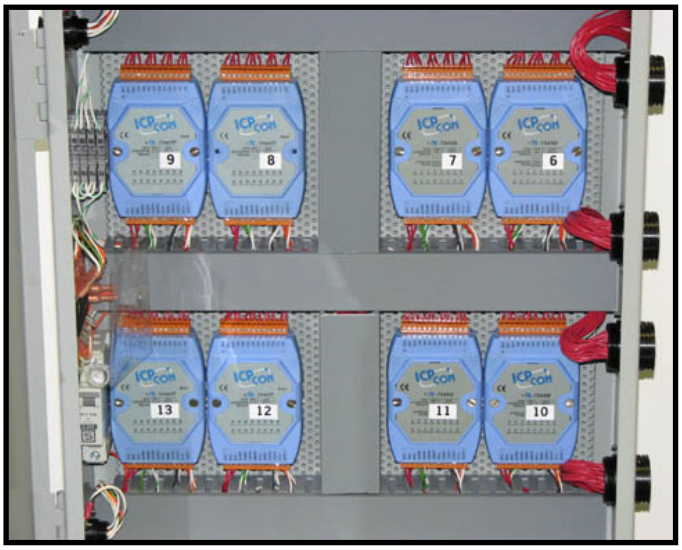
Because of its modular design, expandability, and ease of implementation, Automation Station designed a Parts Indicator System using ICPDAS I-7045D 16-channel digital output modules and an I-7188E3 Ethernet to Serial converter. The I-7045D modules were housed in enclosures capable of controlling anywhere from 1 to 128 LED’s (with up to 8 modules per enclosure). Each output was wired to an LED located under each bin on large racks. Multiple enclosures where daisy chained and connected to the main control panel which contained the I-7133E3 and power supplies. The main control panel would receive commands via Ethernet and convert the data to serial RS-485 commands to control any I-7045D module connected to the system.

The custom software installed on a PC consisted of 3 sections: Product Manager, Layout Editor, and Operator Interface. The Product Manager allowed administration of all parts and subassemblies used to build the various model of valves. The Layout Editor was used to graphically position the location of the bins on racks for the system and configure both the part belonging to that bin and the address and channel of the I-7045D that corresponded to the LED for the bin. Finally, the Operator Interface would allow the user to search, type, or scan the final valve assembly and the system would light up the LED under the bins containing the correct components.

ICP DAS USA, Inc. www.icpdas-usa.com, 1-310-517-9888
1508 West Pacific Coast Highway, Harbor City, CA 90710

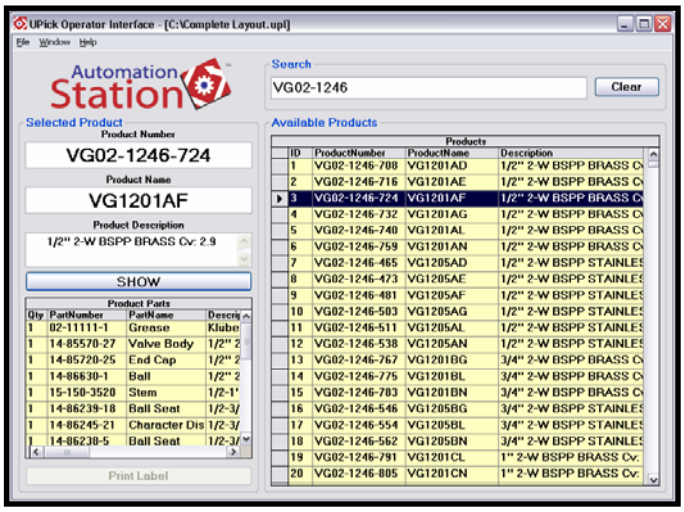
The system was further extended to provide a means for 2 operators to select/build different valves at the same time by adding a second LED under each bin (one green and the other red). Another PC loaded with the same software could control the second set of LEDs at the same time.

The custom software was designed quickly using Visual Basic and the standard serial port MSComm ActiveX control. With the easy to use VxComm driver by ICPDAS, the software was able to communicate to the I-7188E3 via a virtual Com Port. This allowed 2 computers to communicate to 1 control box at the same time without having to deal with opening and closing serial port connections.

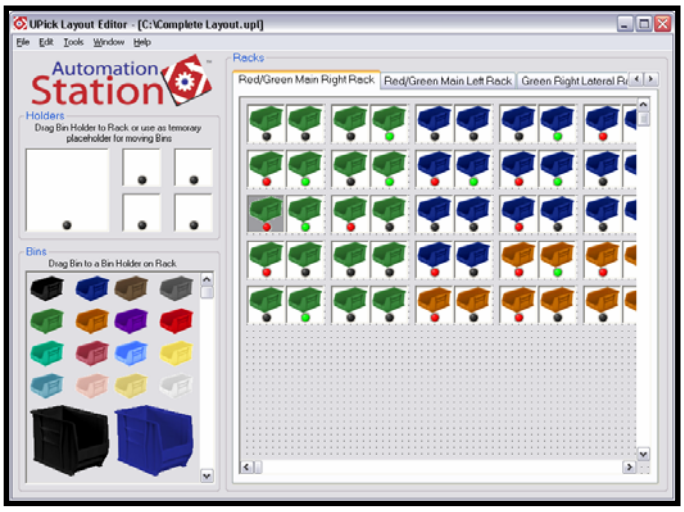


I-7045D Digital Output Panels for controlling LEDs

I-7188E3 and I-7067D with power supplies for remote panels and LEDs

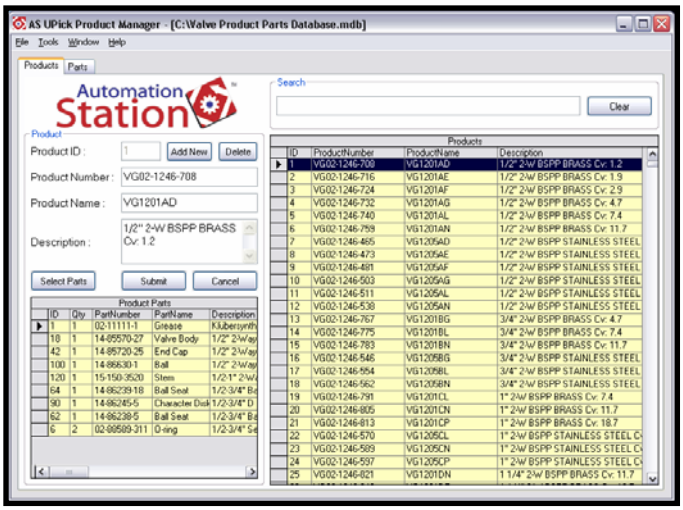


UPick Operator Interface



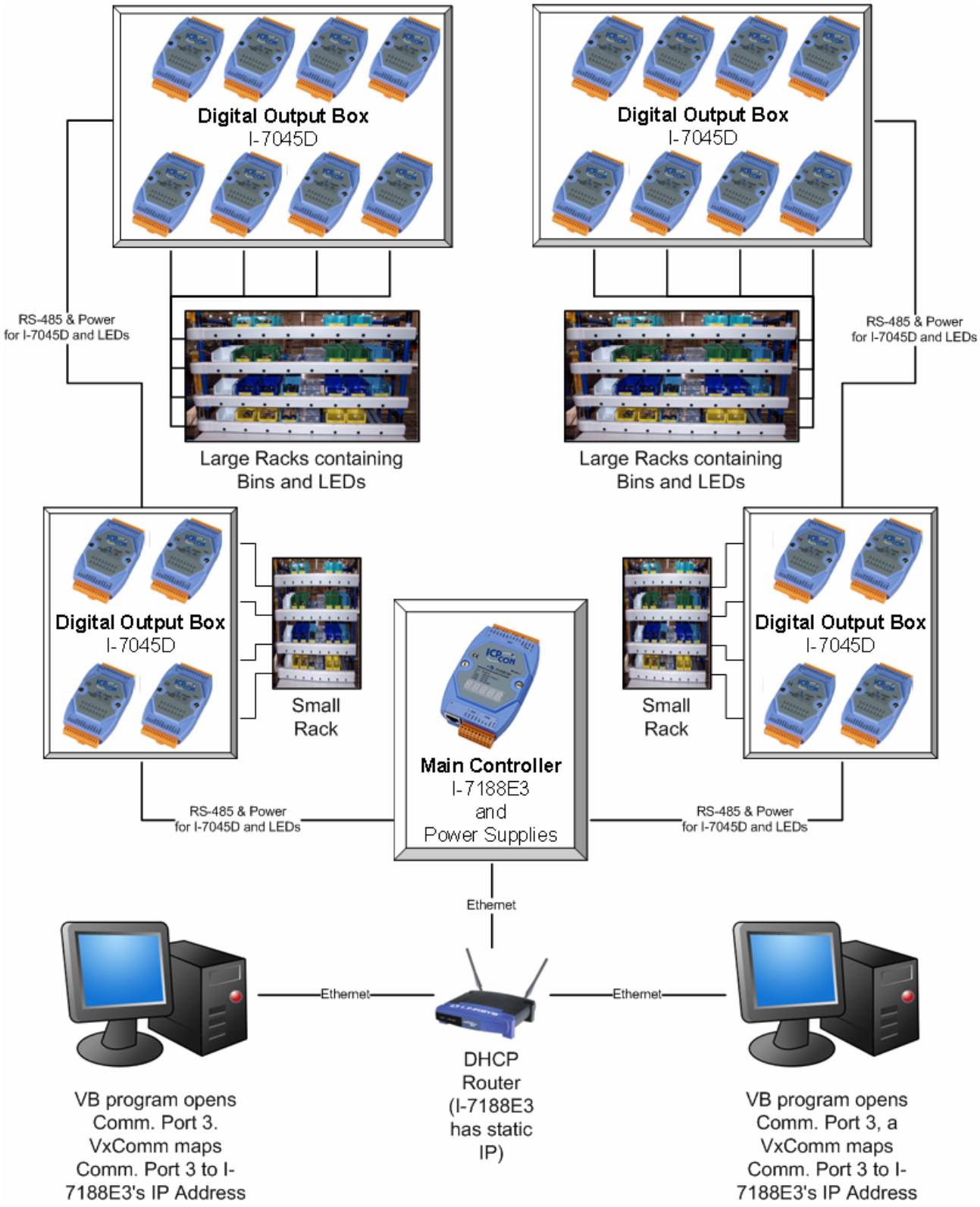
UPick Layout Editor

ICP DAS USA, Inc. www.icpdas-usa.com, 1-310-517-9888
1508 West Pacific Coast Highway, Harbor City, CA 90710



UPick Product Manager

ICP DAS USA, Inc. www.icpdas-usa.com, 1-310-517-9888
1508 West Pacific Coast Highway, Harbor City, CA 90710



ICP DAS USA, Inc. www.icpdas-usa.com, 1-310-517-9888
1508 West Pacific Coast Highway, Harbor City, CA 90710

ICP DAS USA, Inc. www.icpdas-usa.com, 1-310-517-9888
1508 West Pacific Coast Highway, Harbor City, CA 90710