

InduSoft Web Studio HMI Software Used To Automate Home

Successfully used to design flexible, complete, expandable, and affordable home automation systems drives this homeowner to get creative and build his own system using the industrial-based InduSoft Web Studio software.



The homeowner used InduSoft Web Studio to create a centrally-located system that will last for many years, will expand as the house does and helps manage energy costs.

- Home of the future now!
The flexible nature of InduSoft Web Studio creates an “open architecture” system that easily expands with technologies as they become available.
- Homeowner uses InduSoft Web Studio to create a powerful home automation system rivaling professional installations.
- Concepts used in this project translate well to larger “building automation” projects, for offices and other facility management applications.
- By integrating several systems into one, the homeowner saved thousands of dollars.

Background

Homeowners today increasingly seek convenient ways to reduce energy costs, improve security and expand comfort. In their pursuit, they are turning to home automation systems. Home automation is an innovative way of virtually having your home run itself. Technology is approaching a point where all homes will be able to transmit information so that homeowners will know everything that’s going on at home without being at home.

John Rasmussen, a homeowner in Salt Lake City, Utah, was unable to find a suitable home automation system that could perform more than just a few functions and would also be easy to integrate, so he built his own, using the industrial-based InduSoft Web Studio HMI/SCADA software and a programmable logic controller (PLC). Not only did Rasmussen find the software flexible, but also affordable.



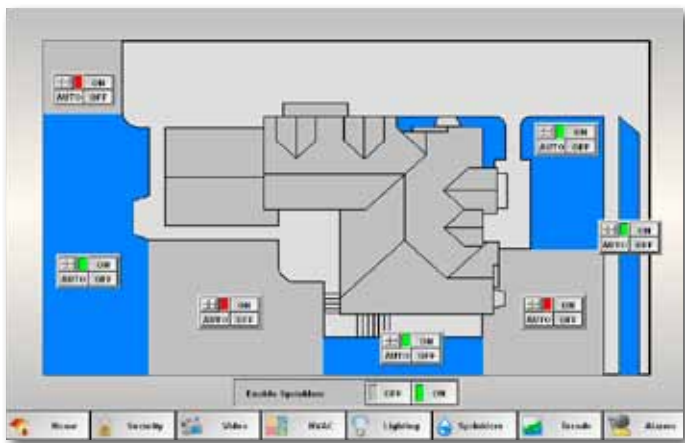
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“We looked at residential and commercial home automation systems, but they all had a ‘closed architecture,’ making them difficult to integrate,” explained Rasmussen.

Closed architecture contains technical specifications that are not made public, thus restricting a third party from building products that interface with or add new enhancements to them. The technical specifications are available only to those authorized by the manufacturer.

Rasmussen continues, “Many systems seem to center exclusively around home audio or home theaters, or they specialize in security. We wanted our home automation system to handle all that, plus zoned heating and air conditioning, fire protection, lawn sprinklers, lighting, video surveillance and anything else that comes along in the future.”

Rasmussen works for a company that makes automated water treatment equipment. Being familiar with the magnitude of programmable logic controllers, computers, software, and other industrial components, he was disappointed when he compared the state of home automation products to industrial equipment.



One system monitors and controls not only the sprinkler system, but video surveillance, heating and air conditioning, floor radiant heating, lighting, and energy usage.

“With industrial systems like the InduSoft Web Studio software and a PLC, I can connect valves, pumps, sensors, switches and video quite easily,” he says. “With traditional home automation products, the choices are much more limited. I would have to buy separate systems for security, heating/cooling, and audio, and they would not work together. For the zone heating alone, I would have needed three commercial controllers with limited functionality, and all of them were sold separately!”

To say that Rasmussen was unenthused with the quality of most home automation systems is an understatement. “I am accustomed to using industrial equipment that is robust, reliable, and supported by the manufacturer,” he says. “I am concerned about longevity and long-term support, and I don’t see either in existing home automation systems.” Married to the aptitude of industrial equipment and what such equipment can provide him in future projects, Rasmussen selected InduSoft Web Studio to automate his home because of its endless capabilities for interfacing with new enhancements.

Rasmussen designed and fabricated a control panel with a Modicon Momentum PLC and installed InduSoft Web Studio HMI/SCADA software on a home computer. The PC connects to the PLC via an Ethernet connection. He wired in temperature sensors, window and door switches, sprinkler valves, circulation pumps, zone valves, and other devices to the PLC. InduSoft Web Studio was used as a front-end interface for these wired devices as well as for lighting control and video surveillance.

“The house is divided into six air conditioning zones, six forced air heating zones, and 12 radiant heating zones,” he says. “The complexity is far beyond anything a single hydronic controller can handle, which is why I would

have had to buy three separate controllers to even get minimal functionality.”

It was easy to program the integrated system. “We wanted to preheat the tile floor in the bathroom early in the morning, Rasmussen says. “It was a simple matter with InduSoft Web Studio to set up a timer to heat the floor at 5 a.m., and then turn the system back to thermostat control once we had left for the day. We decided on the spur of the moment to heat the floor, and 10 minutes later I had it programmed into the system.”

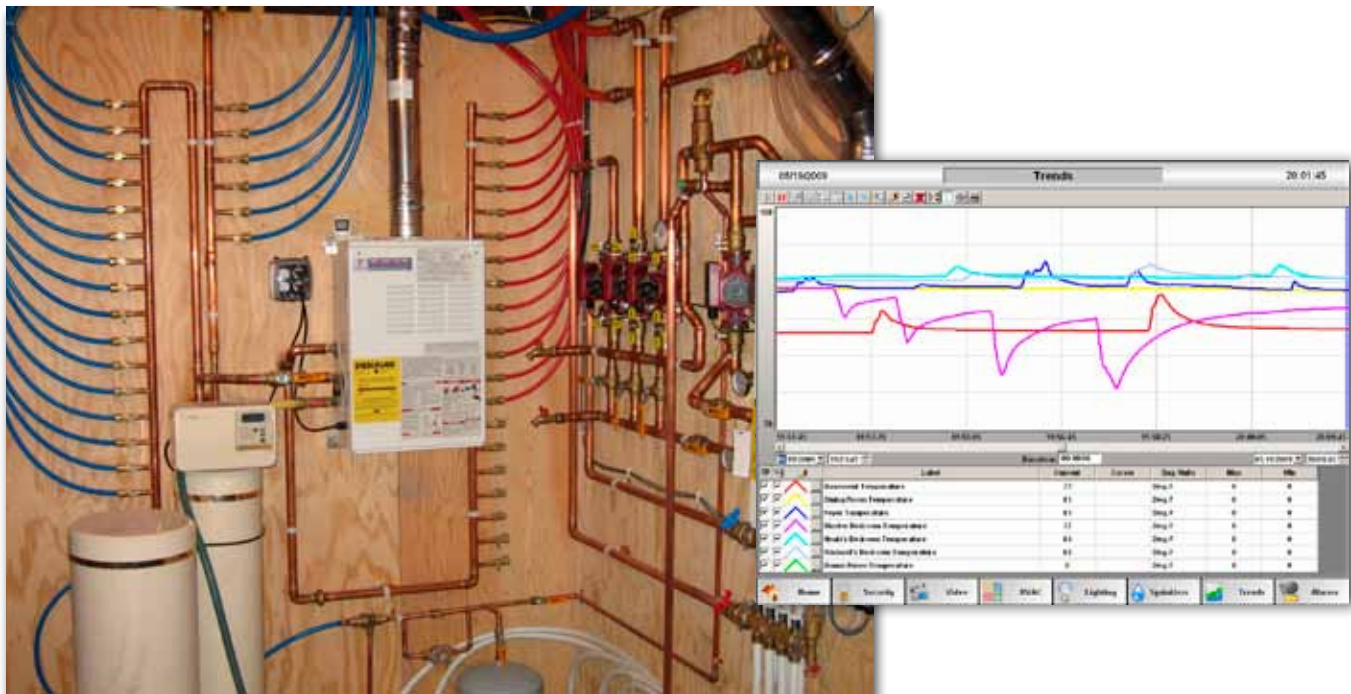
Using InduSoft Web Studio, Rasmussen created floor plan displays, on/off buttons, set points, trends, totalizers, and alarm screens, making it easy for him and his wife to monitor the condition of the house and make changes when needed.

“What’s great about this system is that it’s all in one place,” he says. “We don’t have sprinkler controls in one place, zone heating in another and a security system someplace else.” Instead, everything is controlled from a centrally-located PC.

Using the InduSoft Web Studio Thin Client solution, the system can be monitored and controlled remotely from any PC over the internet, using just a web browser. A cell phone, PDA, or PC can receive notification if an intrusion alarm occurs, or for any monitored parameter.

An Ongoing Project

“The longer we live in the house, the more ideas we get for expanding the system,” says Rasmussen. “We want to implement a vacation mode that gives the home a lived in look, as well as additional video monitoring and



Several complex systems were simplified and combined. For example, the hydronic system shown, combines the functionality of what would otherwise be three separate controllers for 12 floor radiant heat zones into a single system.

integrated lighting. We are always looking into any new technology that is 'open,' so it will be easy to add when we are ready."

Although he was familiar with the PLC hardware and InduSoft software from the beginning, he doesn't think industrial technology is too difficult to learn for a computer savvy homeowner or home automation integrator. "Any HVAC [Heating, Ventilation and Air Conditioning] dealer, architect or electrical contractor can learn what's needed for 'structured pre-wiring' in a matter of hours," he says. "When people see it's possible to use industrial equipment solutions in home automation systems, I predict that the demand will go up. It will be the home automation systems that go 'open' that will survive."



A complex system of zone valve solenoids, primary loop circulation pump and zone circulation pumps shown here are easily monitored by InduSoft Web Studio.

For more information contact your local distributor or InduSoft directly at info@indusoft.com or 877-INDUSOFT (877-463-8763) or 512-349-0334.

