



COMMITTED TO EXCELLENCE: CASE STUDIES



Easy to use, efficient and affordable, our products have been automating processes, systems, and stand-alone applications since 1989.

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INDUSTRY: FOOD & BEVERAGE

7TH SETTLEMENT BREWERY CUTS TIME AND COSTS SIGNIFICANTLY WITH UNITRONICS

The 7th Settlement Brew Pub is the first of its kind in Dover, NH. As the area's first community supported brewery (CSB), it proudly supports its local economy by bringing to the public a unique combination of delicious, socially and environmentally responsible beer. This, of course, has all been made possible with the help of the Unitronics Vision1210™, in conjunction with a remotely accessed Vision120™ PLC with onboard HMI.

THEIR NEED?

Owner and founder Joshua Henry needed a control system that could support temperature measurement in three, 800 gallon fermenters, record batch data, and automate their circulation pump, transfer pump, and 300,000 BTU boiler. Josh also needed to remotely monitor the system off-site, receiving alarms about any "hiccups" by email if necessary. The Vision1210™ and Vision120™ were able to cater to all of Josh's requirements and more. From one central location, the Vision series controllers allowed Josh to control I/O, monitor current temperature and history, and store data during the entire brew process. In addition, the controller's RS485 communications greatly reduced wiring across the brewery to remote PID control of the glycol chilled fermenters.

WHY THE VISION1210™ & VISION120?

Each brewing cycle has multiple functions to manage the two pumps and boiler, along with a large section devoted to the trend image and time in the recipe step. The Vision1210™'s 12" color-touch display was able to accommodate this versatile operation well, to "visually" control the necessary local I/O. The Vision120™ was primarily used as a Modbus RTU slave across the brewery to control a bank of solid state relay's powering the chiller valves to open and close.



THE RESULT?

A substantial simplification of the brewing process, which lead to reduced brewing time, and better records, and ultimately lower production costs. Josh Henry has attributed the Unitronics Vision1210™ as having "greatly increased our capabilities and consistency in our brewery! Not only has it simplified our brewing process, it has legitimized our brewery to our customers in our pub!"

ARTICLE HIGHLIGHTS

- Established in 2013, 7th Settlement Brewery is Dover, NH's first community supported brewery.
- Requirements? A control system that could support temperature measurement, off site monitoring, record keeping and alarm capabilities.
- The Vision1210™ and Vision120™ units were chosen to orchestrate the process, all while maintaining their budget.

INDUSTRY: OIL & GAS

UNITRONICS HELPS AARON OIL COMPANY, INC. ACCURATELY TRACK LIQUID COLLECTION

Based in Mobile, AL, Aaron Oil Company, Inc. is a leader in the used oil recycling and petroleum-based hydrocarbon reclamation sector. Aaron Oil has consulted with ENGraphed Inc. to lead the development of a new generation route collection truck.

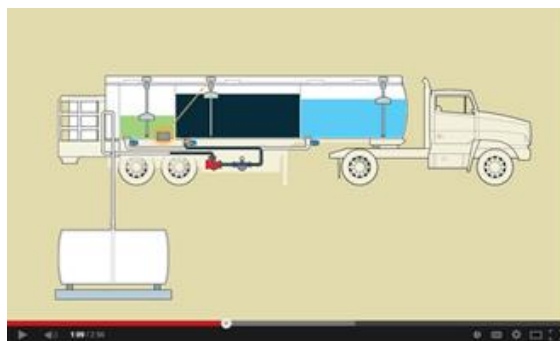
WHAT EXACTLY DOES THAT ENTAIL?

They wanted to track gallon amounts of various liquids pumped through a collection truck by analyzing the liquid as it was being loaded onto the truck. This real time analysis data is used to route different waste products to their respected holding

compartments on the truck, and tally up individual totals for the various liquids being pumped on-board. It is common to find various liquids that are stratified within a single “waste” tank at a customer location. Some of the stratified liquids may be considered a liability, while other layers may be considered an asset. They needed to separate these layers in real-time, in order to provide an honest report as well as introduce a level of handling efficiency that is second to none in this industry.

HOW DID THEY DO IT?

They used a Unitronics Vision560™ PLC with a V200-18-E6B snap-in I/O module. The V560 PLC was able to provide the specific communication features, I/O support as well as the HMI preferences that they needed for their application. The PLC handled all of the on-board automation and data collection on the truck. The PLC accepted an input from an in-line multi-parameter analyzer to keep a running total of various liquids pumped through the truck and to route various liquids into different compartments. It also provides usable output to an on-board PC for real-time invoicing purposes, giving the customer the most accurate gallon amounts. This information is also communicated on a real-time basis to a central office location via secure cellular VPN for accounting purposes. Finally, the information is combined with an external GPS-based driver tracking system to promote efficient dispatching and to track driver performance.



CLICK VIDEO FOR MORE INFO (GUY CHETRIT)

ARTICLE HIGHLIGHTS

- Aaron Oil Company, Inc. is a leader in the used oil recycling and petroleum-based hydrocarbon reclamation sector.
- They wanted to track gallon amounts of various liquids pumped through a collection truck by analyzing the liquid as it was being loaded onto the truck.
- A specific set of I/Os was required, as well as the ability to communicate with other devices on-board, and handle network protocols. The Unitronics Vision560™ met these requirements and more.



The PLC also handled other mission critical decisions and proprietary processes which cannot be replaced by human operation. The operator has the ability to override certain automated tasks at different security levels.

"The Unitronics V560 was a unified solution that was rugged and suitable for an on-road application," said Guy Chetrit, PE, of ENGraphed Inc. "A specific set of I/Os was required, as well as the ability to communicate with other devices on-board, and handle network protocols. The V560 met these requirements and more. Other benefits of using the V560 PLC were the HMI features, the adaptability of the I/O modules that were compatible with this PLC and the ease of programming."

INDUSTRY: PACKAGING

VISION570 & VISION350™ CUT COSTS AND PROVIDE FLEXIBILITY

A&B Packaging of Lawrence, MI specializes in fresh packing and cleaning equipment for fruits and vegetables worldwide.

THEIR NEED?

They had been using custom, pre-programmed PLC boards to control their packaging and cleaning equipment that had quickly become out of date. They were facing upgrading and re-programming costs of over \$85,000 on top of additional costs per-board. Ultimately, they were unable to change the program on their own, which forced them to add an outside HMI.

THE SOLUTION?

Unitronics' V570 and V350 PLCs with onboard HMIs were brought in to give A&B Packaging more flexibility to react to their customer's unique needs, instead of giving them a canned package. "Our biggest advantage with the Unitronics PLC is the lower overall cost," said Allen Roggow, Field Tech Supervisor for A&B Packaging. "These units also gave us the ability to customize software and gave us the benefit of having one database to put together the HMI screens."



A&B Packaging primarily uses the V570's due to the size of the screens, 5.7", and the restrictions on their panel size. They utilize the V350 models for their smaller machinery. "As with any new software, there is a learning curve that has to be dealt with. Once it became clear how to use the software, it became easier and easier to use," says Roggow. "The training seminars that Unitronics put on were also a great help, as was our local distributor, J.P. Motors & Drives." [Click here to see the machine in action!](#)

ARTICLE HIGHLIGHTS

- A & B Packaging retrofitted their packaging & cleaning equipment from pre-programmed PLC boards to the Vision570™ & Vision350™
- Unitronics allows more flexibility to react to their customer's overall needs- versus giving them a canned package
- Their biggest advantage with the Unitronics PLC is the lower overall cost

INDUSTRY: ENERGY

WITH THE HELP OF UNITRONICS, RENE THOMINGAS FIE FACILITATES THE USE OF OVER 80% OF CITY'S HEAT ENERGY FROM RENEWABLE SOURCES

Rene Tomingas FIE of Estonia has been bringing PLC & SCADA systems, engineering, development and startups to industries such as water treatment, energy and heating plants for over 20 years.

THEIR NEED?

Centralized control and a monitoring system for different plants across their country. Their new 8MW thermal oil heating and 1MW ORC electrical power plant in Estonia needed to be safely connected to an existing SCADA system and also to be able to share data with the grid manager SCADA system, all while using different protocols. The ORC system is factory built, so by default, it is linked to a Unitronics competitor's PLC, which cannot be changed.

THE SOLUTION?

Two Vision1040™ PLCs were chosen for the task. The first Vision1040™ would control the 8MW woodchip boiler. The second would control the thermal oil systems, retrieve data from Unitronics' competitor's PLC, share that data with their SpecView SCADA system which delivers that data via IEC104S protocol to the grid manager SCADA

system. The existing plant operator control and SCADA system is done through the Modbus-TCP protocol and a pair of local and remote Vision570™ PLCs within the plant. One PLC could now connect different subsystems, and collect data from different sources (PLCs) with different protocols. It could also share the collected data online with a central SCADA system using generic Modbus protocols.



ARTICLE HIGHLIGHTS

- Rene Tomingas FIE of Estonia required centralized control and a monitoring system for different plants across their country.
- Unitronics' Vision1040™ and Vision570™ PLCs were chosen for the task.
- Unitronics provided a great price for the relative cost/options, they provided good connectivity, and a simple way to configure.

Founder and President Rene Tomingas said "since using Unitronics, we now have great connectivity using Modbus-RTU and TCP protocols. It is simple to configure different solutions, and saves us a lot of time and money; especially with their free programming software. A huge benefit is the integrated operator panel. There is no need to use separate hard and software for the visualization purposes. We also received fast delivery, and were impressed with their stock."

Thanks to this plant, and the help of Unitronics, the city of Rakvere, Estonia will start to use more than 80 percent of their heat energy from renewable sources.





INDUSTRY: MONITORING

CUSTOMER MONITORS MANUAL PROCESSES USING UNITRONICS' VISION PRODUCTS TO IMPROVE QUALITY, CONSISTENCY & EFFICIENCY

In order to improve the quality and consistency of their product, some manufacturers are timing the manual processes performed by operators. This usually requires the operator to manually start and reset multiple timers and pilot lights to monitor and record that the required time of each step in the process, as specified in the SOPs, has been met. For consistency, sometimes the process is carried out inside environmental chambers with multiple temperature control zones.

HOW DO YOU MONITOR A MANUAL PROCESS?

In order to maintain product traceability, parameters such as the name of the operator, the environmental conditions of the process chamber and the time in process need to be recorded. The timers should not run if the process conditions are off spec. Additionally, the timers for each part should be presented in a manner that the operator can intuitively know which timer belongs to which part in the process. In industries where products and processes constantly change, the control system must be flexible and easy to modify without costly rewiring or modifications. Instead of using wired timers and pilot lights, timers and virtual pilot lights can be programmed onto Unitronics' Vision1210™ PLC + HMI screen. Through programmed interlocks, timers only run when the environmental conditions are within spec. In the future, if the customer needs to modify the system, such as adding or eliminating timers, a simple programming change can be done. The SD card functionality of the V1210 eliminates the need for a paperless recorder. PID control with auto tune eliminates the need for external environmental chamber controllers. The large HMI screen allows having multiple loops with all of their adjustable parameters and trending in a single display to aid in process loop tuning.

Jose Padro, PE, President of Unitronics' Caribbean distributor Alpha Systems, Inc., delivers solutions using the Unitronics V1210 for processes such as these. The large screen allows fitting all the timers and "virtual" pilot lights on a single display. "The complexity of wiring multiple timers with two pilot lights per timer (a green for running timer and a red pilot light for an expired timer for each part), plus wiring multiple temperature controllers and a paperless recorder was eliminated," said Padro. Accidental overheating of machine and process due to thermocouple or hardware failure can be eliminated in the Unitronics V1210, by programming logic to shut off heaters

ARTICLE HIGHLIGHTS

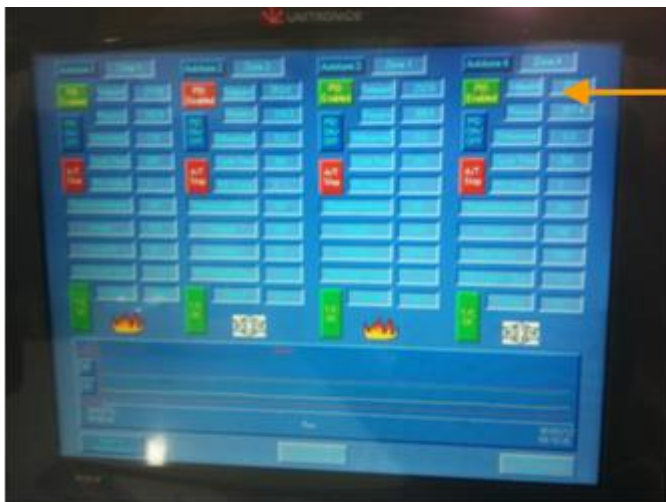
- In order to improve quality, some manufacturers are timing the manual processes performed by operators.
- This usually requires the operator to start & reset multiple timers and pilot lights to determine that the specified time and other process conditions, as specified in their SOPs, have been met.
- The standard operating procedures can be programmed onto the Unitronics Vision1210™ so that the operator can accurately time each step in the process, while monitoring and recording all critical process parameters.

when temperatures are either too low or too high to be real. The logic is then tested for either a thermocouple failure or a hardware failure through simple tests which should result in shutting off heater operation.

Additionally, all operator logins, process parameters and alarms can be logged onto the SD card for traceability and to act as a “black box” to help customers diagnose a machine or process failure. Jose Padro describes the Unitronics solution as “lower cost, an easier build, and easier debugging.” He goes on to say that Unitronics’ Vision1210™ PLC + HMI can provide “an easier and safer operation, a better integrated system and a more modern design. Unitronics gives us higher customer satisfaction that comes hand in hand with repeat business. When building multiple identical machines, the programming is done and debugged once vs. having to hard wire and test the logic for each copy of a machine.”

WHY UNITRONICS?

“Unitronics is an excellent product. The Vision1210™ is priced at less than half of a traditional panel type HMI, and does even more because it doubles as a paperless recorder with the SD card functionality.” Says Padro. “It gives us a foot in the door when we sell it as a control panel HMI for existing PLCs. Additionally, the Unitronics I/O cards can be wired for sinking or sourcing inputs while other major brand PLCs require different I/O cards for sinking or sourcing inputs. The support both via telephone, email, and the Unitronics forum is among the best in the industry. I have had questions answered even on a Saturday from the Israeli office.”



The large screen allows multiple zones with all control settings in one display



INDUSTRY: REFRIGERATION

VISION280™ COOLS AMMONIA REFRIGERANT IN CHILLING SYSTEM APPLICATION

All over the world, industries such as food, dairy, meat processing, and pharmaceutical are using refrigeration compressors and chilling systems for frozen storage. Seagull Refrigeration, Ltd., an industrial refrigeration company based in the Republic of Ireland, specializes in the supply of ammonia refrigeration systems. The units also compress refrigerants such as CO₂, F-Gasses and many other refrigerants using motor sizes ranging from 55Kw to 455Kw.

THEIR NEED?

In this particular application for a pharmaceutical plant, they were in need of a control system that would give Seagull Refrigeration the ability to add I/O options inexpensively, and adapt easily to their individual customer requirements. Driven by a 315Kw motor, the compressors are speed controlled. In this particular case, the compressor is designed to cool ammonia to -29° C. This ammonia refrigerant then cools Methanol (an alcohol-based coolant) to -25° C. Methanol is then used to cool the vessels in the production of the drug. The Vision280™ was chosen to monitor and control the compressor. "The keyboard was useful, as these units can be located in machine rooms where a touch screen option may not be suitable," said Denis Morrissey of Seagull Refrigeration. "The unit we chose was a cost effective and reliable solution."



TWO LANGUAGES! DEUX LANGUES!

The compressors that Seagull supplies are manufactured in France by Samifi France, so they needed to develop the program in two languages—French and English. This was managed by the controller's string library option—this particular controller can support up to 8 different languages.

ARTICLE HIGHLIGHTS

- Manufacturing of machinery in France required the program to be developed in 2 languages – French & English.
- The ability to adapt the program easily to the customer's needs was a big feature for customer.
- Great customer support and product reliability results in great user experience.

THE RESULT:

When cooling is required, the controller sends an output to start the compressor oil pump. Once oil pressure is established, the controller starts the main motor. If more cooling is required, the controller speeds up the motor to a maximum of 3600rpm. If less cooling is required, the controller slows the motor to a minimum speed of 1500rpm.

While the compressor is running, the Vision280™ is monitoring the following: low oil pressure, low inlet gas pressure, high outlet gas pressure, methanol temperature, oil filter differential pressure high, high motor amps, high ammonia temperature, low oil temperature, and motor bearing temperatures. Many digital inputs are also used, such as remote start, coolant flow, and change set point. A total of 17 digital inputs, 17 digital outputs, 18 analog inputs, and 2 analog outputs were used in the control process.

WHY UNITRONICS?

“The main benefit of this unit is that we could adapt the program easily to the customer's needs,” said Denis. “Combined PLC and HMI make the unit compact and easy to install. The communication possibilities are a huge advantage as most dedicated controllers use 1 dedicated protocol.” Denis continues, “one of the best aspects of Unitronics is their customer support. If the topic is not covered in the examples or forum, an email to customer support has never failed to return a prompt and comprehensive solution to any problems that we have had. Of course, the product's reliability was also a plus.”



BECAUSE OF HIGH NOISE LEVELS INSIDE THE ROOM, THEY INSTALLED ONE VISION570™
OUTSIDE CONNECTED VIA CANBUS TO THE VISION280™ UNITS.