

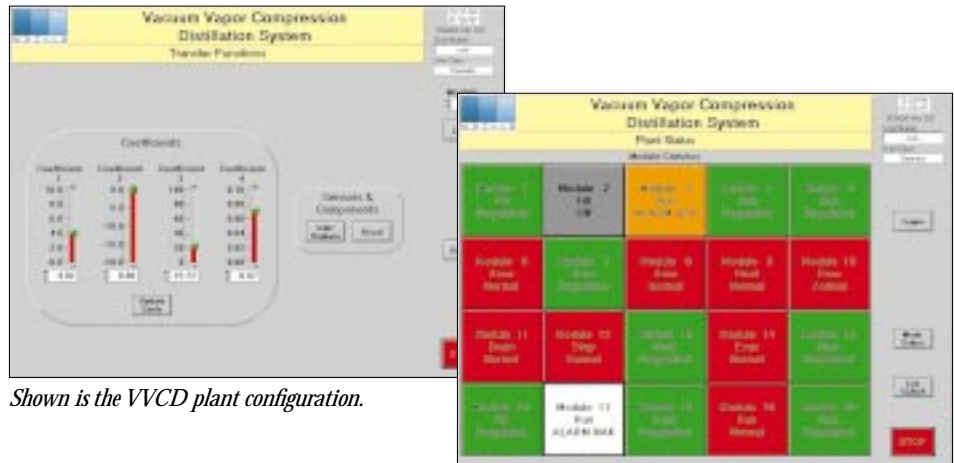
BridgeVIEW Application Monitors VVCD Plant

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Advanced Distillation Technology (ADT), located in Sacramento, CA, needed a mobile desalination plant to produce quality drinking water. ADT chose us, Spincraft Engineering, Inc. located in San Diego, CA, to design and develop the SCADA system responsible for monitoring and controlling the vacuum vapor control distillation (VVCD) plant.

We selected BridgeVIEW to implement this demanding application. The intuitive graphical user interface (GUI), combined with the powerful graphical programming language, G, gave us a SCADA system capable of supervising the total plant. The VVCD SCADA system we developed with BridgeVIEW provides a rapidly reconfigurable control system capable of monitoring a wide range of plant operational parameters, such as flow, pressure, and water quality.

The VVCD desalination plant design needed to be easy and efficient to operate and maintain. In addition, ADT wanted a mobile system so they could easily move the plant to new locations; this is because



Shown is the VVCD plant configuration.

microcontrollers that are networked together using a multidrop standard communications protocol. We implemented the MMI/SCADA application on a PC-based system running BridgeVIEW on Windows NT 4.0 for enhanced security and stability. The prototype VVCD system implements the MODBUS protocol and will be upgradable to a Fieldbus protocol in the future.

Our challenge was to provide a SCADA system that would monitor and control a single VVCD module, and yet be robust

to perform complex analysis during real time operations. Users can draw their own automation solution using the extensive G graphical library, which includes functions for data acquisition, math analysis, GUI presentation, as well as connectivity to networks and other applications, such as Excel, using standards such as TCP/IP, OPC, and DDE.

Security

System security was important for this VVCD system because the plant is unattended for long periods of time. We provided access to the VVCD system to three classes of users – Operator, Supervisor, and Engineer. Logon access for each class of user is restricted via password protection. We maintain an access log file itemizing each Logon attempt with the resolution of the attempt. With BridgeVIEW as the development and applications environment, we easily achieve this type of layered security.

Results

We delivered a working prototype of the VVCD automation system. With the capabilities of BridgeVIEW, we implemented the distributed control functions required by this application in a straightforward manner and forged new ground in distributed high-performance control systems. ☑

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mobile desalination plants are used around the world in countries that have difficulty obtaining a reliable fresh drinking water supply. The portable VVCD plant, which is built into a van, has the capacity to provide a reliable fresh water supply from saltwater. Also, users can easily move the system to different populations as water is needed. A typical VVCD plant is composed of up to 20 identical purification modules, each capable of distilling salt water into potable water at a rate of up to 50,000 gallons per day.

System Configuration

The BridgeVIEW SCADA application monitors and controls plant parameters necessary to maximize operating efficiency. The plant incorporates distributed, real-time controllers built with embedded PC-104-based

enough to control the entire set of 20 modules that comprise the plant. We developed this feature in BridgeVIEW to provide the operator with a hierarchy of user interface screen displays through which the user can easily navigate the system. We chose BridgeVIEW because of its unique graphic capabilities, built-in network configurations, and connectivity to existing LabVIEW device drivers. Because G, the BridgeVIEW built-in programming language, is graphical, it offers a unique combination of flexibility and ease of use to handle the most demanding data acquisition or control applications. G is well suited to handle automation applications that fall outside the well defined boundaries of scripting languages provided with many traditional MMI/SCADA software packages