

## Transform Your Precision Autoclave Process With New HMI Software

How an aerospace manufacturer increased reliability and reduced costs for its compositing process.

By Natasha Lutz

Composites Atlantic Limited designs and manufactures advanced composite components and integrates sub-assemblies for the Aerospace industry. Typically, this involves using an autoclave to process airplane parts and materials by precisely controlling pressure and temperature. When the time came to upgrade their monitoring & control application, the company realized that its existing HMI software was unable to incorporate the new hardware needed to maintain the high level of precision required. Rather than maintain a second stand-alone system, they asked their local System Integrator, Automated Systems Group Ltd. (ASG), to identify a solution. Their recommendation was to adopt a product that could handle their new and existing hardware as well as provide a customized recipe management component.

### The Software Selection Process

For the new system, ASG selected VTScada HMI software from Trihedral Engineering Limited. Kevin Cook, senior technologist at ASG, has been using VTScada since he took a programming course from Trihedral in 1998. In addition to its ability to communicate with a variety of monitoring and control equipment, ASG chose VTScada, specifically Version 10, because of its trending capabilities, its ease of configuration, and its new changeset functionality.



The Autoclave for Monitoring

For example, users can modify the tag database using MS Access<sup>®</sup>, and modify graphics in a text editor. Changesets make transferring modifications fast and foolproof. Over his 28 year career, he has worked with numerous HMI software products. "I can honestly say that, I would use VTScada 10 over any other product for in-plant HMI and telemetry SCADA system front ends."

### One PLC Is Better Than Two

James McKee-Mitchell was part of the ASG team who worked on the upgrade. "The previous solution required two separate PLCs, one acting solely as the recipe manager and the other controlling the processes of the cure. The new software allowed a single application to manage recipes input by operators and transfer those data into the PLC operating the cure. This reduced costs significantly by eliminating the need for the second PLC."

For his first VTScada project, McKee-Mitchell wanted to simplify the process. "There were stand-alone controllers that took care of the temperature control, the pressure control, and the lead and lag parts. All of this was written into a Hewlett-Packard<sup>®</sup> stand-alone controller for data management. An Allen Bradley PLC<sup>®</sup> controlled the process but that didn't hold the recipe required for the cure." As part of the upgrade, the stand-alone controllers were all removed. Now the Allen Bradley PLC controls everything. VTScada has replaced the stand-alone controller that served as the recipe manager and provides the recipe to the PLC.

### Customized Recipe Management

Before starting this project, Cook evaluated several HMI software products that had built-in recipe management. Cook states "they were not easy to work and their recipe management components were very generic. They included hundreds of functions and variables not required in the autoclave application. Also, technical support for this software left a lot to be desired. For a very reasonable cost, Trihedral produced a customized recipe management add-on and worked with us to tweak it to perfection as per the customer's wishes." Cook then integrated Trihedral's custom code into his application.

VTScada monitors the temperature of 56 thermocouples attached to parts being cured in the autoclave. The operator is able to spot exothermic or erratic reactions in the thermocouples and disable them if required. VTScada also monitors eighteen vacuum lines for bag breaks.

### Clear Upgrade Path

Cook also wanted to avoid the problems the customer experienced with another autoclave when they needed to upgrade the HMI software version or the computer operating system. Cook says "The HMI had become obsolete, but was still being sold at an outrageous price WITH NO TECH SUPPORT." VTScada supports multiple operating systems (including 32- and 64-bit) and allows customers with valid support to upgrade to the latest version at any time. "Trihedral's tech support team is knowledgeable, accessible and obviously cares when customers have a problem."

### Using Trends to Monitor the Cure Process

Along with the overall look and feel of the system, McKee-Mitchell describes an unexpected benefit of VTScada for their customer, "The lead operator likes to monitor the cure as it is going through its process using the VTScada Historical Data Viewer. He really likes that he can select grid view and get the digital trend data, second by second. He is impressed that if he is monitoring 25 thermal couples, he can get the actual number instead of trying to read a plot on a graph."

### A User Friendly Interface

"We transferred the application over to the end user on January 25, 2012. There have been a few service calls made, but nothing major, and nothing with the user interface, just minor operational and program changes."

McKee-Mitchell says, "The operators are extremely pleased with it and impressed with the overall interface. It has significantly improved capabilities for data management. It is also very user friendly; you can take one look at the screen and know exactly what is going on in the cure. Before, you had to switch between several different screens."

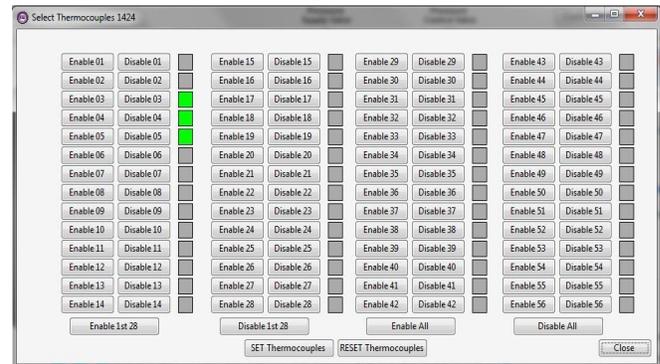


### The Future

Now that McKee-Mitchell has completed his first installation since taking the training at Trihedral's Bedford facility, he is now looking to use VTScada on other autoclave applications



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### For More Information

Contact [www.trihedral.com](http://www.trihedral.com) or [www.asg-canada.com](http://www.asg-canada.com)

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