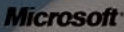


Energy Smart Buildings Customer Success Stories

Proven Solutions for Every Industry



Trailblazer Award
US ISV CTO Summit 07



Microsoft
Partner Program

Microsoft
Partner Program

Microsoft
Partner Program

Windows
World Open
RECOGNIZING EXCELLENCE
IN CUSTOM APPLICATIONS

WINNER
1998

2008

ISV/Software Solutions
Partner of the Year

ICONICS

2012

Sustainability
Partner of the Year

ICONICS

2014

Public Sector:
CityNext
Partner of the Year

ICONICS

VISUALIZE



ANALYZE



MOBILIZE



CLOUD



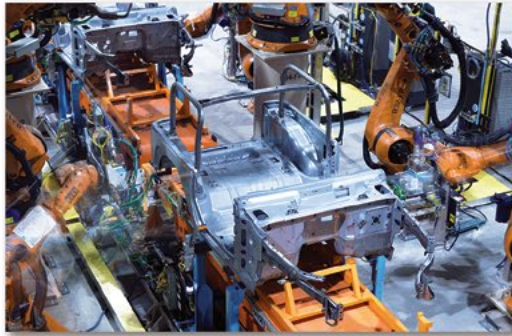
Visualize Your Enterprise™



Government
Infrastructure



Energy Smart
Buildings



Power & Energy
Management,
Utilities



Manufacturing &
Machine Builders



Oil, Gas & Petrochemical

Food &
Pharmaceutical



Water &
Wastewater



ICONICS Thanks Our Loyal Customers from Around the World

ICONICS is a leading provider of award-winning real-time visualization, HMI/SCADA and operational management software for manufacturing intelligence and building automation. ICONICS software delivers significant cost reductions in design, building, deployment and maintenance for a wide variety of manufacturing companies, building owners and government organizations. ICONICS solutions have helped our customers to be profitable, agile and efficient, to improve quality and be more sustainable. Our products are installed in over 300,000 applications worldwide, continuously delivering value to more than 70% of the Fortune 1000.

Microsoft Partner
Gold Application Development

Microsoft Partner
2014 Partner of the Year Winner
Public Sector: CityNext



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About ICONICS

Founded in 1986, ICONICS is an award-winning independent software developer offering real-time visualization, HMI/SCADA, energy smart buildings, fault detection, manufacturing intelligence, MES and a suite of analytics solutions for operational excellence. ICONICS solutions are installed in 70% of the Fortune 500 companies around the world, helping customers to be more profitable, agile and efficient, to improve quality and be more sustainable.



ICONICS is leading the way in cloud-based solutions with its HMI/SCADA, analytics, mobile and data historian to help its customers embrace the Internet of Things (IoT). ICONICS promotes an international culture of innovation and excellence in product design, development, support, training, sales and consulting services for end users, system integrators, OEMs and Channel Partners. ICONICS has over 300,000 applications installed in multiple industries worldwide. ICONICS world headquarters is located in Foxborough, Massachusetts, USA, and the company has offices located throughout the U.S., Europe, Asia, and Australia.

ICONICS products are used in energy smart buildings, automotive, oil & gas, renewable energy, utilities, water/wastewater, pharmaceuticals and many other industries. ICONICS' advanced visualization, productivity, and sustainability solutions are built on its flagship products: GENESIS64™ HMI/SCADA, Hyper Historian™ plant historian, AnalytiX® solution suite and MobileHMI™ mobile apps. Delivering information anytime, anywhere, ICONICS' solutions scale from the smallest standalone embedded projects to the largest enterprise applications.

For over 29 years, ICONICS has been a leader in the area of standards-based connectivity providing direct, real-time OPC, BACnet, SNMP, SAP, Web services and database interfaces and communication from the shop floor to the enterprise. ICONICS products are OPC Foundation certified for OPC and OPC UA. ICONICS has received the BACnet Advanced Workstation certification for its excellence in energy smart buildings from the BTL Organization.

ICONICS is a charter member of the OPC Foundation (www.opcfoundation.org), an organization dedicated to



“ensuring interoperability in automation” by creating and maintaining open specifications that standardize communication. ICONICS has been on the OPC Foundation Board of directors since 2003 and provides “OPC to the Core”

64- and 32-bit solutions for the development of OPC Servers, OPC clients and OPC-enabled controls.

ICONICS is a longtime Microsoft Gold Certified Partner and winner of the Microsoft Public Sector CityNext Partner of the Year award and Sustainability Partner of the Year award. Microsoft recognizes innovations built on the Microsoft platform that help people, organizations, and cities around the world reduce their energy costs and impact on the environment. ICONICS is a preferred partner for Microsoft's CityNext initiative, which strives to improve the lives of millions of people worldwide.



President's Message

Welcome to the 5th edition of the ICONICS Customer Success Story Catalog. Since ICONICS' founding in 1986, and with over 300,000 installations worldwide, our building and industrial automation software solutions have helped customers in numerous industries and applications. From delivering solutions for the world's largest pipeline to managing energy on Microsoft's campus to automating renewable wind parks, ICONICS' solutions scale from the smallest to the largest and most demanding applications worldwide.

Inside the Success Story Catalog

This catalog is a compilation of the most successful implementations, installations and deployments across the globe. We have organized these stories into the following industry categories:

- Energy Smart Buildings
- Government Infrastructure
- Oil, Gas & Petrochemical
- Renewable Energy
- Food & Pharmaceutical
- Machine Builders & Manufacturing
- Power & Utilities
- Water & Wastewater

In each of the success stories, you'll read about real world customer needs in achieving unique business objectives and the recommended ICONICS solutions for these needs. These stories also include ICONICS channel partners and system integrators involved in each project.

Three-time Microsoft Partner of the Year Award Winner

Multiple awards highlight the close working relationship between Microsoft and ICONICS. ICONICS is the Public Sector CityNext and Sustainability Partner of the Year for demonstrating excellence in innovation and implementation of customer solutions based on Microsoft technology.

We hope that you enjoy these customer success stories and find out how ICONICS has helped solve real world applications. We also hope these testimonials inspire you to learn how ICONICS can help meet your or your clients' automation software needs.

Thank you again to those customers and partners who helped us put this Success Story Catalog together. And to our potential new customers and partners, we look forward to working with you.

Sincerely,



Russell L. Agrusa
President and CEO
ICONICS, Inc.



Russell L. Agrusa
President & CEO
ICONICS, Inc.



CityNext Partner of the Year

"ICONICS is extremely pleased and honored to have won the CityNext Partner of the Year Award from Microsoft," said Russ Agrusa, President and CEO of ICONICS. "This is our third Partner of the Year Award and recognizes innovation and success at providing software solutions that reduce energy

Microsoft Partner

2014 Partner of the Year **Winner**

Public Sector: CityNext

consumption and environmental impact. Our CityNext involvement reinforces the partnership we have with Microsoft, as well as ICONICS' commitment to providing our customers and partners with cutting edge energy and sustainability solutions the world over."

Awards were presented in multiple categories, with winners chosen from a set of more than 2,800 entrants from 117 different countries worldwide. ICONICS was recognized for providing outstanding solutions and services in Microsoft's CityNext initiative.

The Microsoft CityNext Partner of the Year Award recognizes the partner who best exemplifies how their solutions built on Microsoft technology to address the most pressing challenges for cities and help them do "more with less". The Microsoft platform provides a connected foundation for cities to build on, utilizing solutions and apps across core city functional solution areas and scenarios that present opportunities for cities to address challenges, spur economic growth and transform where they work and live.

The Microsoft Partner of the Year Awards recognize Microsoft partners that have developed and delivered exceptional Microsoft-based solutions during the past year. ICONICS looks forward to being an ambassador of the global CityNext initiative as more and more countries catch the vision of developing smart cities that will conserve energy, protect environmental resources, and inspire the rest of the world to follow in their footsteps.

ICONICS is a leading independent software supplier and Microsoft Gold Application Development Partner of award-winning, HMI/SCADA, energy management, building automation, MES and manufacturing intelligence solutions, with over 300,000 installations in over 60 countries worldwide.

ICONICS software is recommended for automating, monitoring and optimizing a customer's most critical assets and processes and has been selected by over 70% of Fortune 500 companies.

This recent award highlights the continued partnership between Microsoft and ICONICS. In 2013, ICONICS was named the Application Development Partner of the Year Finalist. In 2012, ICONICS was recognized as Microsoft's Sustainability Partner of the Year. In 2010, ICONICS was honored as the US Windows Independent Software Vendor (ISV) Partner of the Year.

"Microsoft's success as a company depends on great partners, and ICONICS is a shining example of the kind of innovation our partner ecosystem drives year after year. We are honored to recognize ICONICS as this year's winner of the 2014 Microsoft CityNext Partner of the Year award, and we applaud ICONICS' dedication to providing innovative solutions that drive results for our mutual customers."

Phil Sorgen

Vice President, Worldwide Partner Group

Microsoft



Sustainability Partner of the Year

ICONICS was chosen for the Microsoft Sustainability Partner of the Year Award for 2012 from nearly 3,000 entrants. Due to our successful implementation of customer solutions based on Microsoft technology and a continued dedication to new technology, ICONICS puts sustainability at the forefront of our innovation. After the second Microsoft Award received in four years; the other being the 2008 Microsoft Partner of the Year Award; ICONICS is proud to produce the cutting edge software that Microsoft has come to expect and appreciate in ICONICS.

Microsoft
Partner Network™



2012 PARTNER OF THE YEAR
Sustainability
Winner

Sustainability is a growing priority for many businesses including many building and manufacturing facilities worldwide. In the United States alone, industry experts estimate that businesses spend about \$100 billion on energy for their offices. This creates a pronounced need for the careful allocation and management of natural resources. Customers, as a direct result of using the ICONICS solution, have realized a 6-12% cost reduction and energy savings in year one, with an ROI in as short as nine months. A prescriptive software approach to identifying sources of energy loss has proven itself in buildings, manufacturing operations and water/sewer industries.

“For its commitment to helping customers increase the energy-efficiency of their operations, ICONICS, Inc. is recognized by Microsoft as the 2012 Sustainability Partner of the Year. By using the Microsoft technology platform to harness the power of real-time data from manufacturing and facility operations, ICONICS has achieved outstanding results in driving customer sustainability efforts and reducing energy costs across all the multiple industries.”

Rob Bernard
Chief Environmental and Cities Strategist
Microsoft

ICONICS' Sustainability and AnalytiX® solutions help reduce energy costs, cut consumption, and curtail carbon-based greenhouse gases generated by manufacturers, buildings and factories. To achieve these goals, ICONICS solutions utilize the complete Microsoft stack including; .NET (WPF, WCF, WF), Silverlight, Active Directory, Windows Server, Windows 8, SharePoint 2010, SQL Server 2012, Internet Explorer, Windows Phone, Bing Maps, IIS and Office 2013.

In today's competitive global economy, everyone is looking for ways to reduce consumption, monitor conditions, lower energy costs and minimize carbon emissions. To that end, ICONICS designed its AnalytiX

suite with the flexibility to cater to any application in any industry. Virtually any process, production or building data that requires summarization, aggregation, comparison and observation over time can greatly benefit from this solution. Applications range from buildings and facilities, smart grids, large water plants, wind and solar renewable energy sites, airports and campus-wide installations; all providing the desired, sustainable results that customers can anticipate when using ICONICS software solutions.



Symphony of Software Saves Millions

Microsoft and ICONICS Partner to Fine-tune Energy and Maintenance Systems

A small, covert team of engineers at Microsoft cast aside suggestions that the company spend US\$60 million to turn its 500-acre headquarters into a smart campus to achieve energy savings and other efficiency gains. Instead, applying an “Internet of Things meets Big Data” approach, the team invented a data-driven software solution based upon ICONICS COTS software solution that is slashing the cost of operating the campus’ 125 buildings saving Microsoft millions of dollars.

The application has been so successful that the company and its partners are now helping building managers across the world deploy the same solution. And with commercial buildings consuming an estimated 40 percent of the world’s total energy, the potential is huge.

Darrell Smith and his team have been working for more than three years to unify an incongruent network of sensors from different eras (think several decades of different sensor technology and dozens of manufacturers). The software that he and his team built strings together thousands of building sensors that track things like heaters, air conditioners, fans, and lights – harvesting billions of data points per week. That data has given the team deep insights, en-

abled better diagnostics, and has allowed for far more intelligent decision making. A test run of the program in 13 Microsoft buildings has provided staggering results – not only has Microsoft saved energy and millions in maintenance and utility costs, but the company now is hyper-aware of the way its buildings perform.

Today the campus spans 500 acres. There’s a soccer field and cricket pitch, miles of wooded walking paths – and 14.9 million square feet of office space and labs that now function as one interconnected system.

Until recently, Microsoft was using disparate building management systems to manage 30,000 unconnected, sensor-enabled pieces of equipment. Imagine a symphony orchestra, but with every musician playing from different sheet music. Then, imagine trying to conduct that symphony – to make sure the music was on tempo, in key, and starting and stopping as it should. Microsoft’s buildings were experiencing data dissonance that would make the works of Igor Stravinsky sound like a barbershop quartet.

This is the challenge faced by many in the Public sector, old legacy equipment that is not perceived to be capable of true energy efficiency!

The question was raised do we rip and replace or try to reduce energy through technology?

“Give me a little data and I’ll tell you a little.
Give me a lot of data and I’ll save the world.”

- Darrell Smith, Director of Facilities and Energy Microsoft



Smith's team created a pilot program in 13 of the buildings on Microsoft's Redmond campus. The team developed an "analytical blanket" based upon ICONICS software to lie on top of the diverse systems used to manage the buildings. The blanket of software enabled equipment and buildings to talk to each other, and to provide a wealth of data to building managers.

The new tool got data out of the buildings – great tidal waves of data that came cascading into the ROC, telling engineers about everything from wasteful lighting schedules to hugely inefficient (but up until then, silent and undetectable) battles being waged between air conditioners and heaters to maintain temperatures.

Engineers are no longer climbing over rooftops, inspecting pump rooms and peering above ceiling tiles, no, engineers are now spending 95% of their time doing engineering. Suddenly, the symphony of sensors was not only following the conductor, its musicians were all playing the same song. As buildings came online and data poured in, it created what engineers called a "target-rich environment" for problem solving.

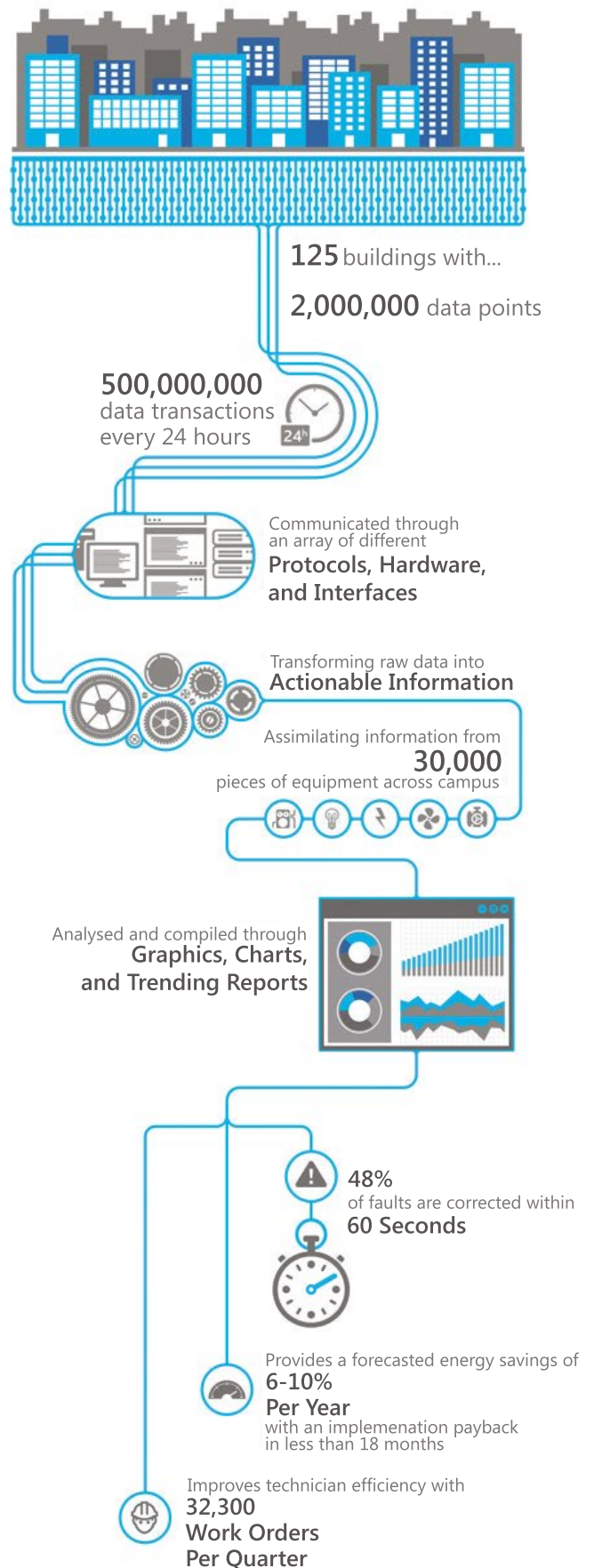
They used to move from building to building, camping out in each for two weeks at a time to inspect and tune it top to bottom before moving on to the next. It would take them five years to tune up all of the buildings on campus, and then they'd start the process all over again. Their tune-ups were making the buildings run more efficiently, saving the company around \$250,000 annually – but the new data gold rush has helped them save six times that much!

ICONICS and its partners are looking to engage with any company, institution or person who is looking to drive energy reductions through technology. We have a suite of tools that can both scale to size and budget. ICONICS promotes an international culture of innovation and are the reigning Microsoft Sustainability Partner of the Year; this award recognizes software innovations built on the Microsoft platform that help organizations, governments and cities around the world reduce their impact on the environment.

For more information please visit us at: www.iconics.com

This article and its images were excerpted and adapted from Jennifer Warnick's feature story "88 Acres: How Microsoft Quietly Built the City of the Future," which was originally published at www.microsoft.com/stories.

Microsoft's Smart Campus



Built using Microsoft technology



Key features

- Reduces energy consumption and costs
- Extends the life of building assets
- Drives labor efficiencies
- Shrinks carbon footprints



Out with the old, in with the new

Two years ago, Washington Athletic Club rolled out a cloud-based solution from ICONICS to monitor its energy usage and regulate consumption in real time. The organisation is already saving more than US\$200,000 per year on its energy bills. Rebecca Lambert finds out more

As six-time winner of the 5-Star Platinum Club of America award, Washington Athletic Club (WAC), based in downtown Seattle in the US state of Washington, has a long-standing reputation for being one of the best athletic clubs in the US. More recently, it has also gained recognition for its energy saving efforts and is now considered to be one of Seattle's greenest buildings – no small feat for an 84-year old construction based somewhere that is consistently ranked among the top green cities in the country.

Two years ago, WAC partnered with project contractor MacDonald-Miller Facility Solutions in a bid to optimise energy performance and reduce its carbon footprint. The ambitious project involved overhauling all of the building's legacy energy systems and replacing them with one digital system from ICONICS that monitors usage and regulates consumption based on real-time needs. Following the project's completion, first year energy savings were in the region of

US\$200,000 – 10% above target, amounting to a 25% reduction in total energy use. This year, the building expects to save even more.

"Since it was built in 1930, WAC has been committed to making continuous upgrades to its facilities to meet the needs of its more than 12,000 members and retain its prestigious reputation as one of the nation's top athletic clubs," says Paul Lowber, WAC's chief financial officer. "One of our ongoing challenges has been how to keep the building contemporary and ensure it runs as efficiently as possible. We've always tried to be good stewards; we were into conservation before conservation was cool! But this latest project has really taken our green credentials to another level."

Financial sense

At 21 stories high, the club is home to 109 hotel rooms; five floors of fitness amenities, including a full-size basketball court and swimming pool; banquet and conference rooms; retail outlets; and more. Any project

covering this kind of scale was always going to be a massive undertaking, and a costly one.

"The building has been expanded twice since it was constructed," says Bill Cohen, the club's vice president of operations. "In 1955 we added a four-story extension and then in the 1970s we built a further eight floors on top of that. The result was that we had three distinct areas of infrastructure and, therefore, three different philosophies for managing the building's heating, ventilation and air conditioning. To put it kindly, we had a real hybrid energy system to deal with. None of the subsystems talked to each other very well and we had two separate areas of digital control that really didn't like each other. So while we knew we could make improvements, we also knew it was going to be very costly, and this held us back."

In fact, when MacDonald-Miller Facility Solutions came up with a proposal that showed WAC just how much money they could save, and how quickly they could realise

Recognising success

ICONICS has recently been announced the winner of the 2014 Microsoft CityNext Partner of the Year award. Chosen for its ability to help customers, including WAC, realise tangible benefits from solutions such as the MobileHMI App, ICONICS exemplifies how partners can take advantage of Microsoft technology to address the most pressing challenges for cities and help them do more with less.

"ICONICS is extremely honoured to have been selected for this prestigious global award from Microsoft," says Russ Agrusa, president and CEO of ICONICS. "This award recognises innovation and success at providing software solutions that help customers reduce consumption and environmental impact. Our CityNext involvement reinforces the strength of our relationship with Microsoft, as well as our commitment to providing our customers and partners with cutting-edge energy and sustainability solutions the world over."



those savings by implementing ICONICS' new building control system, it sounded almost too good to be true – so much so that the project was shelved for a year.

"The statistics were compelling, but we were just going through the recession so we were selective about the projects we were going to start," admits Lowber. "Then some funding came through and MacDonald-Miller agreed to offset the rest of the costs of the project via actual energy savings over the next seven years. This meant we wouldn't be out of pocket and that really got our attention!"

Alongside MacDonald-Miller's payment scheme, funding from a US Department of Energy grant and Seattle City Light incentives helped pay for the project upfront. Both of these initiatives are related to Seattle 2030 District – an interdisciplinary public-private collaborative working to create a groundbreaking high-performance building district in downtown Seattle that will consume 50% less energy by 2030.

"We decided to just go for it," says Lowber. "Now, we're wrapping up year two and it looks like we're going to be saving well over US\$200,000 again."

"It would probably have taken us ten years to complete this project and get to the stage we're at now if we'd tried to do this by ourselves," adds Mike Young, WAC's building operations manager. "It's been nothing but a win-win situation."

Smooth transition

The project involved replacing and integrating WAC's legacy control systems with a new building automation system from ICONICS, converting a three-way, constant-volume chilled water system to a load-based, variable-volume system, and replacing pneumatic actuation with electric, load-based kitchen ventilation controls. Today, the entire building's heating, ventilation and air conditioning are controlled by one digital system that monitors usage based on real-time needs.

"Working hand-in-hand with MacDonald-Miller, we pretty much tore the building apart and put it back together in about a year and a half," says Cohen. "We did a lot of the work upfront – we strung the wires, mounted the hardware and installed a lot of the equipment – and then went back and started changing everything over a piece at a time. This approach allowed us to change to the new system relatively seamlessly – we never had to turn anything off, so people in the building weren't even aware of what was happening. We just switched the controls from old analogue to new digital – at times we even did it in the middle of the day and nobody noticed."

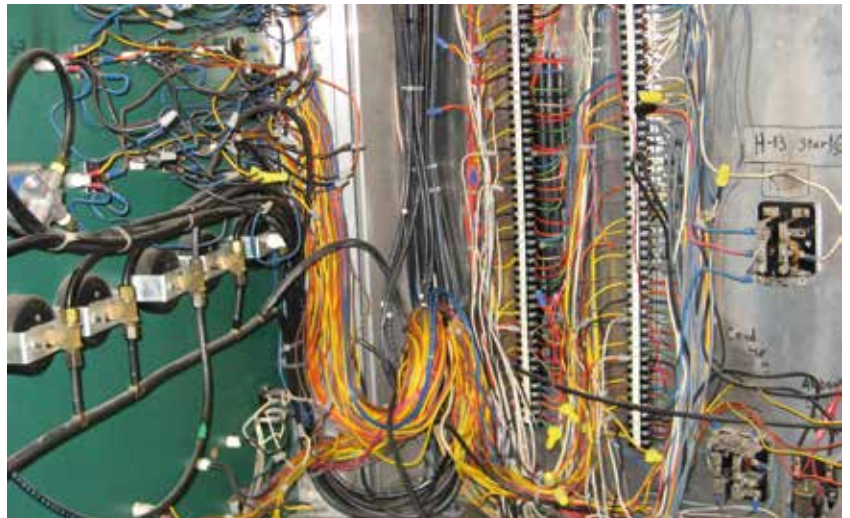
Managing from the cloud

The MobileHMI App developed by ICONICS is a cloud-based business and visual intelligence solution, and is now being used by the WAC team to monitor energy usage throughout the building. Connected to the



Honeywell AX Building Management System via BACnet/IP, the solution provides real-time access to key operational performance indicators through energy performance dashboards and analytics reports. This allows Young and his team of engineers and technicians to remain informed at any time.

MacDonald-Miller considered different ways of deploying the software at WAC before choosing MobileHMI. “One option was to install an on-premise solution,” explains Jeremy Richmond, building performance manager at MacDonald-Miller. “But we realised that this would create a lag getting technology upgrades, and cause issues if we wanted to get data offsite to assist with trouble shooting. When ICONICS first started talking about running a solution on the Microsoft Azure cloud computing platform, we were very interested in it. Today, we are extremely pleased with the results of implementing ICONICS on Microsoft Azure.”



WAC's old analogue energy control system (top) was replaced by modern network-based digital controls (bottom)

Running on a single computer at WAC, the MobileHMI App aggregates all of the building's data in the cloud and pushes it back down to the computers and devices at WAC and MacDonald-Miller, allowing both teams to analyse real-time information.

“The ICONICS software is a really valuable tool,” says Richmond. “Because it's hosted in the cloud, it can be accessed from a range of mobile devices, plus it's robust and scalable. In this particular deployment, it's handling over 2,000 data points, but it can deal with even more if need be. It also takes some of the guessing out of the equation, in that it allows you to see where the problems may or may not be in a facility.”

And because MacDonald-Miller has access to the same information as the club, in some instances it picks up on issues before WAC does. “Working together, we can diagnose problems much faster,” says Richmond.

Tangible benefits

From one dashboard, the WAC team can track and control every aspect of the building and monitor over 2,000 data points in real time. What's more is that if they find a problem, they can look back at the history of a particular set of data points and see where the change occurred. “It's an invaluable trouble-shooting tool,” says Cohen. “It's light-years from the way we used to do things.”

Cover story Smart buildings and infrastructures

The ICONICS MobileHMI App is also helping to dramatically reduce energy consumption throughout the building. “It’s staggering how much less energy we’re using by having the ability to turn things down or off and only use them when the environment calls for it,” says Young. “We’ve experienced real success in our group exercise spaces, for example. On any given day, our exercise spaces can be used for a whole range of activities including yoga, Pilates and aerobics. Some of those classes like a nice cool room, especially the spinning group, but the yoga class likes a warm environment. With the new system, we have the ability to drive the temperatures up and down at will. And we can schedule those changes with very little time between classes. It’s really handy and, most importantly, it takes the controls off the wall.”

The team is achieving similar results in the kitchen area. “We used to turn all the extractor fans on as soon as we fired up the kitchen at 6am,” says Lowber. “Those fans would run all day until we closed at 10pm. Now, with the sensors and a system that measures the air quality in the room, the fans come on automatically when they’re needed. It’s a much smarter system and it allows us to use a third of the energy than we did before.”

A true partnership

Key to the project’s success has been WAC’s partnership with MacDonald-Miller. “They were fundamental to the success of this project,” says Lowber. “They did all of the work and we watched over their shoulders to learn how the system operates. Over the last two years they’ve helped us with the fine-tuning and they continue to ensure we’re using the equipment as effectively as possible. Because they have access to our system, they can provide immediate assistance without having to send out a technician each time.”

Even though WAC is already achieving impressive results, the work doesn’t stop there. “We’re working closely with the WAC team to help them use their data-rich environment to further modify their building practices and become even more energy efficient,” says Perry England, vice president of building performance at MacDonald-Miller. “We’ve achieved impressive savings



WAC is now considered to be one of Seattle's greenest buildings

already, but we can do so much more. Our next step is to get the team accessing the MobileHMI dashboard via mobile devices so that they can always see what’s going on in the building no matter where they are.”

Based on this project’s success, MacDonald-Miller has already rolled the ICONICS system out to other buildings. “Microsoft Azure gives us massive scalability and makes the MobileHMI App an extremely adaptable solution,” says England. “We can take what we’ve done with WAC and apply it to a small building or a large campus – in the most cost-effective way. Regardless of the types and sizes of buildings we are managing, we can provide them with full business analytics. Microsoft Azure has undoubtedly been key to this project’s success. We have been able

to give WAC a business model that has turned their building into a cash machine.”

For anyone still unsure whether to embark on a smart energy saving project, Paul Lowber, Bill Cohen and Mike Young have two words of advice: don’t wait. “Do it now,” says Lowber. “The technology is already out there, so don’t wait for the next big leap. Our financial agreement with MacDonald-Miller has meant that we haven’t had to pay upfront, but the energy savings we’re making so far would have ensured a fast return on investment anyway.”

“And whatever you do, make sure that the system you install is scalable,” adds Young. “We have confidence in our solution and know that it will scale and adapt to our needs. Having access to unlimited computational horsepower is invaluable.”

Allowing full visibility of buildings' equipment

Melissa Topp, director of global marketing at ICONICS, explains how fault detection and diagnostics is influencing a paradigm shift in the way organisations monitor, detect and repair faults within building equipment

Widespread smart city initiatives and government sustainability incentives are putting pressure on public sector organisations to reduce consumption and cut energy costs. Because of this, ICONICS have seen increasing interest in smart buildings solutions that improve monitoring of building automation equipment and energy systems to identify faults and improve efficiency.

A major challenge is getting insight from disparate energy systems and building automation equipment that span organisations' campuses or facilities. Facility managers lack a single view of their facility and, without the ability to correlate the data, they're unable to recognise patterns that equate to the loss of millions of dollars in energy costs.

Some organisations are cautious of smart building solutions because of a preconception that they will have to rip and replace all the equipment in their buildings. But that's not the case with ICONICS' Facility AnalytiX. Because it is an open integration platform, any building automation equipment or device can be integrated into the solution.

ICONICS' Facility AnalytiX is driving a paradigm shift away from retro-commissioning to continuous commissioning. Historically, facility managers of large campuses such as universities, government organisations, hospitals or airports will follow a maintenance schedule and work their way through each building to monitor every piece of equipment and system. In some cases, they may only get to some buildings once every five years. And after reviewing and repairing the faults, the equipment starts to degrade again as soon as they leave the building. In contrast, Facility AnalytiX allows users to have full visibility of their entire facility and continuously casts a net for faults. The solution then allows them to dig further into the fault information and make informed decisions about where to spend resources based on costs and priorities.

Based on fault detection and diagnostics (FDD) technology, Facility AnalytiX has three main features: customisable rules for detecting faults; dynamic cost calculations to help prioritise faults; and visualisation to diagnose and repair faults.

Facility AnalytiX comes with more than 300 tested and preconfigured fault rules for common building automation equipment, while advanced diagnostics suggest probable causes for faults. Historic trends are also provided so users can view how many times the fault has occurred over recent weeks, months or even years to determine a recurring problem. All of this is visualised as easy-to-consume text, graphs or charts. For improved mobility, users can deploy the solution on a cloud connector and access the data from anywhere at any time,

meaning a facility manager can monitor the status of equipment across multiple buildings and campuses while working in another facility.

Once public sector organisations are successful with monitoring and repairing faults, they are then able to involve citizens in their wider sustainability strategy. For example, students could be given access to data regarding which dormitory is the most energy efficient, to incentivise them and encourage a wider acceptance of the strategy. Likewise, neighbourhoods could compete for the most efficient energy usage or the lowest water consumption. Involving all possible stakeholders in the process is the secret to a truly successful deployment, with Facility AnalytiX as its cornerstone.

“Any building automation equipment or device can be integrated into the solution”

Melissa Topp

ICONICS



Facility AnalytiX's dashboard provides easy access to information

Software Solutions

ICONICS Software Solutions cover a wide variety of customer and partner visualization, control and analysis needs. For more information, visit ICONICS online at www.iconics.com.

HMI/SCADA

ICONICS creates 64-bit and 32-bit HMI/SCADA software suites that help customers visualize and control processes in a wide variety of industries and applications worldwide.

GENESIS64™ is a mission critical, scalable, 64-bit HMI/SCADA and Building Automation solution utilizing the latest visualization technologies. Delivering high-powered, easy to use 2D, 3D and GEO SCADA HMI visualizations with natural user interfaces, it provides universal connectivity through certified OPC, OPC UA, BACnet, SNMP and Web Service protocols.

GENESIS32™ provides advanced visualization solutions for 32-bit platforms, connecting plant-level operations to the enterprise and turning real-time data into a competitive advantage.



Analytics

ICONICS has created an analytics suite of products that transforms large amounts of real-time data from manufacturing and facility operations into actionable intelligence, driving improvement in productivity, efficiency, quality and sustainability.

Energy AnalytiX® is a sustainability and energy management solution that helps reduce energy costs, cut consumption and curtail carbon-based greenhouse gases generated by manufacturers, buildings and factories. Energy AnalytiX' ability to integrate data from any electric, gas, fuel, steam or water meter, as well as operations and business variables, delivers the insight needed to identify improvement opportunities.

Facility AnalytiX® is a predictive equipment diagnostic solution that uses an advanced Fault Detection and Diagnostics (FDD) Engine to analyze all available information to detect and predict faults in equipment. Incorporating a library of over 300 standard fault rules, Facility AnalytiX advises management, operators and maintenance personnel of actions to prevent equipment failures or excessive use of energy.



Quality AnalytiX® is a real-time Statistical Process Control (SPC) quality analysis solution, offering an extensive set of SPC calculations, control charts, portal dashboard views and standard quality reports. This information can be visualized in a variety of combinations to help pinpoint quality outliers. It enables operators, quality personnel, manufacturing engineers and management reduce scrap and improve production yields in any application.

Productivity Analytics™ empowers decision makers at all levels of the enterprise with real-time and accurate information to help drive global operational efficiency and strengthen competitive market advantage. Gain insight into OEE, cycle time, yield and many more KPIs. Visualize, analyze and report on any Web browser or Microsoft SharePoint portal.

Alarm Analytics™ provides insight into alarm frequency, statistics, user acknowledgements, priority distributions and hidden correlations, helping personnel to visualize, analyze, and manage alarm information.

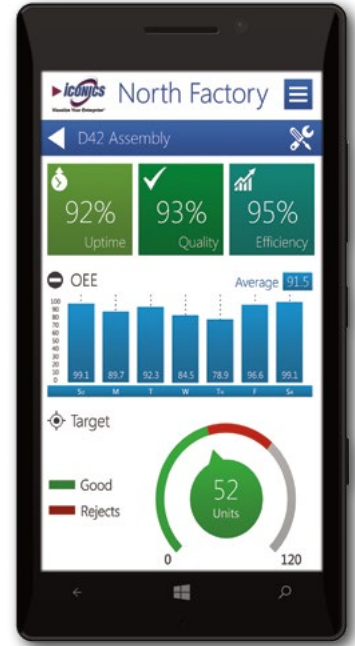
Software Solutions

Web and Mobile Solutions

With ICONICS' Mobile and Web Solutions, the graphics, dashboards, trends and reports that users create to manage operations can be viewed and analyzed from Web-connected devices, providing secure management access from your plant, factory, building, campus or via phone/tablet on the go.

WebHMI™ uses Web browsers to provide an interface with ICONICS' graphics, trending and alarming applications (applications within the HMI/SCADA suites) with no need to install any software onto the remote clients or to export or convert displays.

MobileHMI™ provides real-time mobile access to critical data in manufacturing, industrial and building operations, maximizing the value of corporate data and improving ROI and overall business performance. Deliver dazzling graphics, charts, trends, grids and push alert notifications to any smartphone or tablet. New **KPIWorX™** allows for the creation of self-service dashboards, with responsive design technology to deliver a consistent view on Any Glass™. New **MobileHMI** augmented reality technology visualizes real-time information, streams video and fuses information from multiple sources to location-aware smart mobile devices.



Manufacturing Intelligence

ICONICS' Manufacturing Intelligence suite of solutions provides users with accurate up-to-date, real-time information from all enterprise systems, resulting in increased profitability and streamlined business efficiency.

BizViz™ translates manufacturing data from the plant floor into actionable intelligence for decision makers at the enterprise level, integrating data from multiple data sources into visual summaries through powerful dashboards and reports.

BridgeWorX™ performs efficient data exchange to and from any database or data source. With a unique visual transaction data-mapping configuration wizard, users are able to transfer information, including commands, to and from real-time OPC or BACnet devices, Web services and corporate business information systems.

ReportWorX™ is a powerful reporting tool that turns volumes of data into manufacturing intelligence. Connecting to multiple data sources, including real-time OPC and BACnet data, as well as databases and Web Services, ReportWorX processes data from the plant floor, corporate business systems and everywhere in between.

Historians

ICONICS' Historian family of products provides flexible data historian solutions, whether for high speed or cloud-based applications that demand efficient data storage to archive years of information, ensuring that critical data is never more than a few clicks away.



Hyper Historian™ is a high-performance, mission-critical, industrial data historian designed for the most demanding applications and to log greater than 100,000 tags per second. Hyper Historian works with multiple data sources across the enterprise including OPC UA Servers, BACnet, SNMP, Web services and many more.

Hyper Historian is also one of the first industrial plant historians available on the cloud. ICONICS Cloud Historian leverages Microsoft Azure to visualize Big Data on any desktop, Web browser or mobile device, reducing IT costs with simple setup and minimal maintenance requirements. This allows customers to infinitely grow applications based on changing business needs.

Global Technical Support

ICONICS has created a service and support structure to assist customers and partners with our software solutions. We continually invest in the latest technologies, linking our support and engineering organizations together electronically. When you call our support line, or access our online support portal, you are routed to the appropriate technical experts based on your specific need/topic and the time of day. You will receive the same world-class service from all of our global support offices.

Our support offices are staffed with experts that have immediate access to multiple versions of all of our software products, so we can reproduce the same steps and actions that you are performing. In addition, with your approval, we have the ability to remotely access your system, so that we can observe your operations first hand and can provide hands-on support.

Customers can access support via the communications method that is most productive for them: phone, email or online portal. Those who select our customer portal can access the current status of any issue they have reported and all activity performed on it at getconnected.iconics.com.

ICONICS Technical Support Features:

- "Follow the Sun" Telephone Support Option
- 24/7 Telephone Support Option
- Technical Support Centers Around the Globe
- Global Case Tracking System for Easy Access
- Support Options Include: Online, By Phone or Email
- Interactive Case Resolution Via Remote Sessions
- Experienced, Trained Support Staff
- Escalation of Cases As Needed
- Installation/Upgrades/Licensing Assistance
- License Replacement Assistance
- Multiple Software Versions Supported

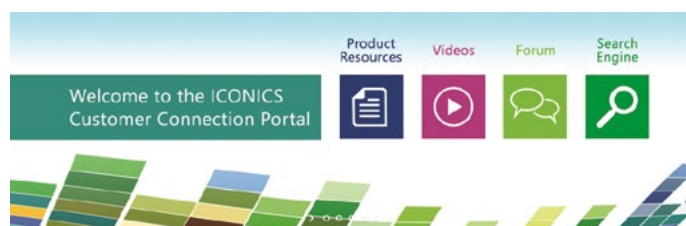


Customer Connection Portal

The ICONICS Customer Connection Portal is a one-stop online resource for all your support needs. At the Customer Connection Portal, you can search the ICONICS Knowledgebase, review Application Notes, watch "How To" videos, engage with the Customer Forum and Blog, download software updates and view Frequently Asked Questions. You can even see your active SupportWorX Plans and support cases.

The Customer Connection Portal complements our telephone support and gives our customers and partners the ability to communicate with ICONICS and to collaborate with peers. You will also have direct access to many of the resources used by our technical support and professional services staff.

Visit getconnected.iconics.com to get started today!



ICONICS Customer Connection Portal Features:

- Extensive Knowledgebase
- Broad Range Search Engine
- Product Feature Training Videos
- "How To" Videos
- Access to "My Support Cases" for Current Status
- Review Open Items for You or Your Customers
- Forums and Connection to Other ICONICS Users
- Software Updates and Service Packs
- Full Release Downloads and Hot Fixes
- Sales Support Information
- Tips of the Day
- News
- FAQs

Consulting Services

There are times when applications require design, implementation or specialized startup assistance. In these situations, you can work directly with our highly skilled applications engineers at our Global Support and Service Centers. Our applications engineers have extensive experience implementing customer solutions with our many products. Our professional service team offers proof of concept design assistance, problem solving, expert technical support and a collaborative effort between the end user, the system integrator and ICONICS' engineering staff.

QPS Services are provided to complement and support the strong engineering capability of our Systems Integrators and Distributors.

QPS is purchased on a Time/Expense basis or a Fixed Price/Delivery of Scope of Work basis. Typical uses for this service include: system architectural design guidance, custom development and scripting assistance, startup assistance, custom training, proof of concept demonstrations and additional resources to help meet critical project schedules.

Quality Professional Services Features:

- Well-trained Application and System Engineers
 - Provides Back-up for Tight Deadlines
 - Assures that Systems are Properly Designed
 - Guidance on Most Efficient User Strategies
 - Teaches ICONICS' Product Features Capabilities
 - Configuration Assistance
 - On-site/In-house Services
-



Training

An investment in ICONICS Training will result in reduced engineering costs and greatly improved system designs. ICONICS training classes are packed with hands-on, in-depth interactions with our products. Tips and shortcuts offered by ICONICS' expert instructors will help you develop your applications quickly and efficiently. Training is available in our training centers around the world.

Certification is offered to any student who successfully completes an ICONICS provided training course. Training is an essential component of ICONICS' channel certification programs, including its Systems Integrator Program (SIP), Distributor and Representative Certification Programs.

ICONICS Training Features:

- Globally Scheduled Classroom Training
 - Extensive Training Books & Class Materials
 - 2-day and 3-day Classes or 1 Week Packages
 - On-site Training with Customer Specified Content
-

ICONICS is dedicated to providing the highest quality of training. We offer an array of training courses on ICONICS GENESIS64, GENESIS32, Hyper Historian, AnalytiX and BizViz Product Suites. Official ICONICS training is scheduled at ICONICS' global support centers. Custom training courses are available by request and may be conducted at customer locations. For additional information, please contact ICONICS or its sales representatives.

All courses are a combination of lecture and hands-on training. What you develop during training goes home with you, along with a hard copy of the documentation for future reference.

Contact ICONICS to schedule customized training to fit your organization's exact needs, either in our facilities, or yours.

Courses are scheduled in ICONICS facilities around the world, where and when you need them.

“We have used ICONICS software products almost exclusively on our installations since 1991. Their consistent high performance and value are always major factors in the success of our projects. The versatility and fully customizable nature of the software allowed us to adapt perfectly to the varied technical issues we encountered on the Solebury campus and to precisely tailor the HMI to fit the needs of their personnel.”

Walter L. Horigan

President

Vortechs Automation, Inc.

ENERGY SMART BUILDINGS



Town of Arlington/Peirce School

Arlington, MA



Town of Arlington
State Seal

Town of Arlington

Project Summary

Arlington Public Schools sought to consolidate its summer-school operations into one building at The Peirce School. Anticipating the need for an increase in air conditioning, the district immediately purchased a new chiller for the school building. The Regional Energy Manager for the town of Arlington (and also of nearby Bedford, MA), Ruthy Bennett, is responsible for looking for ways to reduce energy costs, a high priority for a town named a Green Community by the State of Massachusetts in 2010. The town and school district, both operating on tight budgets, wished to ensure that their decisions to consolidate summer school classes to one location and to purchase a new chiller made financial sense. With the goal towards lower energy and operational costs, Bennett sought energy management software that would be more beneficial than what she considered “glorified schedulers”. While researching solutions, she learned of ICONICS’ Facility AnalytiX being used to help cut energy costs at Microsoft’s headquarters in Redmond, WA. After taking a look at competitors’ offerings, Bennett, the town and the school district decided on ICONICS.

Based on advanced Facility Detection and Diagnosis (FDD) technology, Facility AnalytiX uses customizable fault rules to weigh the probability of equipment failure and alerts staff to actions they can take when faults occur. When equipment fails, the software analyzes current and historical information (along with symptom/cause relationships), executes probability algorithms, and provides a list of possible causes sorted by probability.

To save on project costs, the town/school district/Bennett opted to utilize Facility AnalytiX’ ability to integrate



The Peirce School's Main Control Screen,
Generated Via GENESIS64™

About Town of Arlington/Peirce School

The Peirce School, a public elementary school located in the town of Arlington, MA, teaches approximately 280 students from the nearby Peirce district, from other Arlington districts (through open enrollment) and from Boston (through the Metropolitan Council for Education Opportunities [METCO] program). The school is named after Captain Solomon Peirce, who served in the Revolutionary War. The original school building was built in 1924 and demolished in 2001. The current school facilities were built in 2003.

ICONICS Software Deployed

The Town of Arlington, working with Microsoft, selected ICONICS GENESIS64™ HMI/SCADA suite, in addition to the AnalytiX® suite of analytical tools, including Facility AnalytiX predictive software for facilities management.

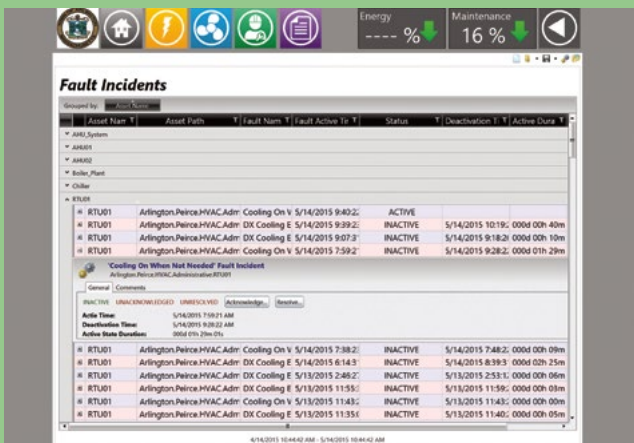
with Microsoft’s Azure cloud computing platform. With no additional hardware required, installation was quick. ICONICS engineers connected equipment with control boxes that communicate with the cloud. Using Facility AnalytiX with Azure also allows the school district to access and store millions of data points across a wider range of time, rather than their previous 72-hour restriction.

Benefits of the System

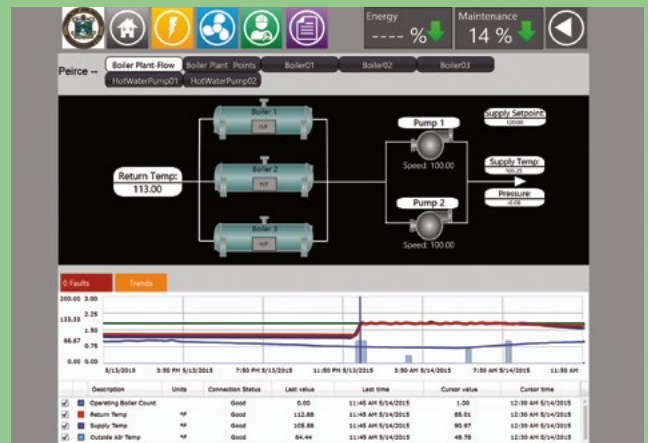
The installation of ICONICS software, especially Facility AnalytiX, immediately paid off during the summer session and continued to do so into the cold New England winter. In the summer, Facility AnalytiX

month—and in the time it took to get the report, I could miss seeing a problem for a month.”

Using ICONICS software; Facility AnalytiX, in particular; has helped the school district cut 15 to 20 percent of the time that third-party HVAC contractors spend searching for causes to malfunctions. Natural gas consumption was reduced by roughly 20 percent at the school over its first winter with the new software compared to the previous year, according to Bennett. With such constant commissioning, the town and school district are able to see how repairs or schedule changes effect thermal comfort and energy consumption instantly,



A Maintenance Alarm Screen Created Through ICONICS Facility AnalytiX



Boiler Plant Monitoring Dashboard Created in GENESIS64

was used to determine that the new chiller was cooling the building to within half a degree of perfection. Although there were no complaints by the occupants, this meant the system was not running at peak efficiency. The software showed excessive on/off cycling by the chiller about every five minutes. Using past bills for comparison wasn’t an option since the chiller was newly installed. Facility AnalytiX showed that the chiller was overcycling. The right repairs were then made, saving not only on energy costs but also on the chiller’s total lifespan – since constant cycling would put more wear on the equipment.

“ICONICS technology was the most user-friendly,” said Bennett, “providing a dashboard with all the information on one screen. I wouldn’t have to call a third party, who would then write a report each

without waiting for user complaints or the next month’s utility bill. The actions and results are stored via the software and this data can be used at any time within its extended trending capability. The town and school district are hopeful that the results of implementing Facility AnalytiX and Azure can spur behavioral changes that can be quantified and applied to other locations within the town

Conclusion

The Town of Arlington and its school board were pleased enough with the implementation of ICONICS Facility AnalytiX at Peirce School that they’re looking into applying it in another Arlington school. Bennett is seeking funding to roll out the solution throughout the district and town and then possibly within other Massachusetts cities and towns. For software that literally made summer school “cool”, there seem to be no limits.

BAA/Heathrow Airport Middlesex, United Kingdom



*Entrance to T5 Terminal
Heathrow Airport*



A Control Screen at T5 Terminal at Heathrow

About BAA/Heathrow Airport T5 Terminal

The T5 Terminal at London's Heathrow Airport was one of Europe's largest construction projects, funded by BAA at £4.2 billion. Initial planning for the facility, with a planned capacity of moving 30 million passengers a year, began in 1985 leading to a national design competition in 1989, then a four-year public inquiry, the longest ever on record. Permission was granted in November 2001 to begin development, a major step in providing BAA its first new gateway at Heathrow since Terminal 4 opened in 1986. Construction of T5 remained steady and on time as the terminal's March 30, 2008 opening day approached. BAA sought a comprehensive solution to deliver a very intelligent control room to operate the new T5 Terminal.

ICONICS Software Deployed

ICONICS GENESIS32™ OPC Web-enabled HMI/SCADA suite was selected by Ultra Electronics Airport Systems, a "first-tier" supplier for T5's Building System Integration (BSI) and the BAA Systems Team.

Project Summary

The new terminal was designed to be a fully integrated facility, monitored through a central Terminal Service Centre (TSC) and mobile devices. A common user interface was needed to access heating, ventilation, lighting, fire, elevator, CCTV, and security systems as well as to centralize alarm management and automate system interaction.

At its opening, T5 included over 50 different systems, producing a massive tag count of over 3 million, handled easily due to the robust nature of GENESIS32. In addition, by using open industry standards based on OPC, the resulting architecture has been designed to provide flexibility for future expansion and integration, as required by the customer.

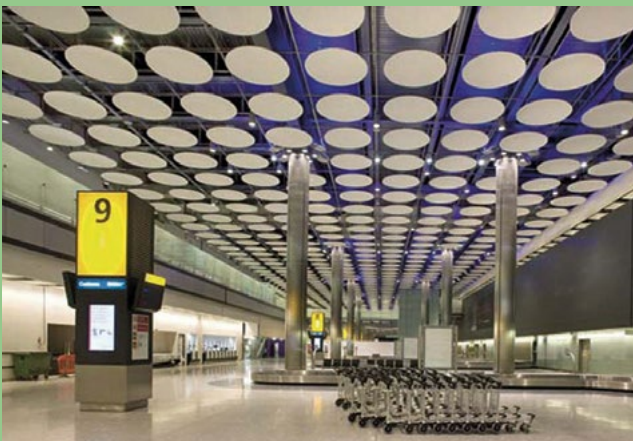
Benefits of the System

The ICONICS platform as implemented by Ultra provides better information to the users than any previously designed model, allowing the terminal operators to respond more quickly to changes and situations. It provides a global view of all operations within the building and allows drill down, by pan and zoom, to any asset or area of interest.

Allowing connectivity with many industrial devices and control systems through a common interface, OPC was fundamental to achieving seamless integration within the BSI and giving users the ability to both see and react to cause and effect within the terminal. One extremely important feature was future flexibility in both technical and operational spheres. During the selection process, this was a strong driver for Ultra's and BAA's selection of ICONICS as the core of the BSI.

Conclusion

ICONICS, one of the world's largest suppliers of controls software front end packages, clearly demonstrated a defined development path and road maps designed to keep their product at the forefront of the market and deliver an extended, useful lifecycle of their solutions for BAA.



Baggage Claim at Heathrow Airport's T5 Terminal



Heathrow Airport's T5 Terminal

Case Study Details

BAA and Ultra Electronics Airport Systems brought ICONICS on board due to several factors, including:

Minimizing Risks

- Development of standard symbols/properties
- Consistent Tag structure and display creation
- Minimum number of interfaces

Meeting Requirements

- Flexibility in using BSI in an airport terminal
- Simple maintenance via off the shelf product
- Complex functionality via point and click

Details Continued

Keeping Pace with Industry Developments

- Open industry/IT standards (SQL, OPC, OLEDB, XML)
- Deployment on Microsoft OSs and Internet Explorer
- Mobile Device Integration

Brézillon

Margny-lès-Compiègne, France



Brézillon Headquarters in Margny-lès-Compiègne, France



A Brézillon Building Control Screen Created with GENESIS64™

About Brézillon

Brézillon, an affiliate of Bouygues Bâtiment Ile-de-France, is an industrial civil engineering, construction management and rehabilitation company located in Margny-lès-Compiègne, in the Picardy region of France. Founded in 1920 by André Brézillon, it became the first construction company in Picardy in 1945, joining the Bouygues group in 1993 as a general building division.

ICONICS Software Deployed

Brézillon, working with system integrator, CR System of Pointoise, France, and design consultant, BETHIC of Enghien Les Bains, France, selected ICONICS' GENESIS64™ HMI/SCADA suite, including AlarmWorX64™ Multimedia distributed, enterprise-wide alarm notification system and

WebHMI™ Web-based, real-time automation. The company also selected ICONICS' ReportWorX™ real-time reporting, charting and analytics software.

Project Summary

Brézillon was tasked with the design and construction of a building compatible with the ideas of the Grenelle de l'environnement, a French consortium of government, labor, industry and other related organizations with the goal of improving ecology, energy, sustainable development and territorial planning. An edict for the building was that it must be built with respect for environmental quality and safety, with the means to monitor and regulate facilities automatically in order to reduce energy costs.

The construction company, working with CR System and BETHIC, had a development time of 14 months, including finalizing electric work and an automated HVAC system. The selected building automation control was meant to tie into multiple procedures and equipment, including:

- Production of calories/kilocalories via two heat pumps (air/water)
- Production of high yield energy recovery (78%) via rotary-equipped CTA turbofan
- Terminal heat treatment via chilled beam induction and motorized air dampers
- Housing of local solar energy controls
- CO₂ presence detection/rate metering and window controls
- Automatic monitoring and regulation
 - More than 2,400 checkpoints (CVCD/CFO/plumbing)

- o Control of energy performance: 102 electrical meters and hydraulic energy

Benefits of the System

ICONICS GENESIS64 was installed to meet several of Brézillon’s requirements, including the ability to handle over 4,000 data points (including SAIA controls), integration with BACnet, ModBus and OPC communication infrastructures, and compatibility with Microsoft Windows®. The ICONICS software adheres to the consortium’s environmental goals, provides diagnostics and support, and helps maintain comfortable

ible in its integration with other building management system variables. The construction company received a user friendly, intuitive solution with high quality graphic user interface controls. Development with GENESIS64 was considered “strictly tailored to the customer needs”.

Conclusion

ICONICS was able to help Brézillon, CR System and BETHIC meet their Grenelle de l’environnement compatibility requirements. Future plans include expansion of the system into energy monitoring and



Building Temperature and CO2 Monitoring



Air Exchange, Blowers, Dew Point Monitoring

conditions for occupants. Brézillon has found the software to be a user friendly, intuitive, open, scalable and comprehensive building automation management tool. The customized graphical development through GENESIS64 allows non-technical users to be able to easily control their workspace environment. A panel-based PC at each office entrance allows occupants to control the temperature. With one click, a user can display current temperatures and can regulate any setpoints. In line with the company’s energy awareness initiatives, the system can also show which windows are open to help users decide whether additional air conditioning is needed. In addition, any supervisor-level changes are automatically reflected on the panel PCs.

Brézillon, CR System and BETHIC selected ICONICS for its ability to provide a Thin Client that was flex-

preventive maintenance, with the goal of reducing energy consumption and greenhouse gas emissions.

Case Study Details

Brézillon and CR System selected ICONICS software for their building controls solution due to:

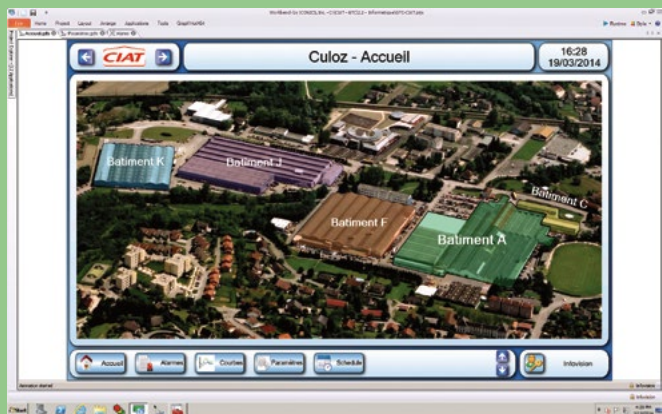
- Ability to Handle a Large Number of Data Points
- Integration with BACnet, Modbus and OPC Communication Infrastructures
- Quick, Intuitive Use by Non-Technical Users
- Integration with Microsoft Technologies
- Scalability for Easy Expansion
- ICONICS’ Shared Adherence to Environmental Policies and Goals



CIAT Culoz, France



Culoz Countryside
in France



Operations Overview

About CIAT

Situated in the Rhone-Alpes region of France in Culoz, CIAT has been an expert producer of air conditioning, refrigeration and heating units for 80 years. CIAT also leads the market in sustainable solutions related to heat exchange and air handling and continues to be a trusted resource for comfort, air quality and energy optimization. A company dedicated to the environment and in using energy wisely, all of CIAT's products and facilities are in accordance with the provisions of the Grenelle Environment Round Table.

ICONICS Software Deployed

CIAT implemented ICONICS' GENESIS64™, ScheduleWorX™, BridgeWorX™, WebHMI™ and

"To summarize ICONICS, I would say they were professional, responsive and competent."

Eric Blancard
Project Manager
CIAT

OPC Server, along with Microsoft SQL Server 2008, across their entire building following a three month pilot program.

Project Summary

In 2013, CIAT employed a workforce of 2,100 people (1,150 in the Rhône-Alpes plants) with a turnover of 256 million Euros. Keeping a steady workforce was an important piece of the upgrade to CIAT. Protecting the environment and using energy wisely were two other components CIAT vowed to never compromise on, and pledges that these are still core business values. Its development subscribes to optimizing energy consumption, improving air quality and ensuring a comfortable atmosphere inside buildings, while providing the best support available to clients.

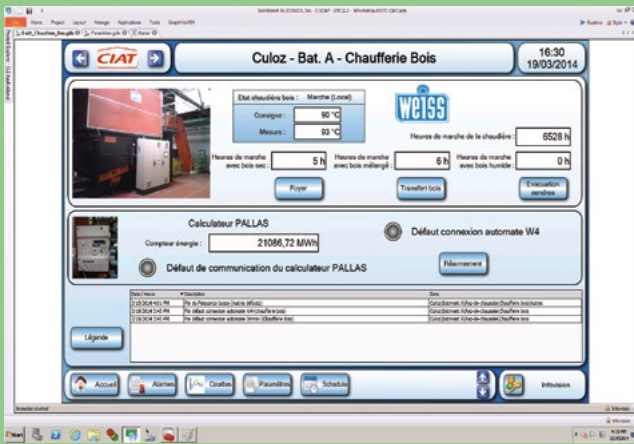
Self-described as a company dedicated to the world around them, it is essential to CIAT to stay current with cutting-edge industry trends and research. Due to these priorities, CIAT decided it was time to investigate 64-bit monitoring systems that aligned with their values for innovation and sustainability. This search ultimately led them to ICONICS due to

their best in class 64-bit solutions, Microsoft Gold certification, and their Web-client connectivity, as well as the scalability of the solution. CIAT was also impressed with the unification and standardization of communications with all their equipment (e.g. meters, compressors, etc.) through OPC technology. ICONICS software provided the ability to integrate information from a broad range of equipment and systems used without breaking existing connections. “Today we must design living and working spaces that are safe, comfortable and sustainable,” said Eric Blancard, CIAT’s Project Manager. “CIAT is strongly

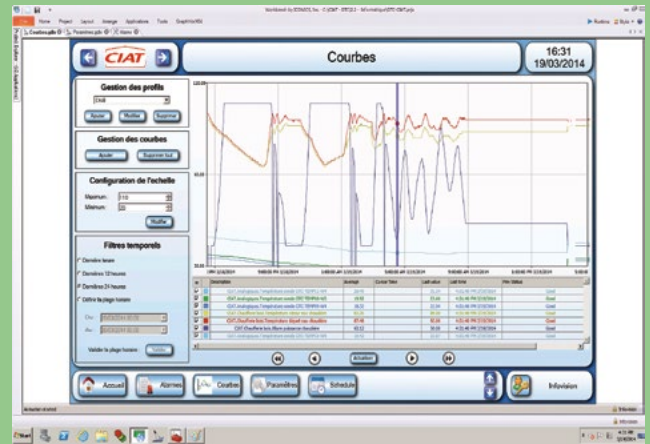
and Italy. With one server and 500 tags, the project modernized the way that CIAT had been operating.

System Benefits

With seven buildings of 92,000 square meters of office and production space, CIAT used ICONICS to centralize the Culoz Servers, access data remotely via Ethernet, view monitoring and consulting reports via the Web, and control devices on a set schedule. They were also able to reach their sustainability goals through ICONICS’ 64-bit technology. Using OPC technology, CIAT can now interface with Mo-



GENESIS64 Dashboard



Energy Monitoring Screen

committed to environmental protection and has made this concern an integral part of its development strategy. CIAT’s expertise is based on three fundamental axes: air quality, comfort and energy optimization.” Luckily, ICONICS’ values and software fit perfectly into these priorities.

In initial planning meetings, CIAT broke the implementation process out into phases. The first involved laying the foundation of the solution, (including designing the hardware and software architecture). Then CIAT began the implementation of ICONICS software and rolled it out across the entire facility over the course of one year. The CIAT Group has six industrial plants based in France (with four plants, three of which are located in Rhône-Alpes), Spain

biCall, Europe’s leading unified event communication service, as well. CIAT was very pleased with the tremendous success of the ICONICS system.

Conclusion

After the project concluded, CIAT analyzed their initial goals and evaluated, based on data and surveys, how well ICONICS’ solutions met their expectations. The results made everyone very excited. Not only had the project goals been met, but CIAT found the system easy to configure and operate as well. Thanks to ICONICS’ GENESIS64, CIAT has high hopes of running an environmentally friendly, low-impact operation and has plans to add Energy AnalytiX® to various locations to improve their energy consumption and conservation even further.



Federation Tower/ ARMO Group Moscow, Russia



A View of the Federation Tower



HMI/SCADA In Action at the Federation Tower (West)

About The Federation Tower/ARMO

The Federation Tower in Moscow, Russia is to become the tallest building in Europe, as well as Europe's first "Supertall" building. The complex is divided into two towers with a shared podium with a combined floor area of 423,000 square meters. Tower 1 is 360 meters and 93 stories tall with 207,000 square meters of floor space and is to be used primarily as office space. Tower 2 is 242 meters and 62 stories tall with 110,500 square meters of floor space and will be used as a hotel and residential apartments.

At the top of both towers, there will be a 360°-view observation deck and restaurant. Eight above-ground floors and one underground floor will contain over 50,000 square meters of shopping space. When com-

pleted, the complex will feature the world's tallest spire, soaring up to over 506 meters and will have the world's highest glass elevators, ascending at a rate of 18 meters per second.

The building automation and security systems in the West Tower are being handled by the ARMO Group, a building systems, automation and management firm also located in Moscow.

ICONICS Software Deployed

Planners for the Federation Tower and consultants from the ARMO Group suggested an OEM version of ICONICS GENESIS32™ Web-enabled, OPC-integrated HMI/SCADA suite. Johnson Controls, Inc. (JCI) utilizes GENESIS32 technology within its Metasys® M5 Workstation building management system.

Project Summary

Construction on the Federation Tower began in 2005 and will be complete in 2013. ARMO Group is assisting with the JCI building controls and automation network in the West Tower, handling over 21,000 data points spread amongst 1,600 automated devices and using more than 20 digital integrations. Among the systems now integrated with JCI M5 (ICONICS GENESIS32) are HVAC, Water Supply, Cooling Center, Heating Center, Electrical Transformer Substations, Electrical Distribution System, Uninterruptible Power Supplies, Diesel Generators, Fire Alarm System, Lighting Control, Elevators, Apartment/Room Control, Common Area Microclimate, and Central Dispatching Room.

Presently, the project encompasses over 41MVA of electrical power, 5.7 and 3.8MVA of backup DGU power, 35MW of cooling and 42.5 Gigacalories of heating. Over 40 JCI Network Controllers (NCMs) are utilized along with over 300 Echelon Lonworks® Field Level Controllers. There are seven stationary building control/automation management workstations throughout the West Tower as well as two portable workstations. All workstations in the Central Dispatching Room are connected to a multi-functional video wall, consisting of 96 high-contrast plasma panels. Throughout the year, all information about

Conclusion

The group managing the Federation Tower is planning on upgrading their building management system, increasing to 50,000 data points, easily manageable with JCI M5 (ICONICS GENESIS32).



*The Federation Tower Under Construction
Moscow, Russia*



*The Building Control Center Inside
the Federation Tower (West)*

trends, alarm lists, access lists, etc., is archived to two clustered servers for network storage and can be accessed online at any time based on access permissions. Among the protocols used throughout the network are LonWorks, N2 Open, Modbus and BACnet. In fact, the JCI-networked West Tower is able to communicate with the Sauter-networked East Tower via BACnet integration.

Benefits of the System

The JCI M5 Workstation OEM version of ICONICS' GENESIS32 HMI/SCADA suite provides multiple benefits including scalability as the system grows, wide integration (via BACnet, OPC, etc.), enhanced graphic visualization, Web accessibility, and more.

Case Study Details



ICONICS provides the ARMO Group with a solution that includes:

- Scalable, Fault Tolerant Workstation
- Dynamic, High Quality Graphic Capability
- GUI Personalization by User/User Type
- Trend Collection, Storage and Analysis
- Interface Between Integrated Systems

International Iberian Nanotechnology Laboratory Braga, Portugal

INL

The International Iberian Nanotechnology Laboratory (INL), Braga, Portugal



Clean Room Floor Monitoring/Control

About International Iberian Nanotechnology Laboratory (INL)

The International Iberian Nanotechnology Laboratory (INL) (<http://inl.int>), located in Braga, Portugal, is an intergovernmental organization created to foster interdisciplinary research in nanotechnology and nanoscience. Aiming to become a vital part of Europe's scientific area, INL provides a high-tech research environment addressing major challenges in nanomedicine, nanotechnology applied to environmental and food control nanoelectronics, as well as nanomachines and molecular manipulation at nanoscale.

With a total area of 28,000 square meters, the INL will house more than 200 top level scientists and about 100 PhD students, besides the laboratory sup-

"So far we have been working with GENESIS32 for five years. Our experience during this time has been excellent. That is the main reason why ICONICS is always our first choice when selecting which SCADA to install."

José Granero Nueda
Project Manager
Cofely GDF Suez (España)

port and administrative personnel. Main outstanding spaces of the building included:

- A clean room space with a total area of 1,050 sq. meters, which is divided into 7 big labs that house 19 different spaces, six of them classified at ISO5 and the rest at ISO 6.
- 11 high accuracy rooms; three of them fully shielded to attenuate the electromagnetic interferences with an attenuation of up to 120 dB, with a total area of 700 sq. meters (m²).
- 23 wet laboratories with a total area of 1,000 m².
- 23 dry laboratories with a total area of 1,000 m².
- 6 biology laboratories with a total area of 170 m².

ICONICS Software Deployed

The INL, working with Cofely GDF Suez (España), selected the ICONICS GENESIS32™ HMI/SCADA software suite for their new Building Management System integration project.

Project Summary

In 2009, a consortium where Cofely was involved was awarded a €42 million contract for the construction of all the installations of the INL in Braga, Portugal. The complex is divided into a hotel for resident researchers and the main building, where clean rooms, laboratories, high accuracy areas and administrative offices are located. The application involved deploying an ICONICS-integrated Building Management System, paying special attention to the clean room and high accuracy and laboratory areas, as well as to the critical process systems.

beginning, implying additional and unacceptable costs. On the other hand, the HVAC system for these areas was designed to work 24 hours a day and 365 days a year. In addition to the temperature, humidity and pressure data monitoring and collection for the certification of the clean rooms, it was an additional challenge to control the temperature in the high accuracy rooms with a required accuracy of $\pm 0.1^{\circ}\text{C}$. The control system is based on B&R's X20 series. The main control tasks are handled by over 100 control cabinets with their respective B&R controllers. Besides the main controllers, over 60 Beckhoff



A Laboratory at the INL



Air Handler Operations for the Connected Hotel

The Building Management System was designed to control and monitor the following systems: HVAC, Hot Water Production, Chilled Water Production, Low Temperature Chilled Water Production, Process Chilled Water, Ultrapure Water, Vacuum, Compressed Air, Acid Waste Neutralization, Flammable/Toxic Gas Detection, Fire Detection and Smoke Exhaust, Electrical Transformer Substations, Natural Gas Detection, and Liquid Leak Detection. There are over 14,000 total I/O points in the facility.

Critical areas such as clean rooms and high accuracy labs don't allow any downtime for the HVAC system, because most of the experiments carried out in these zones are expensive and take a long time. Should any failure occur while an experiment is being carried out, it would have to be started from the

compact PLCs, acting as Modbus TCP slaves, are utilized to control the variable volume boxes located in the conventional areas. B&R (communicating via B&R OPC Server) and Siemens and Omron PLCs (communicating via Kepware OPC Server) were provided by third-party special equipment manufacturers together with their systems and communicate with each other and with the OPC Servers. These are hosted in the same server as the GENESIS32 server via a dedicated Ethernet LAN.

The whole system is synchronized with a SNTP server, also hosted in the GENESIS32 server. The Fire Detection System was also integrated, via Modbus TCP OPC Server, within GENESIS32.

Continued on the next page...

In addition, Cofely plans to install ICONICS WebHMI™ and AlarmWorX™32 Multimedia, as the functionalities provided by these tools have been required by the client.

Main historical data, alarms and events are logged into SQL databases due to the need for compliance with the FDA 21 CFR Part 11 regulation. Data consistency is a must.

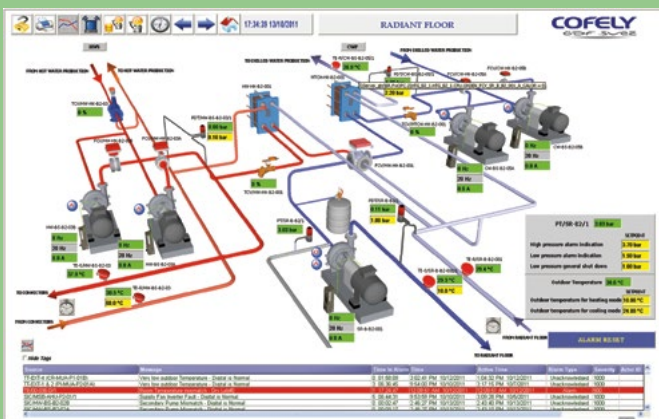
Benefits of the System

The system allows operators to control and monitor the entire complex, following a Web-based look

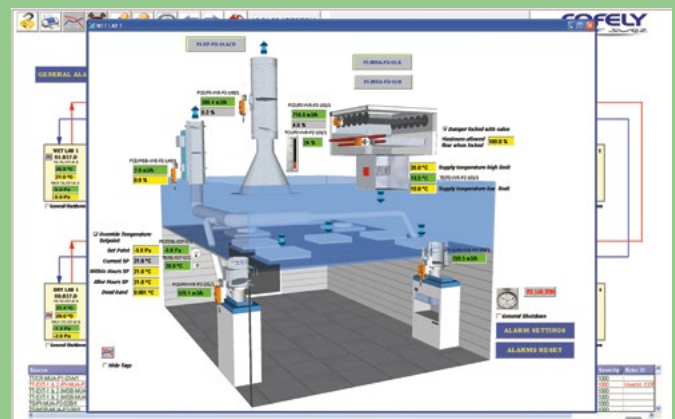
can be done on the spot. The system is expected to grow in the next years and based on Cofely's experience with GENESIS32, they know that it won't be a problem.

Because of the seamless integration via OPC of the different and heterogenous systems and the user of the Global Aliasing tool, it could be said that, compared to other well-known SCADA manufacturers, GENESIS32 allowed Cofely to reduce development time and therefore the costs by 50 percent.

Among the reasons why Cofely and the INL selected ICONICS GENESIS32 are:



INL's Radiant Floor/Water Production System



Air Handler Operations for the Connected Hotel

that makes navigation straightforward and provides users with a low technical profile and with instant visualization of the parameters of any equipment or space. More than 700 screens are deployed on the project. In order to provide a friendly designed environment, 3D graphics with animations were developed, making navigation even easier. An audit trail allows recording of the dates and times of all the operator entries and operator actions that create, modify, or delete any parameters or variables. Another important feature is the possibility of customizing reports, presenting either historical data, alarms or events.

Unlike other SCADA packages, with GENESIS32, openness is not merely a word, as the integration of any controller or system based on OPC

- Past Success Stories and Background with GENESIS32 in Other Building Management Systems for the Pharmaceutical Industry
- Seamless Integration of Any PLC or Controller via OPC.
- Compliance with FDA 21 CFR Part 11
- Free Modbus OPC Server and SQL Server
- Real scalability of the System

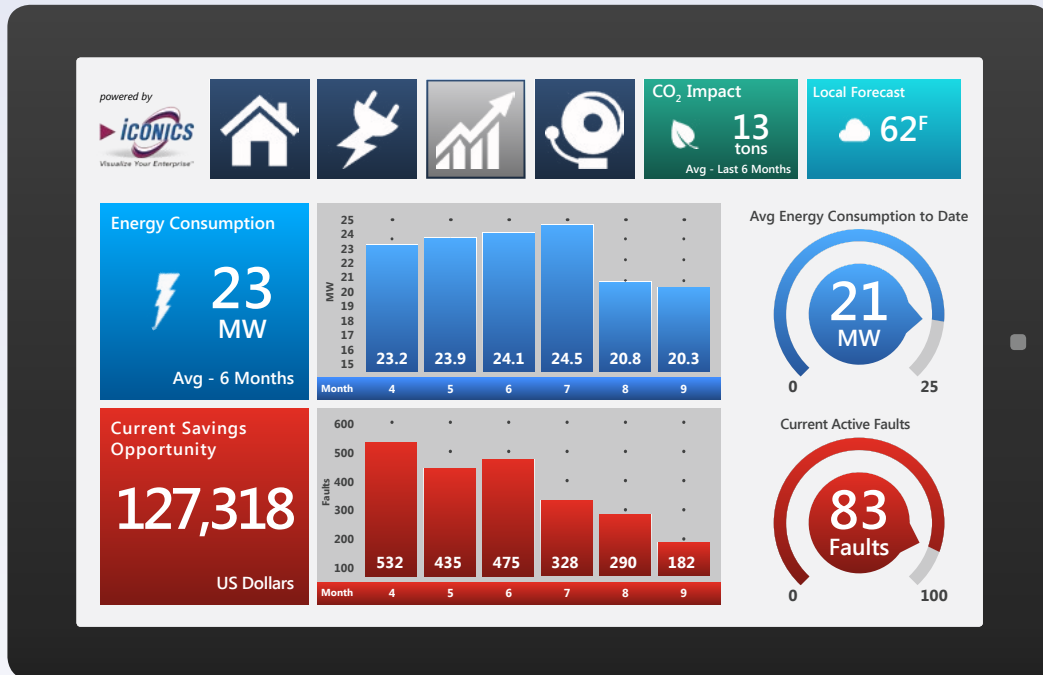
Conclusion

Cofely GDF Suez (España) required a comprehensive, state-of-the-art HMI/SCADA system to handle the International Iberian Nanotechnology Laboratory's building management. ICONICS GENESIS32, with its wide data source integration, emphatically passed the test.

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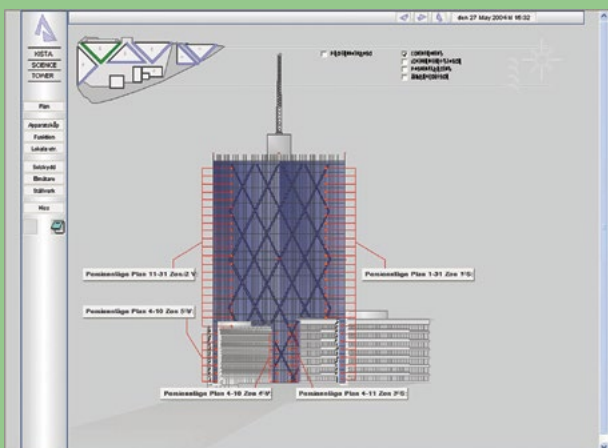




Kista Science Tower Stockholm, Sweden



*Kista Science Tower
Stockholm, Sweden*



Window Blind Control Screen

About The Kista Science Tower

The Kista Science Tower complex is comprised of six buildings, with the tallest spanning 32 stories. This state-of-the-art complex is located in one of the most dynamic IT regions in the world. Each floor of the Kista Science Tower houses approximately 700 square meters of office space. The glass frontage gives this tower an attractive look and plenty of sunlight for tenants, including Network Services, Unisys, Symantec and more.

ICONICS Software Deployed

GENESIS32™ is used to monitor and control the KONE elevators, lighting, HVAC and the window blinds for the Kista Science Tower. OPC-to-the-Core™ technology is a key component of these

“ICONICS software has enabled us to build an independent open system for the Kista Science Tower. The GraphWorX design application in GENESIS32 allowed us to create rich graphics and we were able to take advantage of reusable graphic components”.

Joakim Platbarzdis
Integrator
CIT Sweden AB

high-profile automation applications. Control Integration Technology, Sweden AB was the main integrator for Johnson Controls working closely with NCC construction. Having OPC connectivity native to GENESIS32 made it the premier choice for visualization. AlarmWorX™32 Multimedia and WebHMI™ are also in use. WebHMI™ provides full read/write access remotely via any standard Internet Explorer. AlarmWorX Multimedia is responsible for serving all alarms in real time to those who need them.

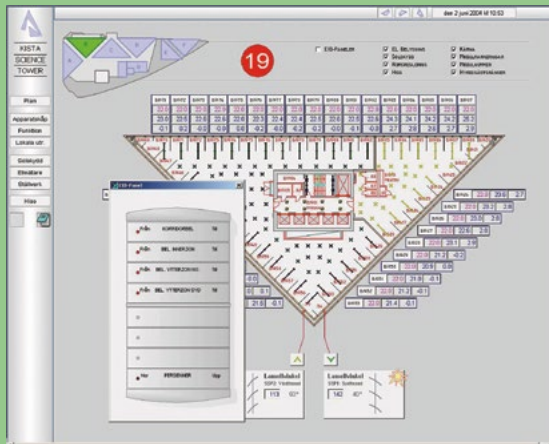
Key Features

The biggest challenge was to have an open infrastructure where all monitoring and control could be looked at as a single system. OPC fits this model very well. With OPC as the open architecture, this allows, for all systems and controllers, a common platform for communication. Since OPC is used, all systems can be monitored by ICONICS. GENESIS32 can connect

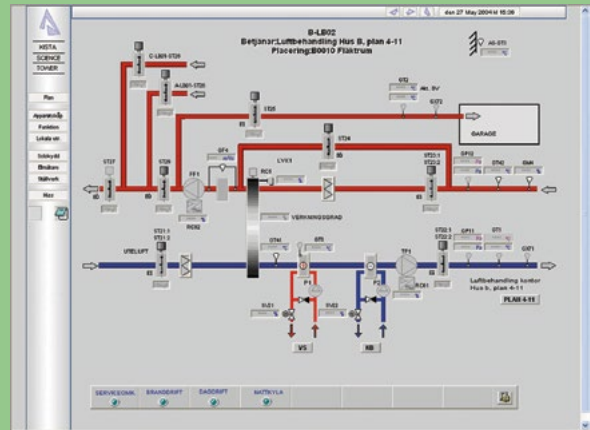
to any OPC server throughout the Kista Science Tower. This connectivity includes communication to the KONE OPC-DA server running on Linux. GENESIS32 components, such as DataWorX™32, AlarmWorX™32, and TrendWorX™32, are bridged to the Linux server through a separate Windows Server. Other OPC connectivity from GENESIS32 includes connections to Johnson Controls and Schneider Electric devices.

event of an emergency, the blinds are automatically opened and the awnings are pulled back within minutes. The KONE elevators are continuously monitored for power failure, fire, or other faults by the GENESIS32 system. A visitor control system is also built into the operation of the elevators. Visitors to the Kista Science Tower are given a programmable access card. This card only allows access to the floors the visitors need to access.

OPC connectivity is provided from GENESIS32 to Johnson Controls, Schneider Electric, and EIB hardware. There is also an OPC bridge to the KONE



Kista Science Tower Floor Control Screen



Air Circulation Handling Controls

Project Summary

GENESIS32 is connected to a weather station that continuously monitors the intensity of the sun. This data is used to control the angle of the blinds and awnings for the entire building. OPC data from the JC.N1 OPC Server connects via DataWorX32 to the CCEIB OPC server to send the proper setting to the blinds. Three times a day, the angle of the blinds is adjusted based on a calculation determined from the sun's intensity, time of year, and building zone.

In addition to keeping the office workers comfortable, the blind-control system saves on heating and air conditioning. The control of the blinds and awnings is also connected to the fire system. In the

elevators. Total I/O points exceed 15,000 tags Microsoft SQL Server is used for all data logging. In total, 2,400 rooms are controlled with 25 network controllers and 18 control cabinets.

Conclusion

Future development plans are underway to allow building occupants to view the status for their own part of the building.



Longmont United Hospital Longmont, CO

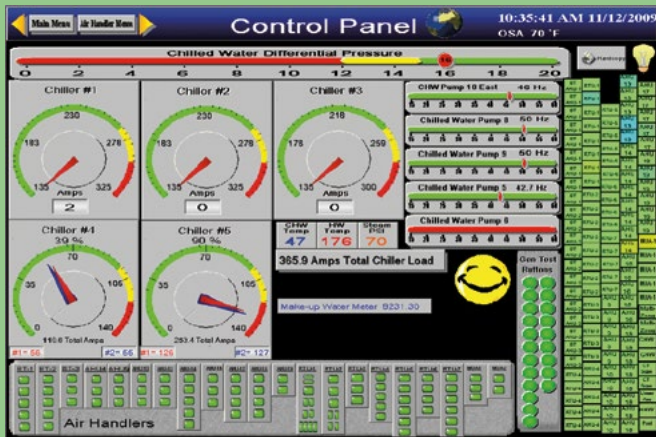


LONGMONT UNITED HOSPITAL



RSI COMPANY

Longmont United Hospital



Longmont United's Self-built Control Panel

“ICONICS software has been an evolving tool for our facility moving from simple graphics to intricate screens in our decade long relationship. It allows facility mechanics to monitor, control, and adjust most systems throughout the campus. We pride ourselves on reacting to and correcting issues before they are ever realized by our customers. ICONICS software is “the” tool that makes it possible. From our panic buttons and therapy pool to our air handling units and emergency power generators, ICONICS helps our daily mission be a successful one.”

Robert Smith

Building Services Manager,
Longmont United Hospital

About Longmont United Hospital

The city of Longmont, Colorado, boasts 300 days of sunshine a year, beautiful views of the Rockies and the world-class Longmont United Hospital. The philosophy that healthcare extends to the patient’s spirit, mind, body and family pervades Longmont United’s services and facilities. Rated among the top 10% of hospitals for patient experience in the United States, Longmont United is a wonderful place to get well.

In January 2000, Longmont United opened a five-story patient tower with new private rooms and soothing environments for patients and their families. Services such as complementary therapy and dedicated departments including a Birth Center, Cancer Center, and Women’s Imaging Center reveal commitment to

compassionate care. This spirit is further reflected in the hospital’s building management system, where ICONICS software allows operators to monitor, control and adjust multiple systems for maximal patient comfort and efficiency.

ICONICS Software Deployed

Longmont United Hospital uses GENESIS32™ WebHMI for their facilities management system. AlarmWorX™32 Multimedia delivers real-time alarm notifications to plant operators, while TrendWorX™32 functions as the hospital’s

data collecting, logging, charting, reporting and analysis system.

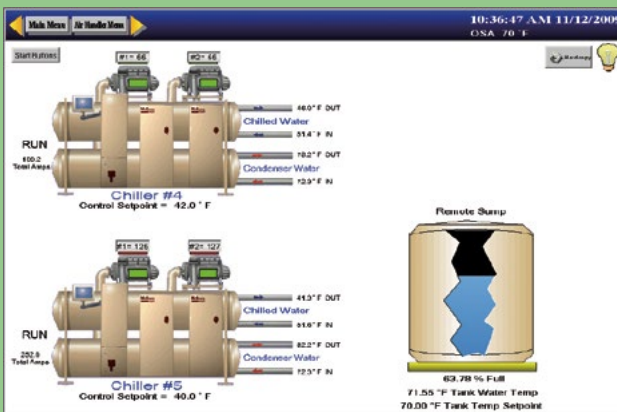
Project Summary

ICONICS and Longmont United Hospital have grown together over the years. Just as healthcare has advanced, Longmont United has expanded and updated its facilities, and ICONICS' technologies have evolved. Longmont United has been quick to upgrade to ICONICS' latest innovations, and a long lasting relationship has developed into a superior building automation and monitoring solution.

Benefits of the System

At Longmont United Hospital, ICONICS is implemented even at the patient level. Climate control is put in the hands of the patients, and panic buttons at various "at risk" locations throughout the campus connect to the self-monitoring alarming system. When a panic button is pressed, appropriate personnel are notified via pager and cell phone.

GENESIS32 has proven to be an effective teaching tool for Longmont United's facilities department. Quality graphics offer visualization of the facility and can be used to show the exact sequence of operations in any area of the building.



View of a Longmont United Chiller



View of Emergency Generators

RSI Company implemented and integrated ICONICS' software, which provides a customized, state-of-the-art Building Management System to the facilities of Longmont United. GENESIS32 allows maintenance personnel and operators to easily navigate and control key operation parameters in the facility. ICONICS WebHMI offers remote Internet connectivity to Longmont United's system, while AlarmWorX Multimedia provides alerting to facility operators via phone.

The hospital's ventilation and air conditioning, thermal and heating stations, emergency power systems, technical gas systems and other systems specific to healthcare are monitored and/or controlled by ICONICS' automation solution.

Conclusion

With Longmont United's buildings efficiently controlled and monitored by ICONICS, the hospital can focus on its primary concern of providing the best healthcare. GENESIS32's WebHMI capabilities will eventually be leveraged to allow Longmont United's facilities operators to manually respond to alarms and adjust conditions from remote sites.



Malpensa Airport/ Elsag S.p.A. Milan, Italy



Malpensa Airport
Milan, Italy



SEA's Baggage Handling Client Interface

About Malpensa Airport/Elsag S.p.A./SEA

Elsag S.p.A., a division of FINMECCANICA, provides IT solutions focused on postal, automation, security, industrial and defense systems. It works in tandem with SEA, the company that manages both the Malpensa and Linate airports in Italy, specifically on the Malpensa Airport T1 terminal's baggage handling system. Elsag S.p.A.'s application is used to monitor and control the Handling Baggage Security (HBS) and Early Baggage System (EBS).

ICONICS Software Deployed

Elsag S.p.A. and SEA selected ICONICS GENESIS32™ HMI/SCADA suite including DataWorX™32 OPC data bridging, aggregation and redundancy.

"The customer can easily handle the entire system just by looking at the general overview page and can handle all the commands with confidence. If necessary, they can switch between the two servers without having a temporary loss of communication within the field."

Masnata Ivano
Project Manager
Elsag S.p.A.

Project Summary

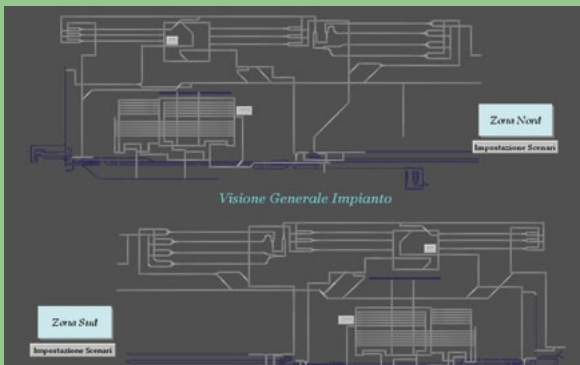
SEA required an HMI/SCADA solution for an in-house data trending application to assist operators with determining the number of baggages processed in defined intervals. The involved system consists of two hot backup servers and 11 clients, used for monitoring the state of the HBS and EBS systems. One server runs ICONICS AlarmWorX™32 (with alarm logger), ScriptWorX™32 and DataWorX™32. Both servers handle client security (aligned between the two servers by means of a script) and can switch automatically if a failure is detected on the primary, or on demand by an operator.

The client interface consists of a main page with all other pages shown concurrently. In this way, the most important required information is constantly represented on screen, including alarm indicators, emergency scenarios, network status (of each PLC or server), reporting, the terminal's Flight Management System, and login/logout. Selecting one of the

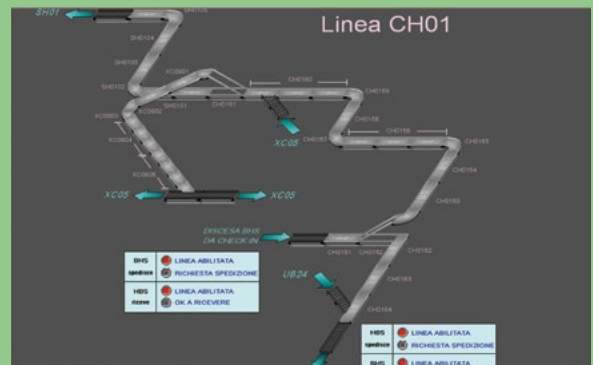
symbols on the general view opens a related page in which each element composing the line is represented. It's possible to open a more detailed page in which each signal related to the element is shown. It's also possible to navigate between different displays (without returning to the general view) via "arrow" navigational tool.

Secured commands can be issued to the PLCs in order to change the working lines of the system. This allows the customer to plan maintenance of the plant, as well as for recovery of faults without affecting the behavior of the entire system.

including the ability to switch between the two connected servers. SEA also values the integration into its Flight Managing System. Configuring the system (displays, alarms, trending) was considered "easy and efficient". Communication between the ICONICS applications and existing Siemens S7-300 PLCs is via an OPC server link by Applicom Cards (two for each server). Integration with the PLCs, the Profibus Remote I/O, as well as with the Oracle DB8 database and Windows 2000 Server and Professional operating systems, is seamless.



Baggage Handling Line Overview



Individual Baggage Handling Line Overview

Key Features

Elsag S.p.A. and SEA had specific requirements in their HMI/SCADA solution for the Malpensa terminal, including:

- Hot Backup Ability
- Extension via Web Interface and Thin Client
- High Quality Graphics and Related Features
- Good Reliability
- Logging and Trending Archive
- Integration with the Terminal's Flight Managing System

Benefits of the System

Malpensa's new ICONICS solutions provide full plant monitoring as well as remote system control,

Conclusion

Elsag S.p.A. and SEA are now able to ensure smooth travel for Malpensa Airport's baggage thanks to the multiple, secure capabilities of ICONICS GENESIS32 and additional solutions.

Solutions Highlighted



DataWorX32

Data Aggregation, Bridging, Redundancy and Tunneling Software



Merrill Lynch Hopewell, NJ



*Merrill Lynch Complex
Hopewell, New Jersey*



Floor Plan of One of the Merrill Lynch Buildings

About Merrill Lynch

Merrill Lynch is a world-recognized financial management and advisory company, with offices in 37 countries. As an investment bank, Merrill Lynch is a global underwriter of debt and equity securities and strategic advisor to corporations, governments, institutions and individuals worldwide. Merrill Lynch required a monitor and control solution at the time for their building campus in Hopewell, New Jersey.

ICONICS Software Deployed

Merrill Lynch selected ICONICS GENESIS32™ Web-enabled, OPC-integrated HMI/SCADA suite featuring the GraphWorX™32 HMI Graphical Display Package, AlarmWorX™32 Alarm Management

System and TrendWorX™32 Live and Historical Data Logging, Charting and Reporting components.

Project Summary

An OEM version of GENESIS32 provides the Building Controls for the Merrill Lynch complex in Hopewell, NJ. There are twelve buildings under the watchful eye of state-of-the-art graphics and alarming.

These ice plants are used as a cost-efficient method for building energy management. They are designed to freeze water at night when electricity is available at a low price. Then, when rates go up during the day, the ice is melted to cool down the buildings, rather than using other methods requiring “instant” energy demand. This “time shifting” of energy usage really helps trim the energy bill.

Operators easily navigate among the various systems used to manage every aspect of the building complex (HVAC, Lighting, Energy, Security, Fire, and other building controls) via the graphics created for the project. There are over 1,000 screens deployed on the project, all of which are accessible with just a few clicks from the menus and control panels designed into the building management system.

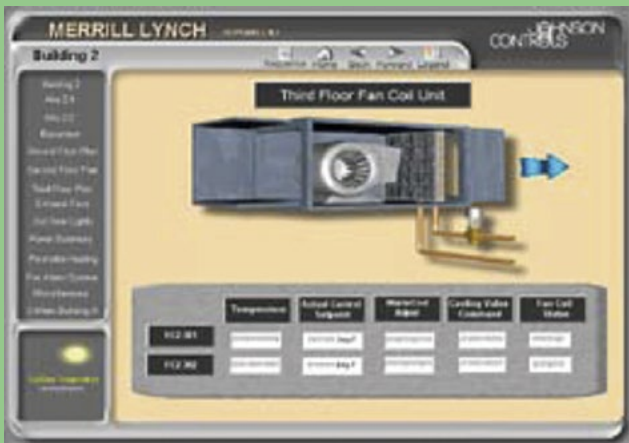
Top-notch 3D images representing the equipment used by the project were completed for this application. The project not only offers stunning visual displays, but also follows a Web-motif, making it easy for users to navigate through the system.

Feedback from the users of the system was very positive. They enjoyed the “realism” of the systems’ representation in the graphics. Clicking on floor

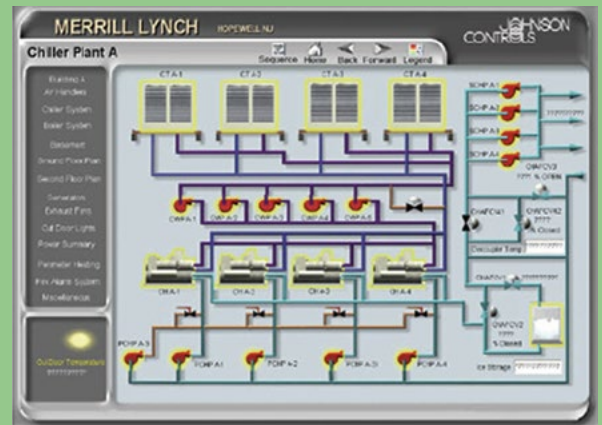
plans and viewing live status information provides the easy-to-understand operations they were hoping for. The graphics also make use of the ICONICS “animators”, showing dampers opening/closing, fan blades turning, airflow direction and more.

Conclusion

GraphWorX32 played a critical role in providing a comfortable and safe environment for the people at the Merrill Lynch office complex.



Fan Coil Unit Control in a Merrill Lynch Building



Chiller Plant Controls

Case Study Details



Some unique features of this project include:

- 8 office buildings totaling 1,598,400 Square Feet
- 4 assembly buildings featuring four cafeterias totaling 246,000 Square Feet
- GUI Personalization by User/User Type
- 4 parking garages with a total of 2,594 parking spaces
- Four boiler plants, chiller plants and ice plants

Solutions Highlighted



GraphWorX32

HMI Graphical Display Package

AlarmWorX

Multimedia OPC Alarm Management Software

TrendWorX

Data Logging, Charting and Reporting Software



Mohegan Sun Uncasville, CT



*Mohegan Sun Casino and Hotel
Uncasville, Connecticut*



A Kitchen Control Panel at Mohegan Sun Casino

About Mohegan Sun

Created by the Mohegan Tribe of Indians of Connecticut, Mohegan Sun is a legendary gaming and entertainment destination, renowned for exceptional service, hospitality and excitement. Featuring an extraordinary Mohegan-themed design unlike any other in the industry, Mohegan Sun is one of the most unique casinos in the world.

ICONICS Software Deployed

Mohegan Sun selected ICONICS GENESIS32™ Web-enabled, OPC-integrated HMI/SCADA suite featuring the GraphWorX™32 HMI Graphical Display Package, AlarmWorX™32 Alarm Management System and TrendWorX™32 Live and Historical Data Logging, Charting and Reporting components.

Project Details

GraphWorX32, a component of GENESIS32, monitors the status of these areas, as well as the chillers, boilers, and other behind-the-scene systems.

The system uses approximately 250 VAV boxes, about 60 air handling units (AHUs), 30 exhaust fans, a dozen fan coil units, and a host of temperature and humidity readings.

An interesting aspect of this project is the AHUs deployed for the arena. There are four fans moving 200,000 cubic feet per minute of air. Normally these are used to air condition the facility for spectators. However, in case of a fire, the smoke detector system puts these AHUs into “Smoke Mode.” Instead of bringing air into the arena, dampers change and these pull the smoke out of the area, making it easier for firefighters to enter the building.

The custom graphic interface that can be developed by using GraphWorX32 gives more knowledge to the user/operator, thus creating an environment for success.

Benefits of the System

Mohegan Sun was able to go beyond just text-based information for operator interactions with the ICONICS-based system. Using this powerful visualization, based on GENESIS32, operators can now visualize the equipment and its operating conditions. The system follows a “Web-based” look and feel, providing users with an instant understanding of how to navigate through the system. Many have commented on how easy it is to manage the environment.

Conclusion

This facility may include a world-class casino, but the customer did not want to gamble on the comfort of their guests. That’s why ICONICS GENESIS32 visualization software is at the core of this application that monitors and controls the entire complex.

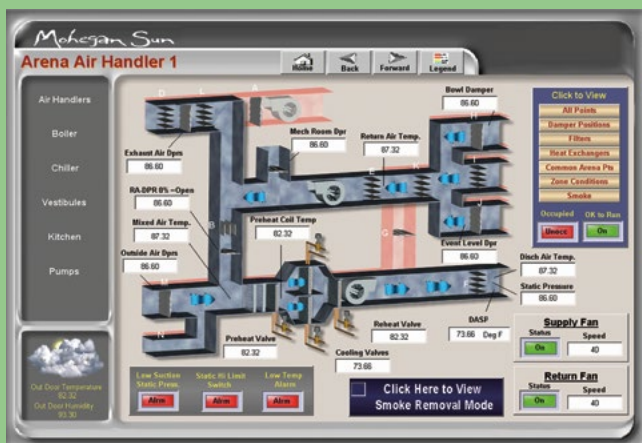
Deploying state-of-the-art alarming and graphics using AlarmWorX32 and GraphWorX32 provided a “best in class” system for this high-profile project. While your luck at the gaming tables may vary, the management system running this fabulous destination is a sure bet.

Case Study Details

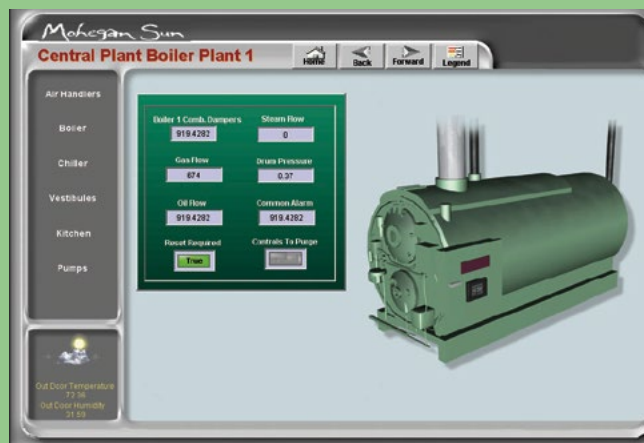


Mohegan Sun uses ICONICS to monitor and control:

- 60 air handling units
(In the arena, 4 AHUs move 200,000 cubic feet of air per minute)
- 250 variable air volume devices
- 30 exhaust fans



Air Handling Control System inside Mohegan Sun’s Arena



Boiler Plant Control

Case Study Details



Mohegan Sun’s grounds include:

- A 34-story hotel featuring 1,176 luxury guest rooms
- 300,000 square feet of gaming excitement
- Thirty-two different dining options
- Over thirty fine shops and boutiques
- A performance theatre and arena
- The Sky Dome - the world’s largest, most spectacular planetarium dome, which bathes the casino in an ever-changing display of sparkling constellations

Solutions Highlighted



GraphWorX

HMI Graphical Display Package

AlarmWorX

Multimedia OPC Alarm Management Software

TrendWorX

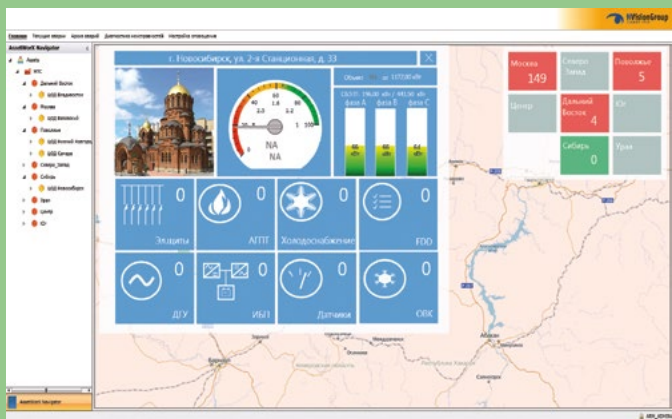
Data Logging, Carting and Reporting Software



Moscow, Russia

MTS

Moscow, Russia



An MTS Overview Dashboard

About MTS

Mobile TeleSystems (MTS) is the leading telecommunications group in Russia and the Commonwealth of Independent States (CIS), offering mobile and fixed voice, broadband, and pay TV, as well as content and entertainment services in one of the world's fastest growing regions. Including its subsidiaries, as of June 30, 2014, the Group serviced over 100 million mobile subscribers in Russia, Ukraine, Armenia, Turkmenistan and Belarus, a region that boasts a total population of more than 200 million. The Group's fixed business, as of June 30, 2014, had a total of 12.390 million households passed and 7.294 million residential subscribers. MTS uses several datacenters located in different regions of Russia for efficient management and information storage and processing.

About NVision Group

NVision Group is one of the largest developers and suppliers of unique solutions and services in the Russian IT market. Its solutions help customers to achieve their strategic objectives both through improving the efficiency of the entire IT infrastructure, and through optimization of individual business processes. The company specializes in the design of systems used to significantly reduce business informatization costs. It aims to protect clients' business and develop new services, while striving to enhance their quality level.



ICONICS Software Deployed

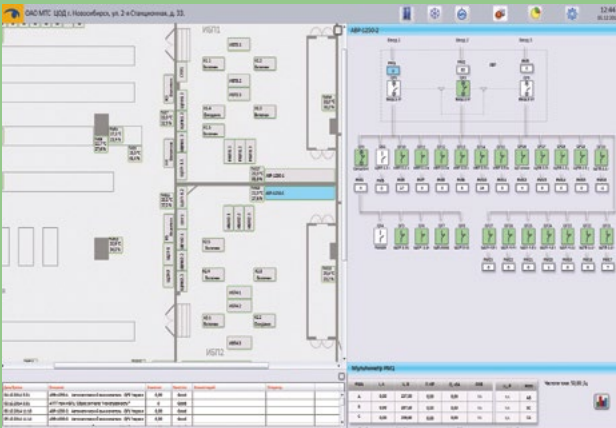
MTS, working with NVision Group, selected ICONICS GENESIS64™ HMI/SCADA software, including its GraphWorX™64 data visualization tool; Workbench centralized configuration environment; GridWorX™64 real-time spreadsheet visualization/control tool; AlarmWorX™64 distributed, enterprise-wide alarm management system; and TrendWorX™64 plant-wide data collection, logging, charting and analysis solution. MTS also uses ICONICS' AssetWorX™ intelligent asset technology, FDDWorX™ predictive fault detection and diagnostics solution, and WebHMI™ Web-based real-time automation software along with GENESIS64's publishing wizard.

Project Summary

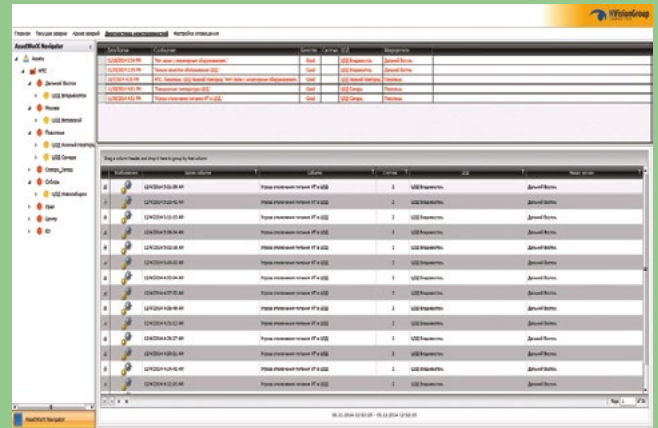
MTS required a new HMI/SCADA system for its commercial datacenter (CDC) and a reserve datacenter located in Moscow. The company also planned to develop an integrated HMI/ SCADA system for management of multiple other datacenters, including five systems in regional sites and a main control system in its central office. MTS required a solution that would provide an immediate display, at any time, of datacenter operations and the runtime efficiency of utility systems. The company's supervisors required a solution that would

Russia. ISCADA acts as a central control system, providing data aggregation from the local systems along with an integrated view of the current conditions of all MTS datacenters. ISCADA also stores data concerning critical events into an external incident management system.

The computer rooms within each datacenter include over 100 server racks. MTS' ISCADA system, powered by GENESIS64, provides estimates of these rooms' technological and climatic metrics, acquiring status information for all power and cooling/



MTS Display Showing Datacenter Controls



MTS Fault Detection Display

provide analysis-driven data about the energy efficiency of each datacenter's IT equipment.

An additional project requirement was to handle wide geography, as MTS's datacenter sites are situated in multiple Russia time zones. The solution also needed to integrate with multi-vendor and multi-protocol controllers and utility system environments (e.g. BACnet/IP, BACnet/Ethernet, Modbus, SNMP, Siemens/TCP, OPC, etc.).

MTS and NVision Group selected ICONICS' GENESIS64 HMI/SCADA suite to develop their ISCADA system, which now controls and monitors equipment not only within their local Moscow datacenters, but all the MTS datacenters located in

AC system components, comprising approximately 5,000 data points. The new HMI/SCADA software also allows MTS to change utility systems' functional modes from a central location.

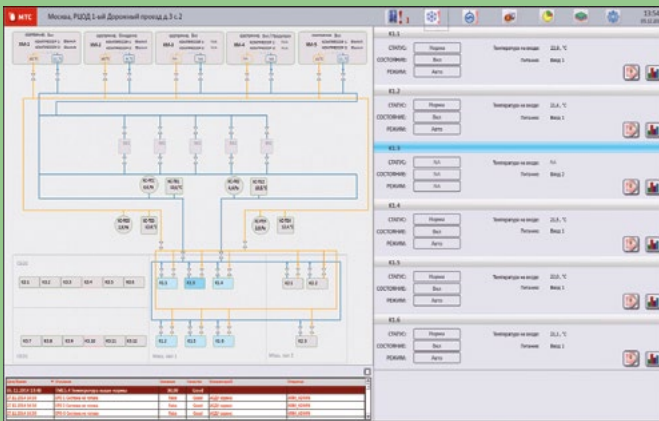
Benefits of the System

ISCADA helps MTS with efficient and secure equipment placement within its datacenter server racks, with special attention towards actual power load for each rack design, the power load level by electrical phase, and actual power load to embedded switch value ratio. The system allows operators to detect unbalanced power distribution for each level of the electricity power supply units, from incoming switchgear to a specific server rack.

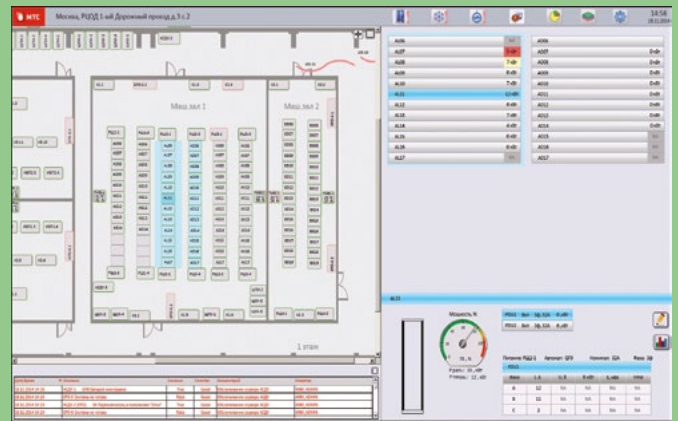
ISCADA was designed to be an ergonomic Web-portal with multi-functional navigation and intuitive menu for fast switching between mnemonic diagrams. In addition to monitoring the current status of local datacenter utility systems, the central HMI/SCADA also works as a troubleshooting system, warning operators about symptoms that could cause certain incidents.

The new HMI/SCADA system interfaces were designed, via GraphWorX64, to be ergonomic, efficient and unified, enabling operator staff to find important

- Handle High-quality Vector Images of Infrastructure Elements
- Import Data from Multiple Databases into Table View
- Study Historical Trends
- Download Reports for Certain Periods and Systems
- Analyze Different Data Visually



Monitoring Power Quality Via MTS ISCADA System



Computer Room Conditions Display at MTS

system information without switching between panels. Operator displays contain common structural patterns of controlled units along with detailed data about every element, node and device. In addition to current data, the system also displays customized operator prompts, technical data regarding switches and electrical boxes, and power load indicators at every level (electrical boxes, uninterruptible power supplies [UPSs], incoming charges, etc.).

MTS’s new system utilizes both the component templates within GraphWorX64, but also components developed specifically for their project. Due to the multiple graphical and functional abilities of GEN-ESIS64, operators are able to:

Conclusion

As leaders in the Russian IT industry, Mobile Tele-Systems (MTS) and NVision Group certainly have the knowledge to select a trusted software vendor. With multiple choices available to them, both companies selected ICONICS due to its reputation for meeting customer challenges anywhere in the world.

City Scale Efficiency



Can You Fit an Entire City in the Palm of Your Hand?

ICONICS offers advanced software solutions that help your organization's productivity. Our real-time animated dashboards, fault detection technology and energy analytics provide you with insight into operational efficiencies. ICONICS visualization and control solutions run on any mobile device and enable city scale infrastructure such as building automation, water treatment, utilities, transportation systems and much more.

Microsoft Partner

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www.iconics.com/citynext



Museum of Krapina Neanderthals Krapina, Croatia



*A Realistic Exhibit in the Neanderthal Museum
Krapina, Croatia*



The Museum of Krapina Neanderthals is technologically oriented and extraordinarily equipped for multimedia presentations enabling an engaging visitor experience.

ICONICS Software Deployed

SCADA technology in the Museum of Krapina Neanderthals integrates diversified and seemingly incompatible electronic subsystems of building and exhibit installation components. ICONICS GENESIS32™ HMI/SCADA suite connects and automates the Museum of Krapina Neanderthals' building management systems, security systems and multimedia systems. The museum is enabled with data acquisition and aggregation, analysis and alarming, visualization and real-time status of installations and components. Complete visualization and automation is accessible through a single personal computer with a simplified and reliable graphical interface.

ECCOS inženjering and ICONICS developed a unique solution for visualization and control of the Museum of Krapina Neanderthals, satisfying the needs of the investors, authors and operators of the site.

Project Summary

Harmonious integration, coordination and automation of multimedia components, building management systems (BMS) and security systems defined the specific needs of the project.



Overview of the Museum

About The Museum of Krapina Neanderthals

The Museum of Krapina Neanderthals is located in a glen between two small hills near the modern city of Krapina, in northern Croatia. The museum represents the spectacular Krapina site, where a Neanderthal village was discovered in 1899 by Dragutin Gorjanovic. The archeological site, one of the richest and most heterogeneous in the world, had over eight hundred fossil remains of 75 Neanderthals and their tools and weapons.

Opened in February 2010, visitors to the museum's 1,200 square meter exhibition space experience a simulation of the way of life in a Neanderthal cave 130 thousand years ago. Through touch screens, video-walls and numerous audio, visual and scent installations, visitors enjoy a highly interactive museum experience.

Multimedia components comprised of:

- Computers
- Projectors
- MPEG players
- Audio, video and scenting equipment

Building management systems (BMS) included:

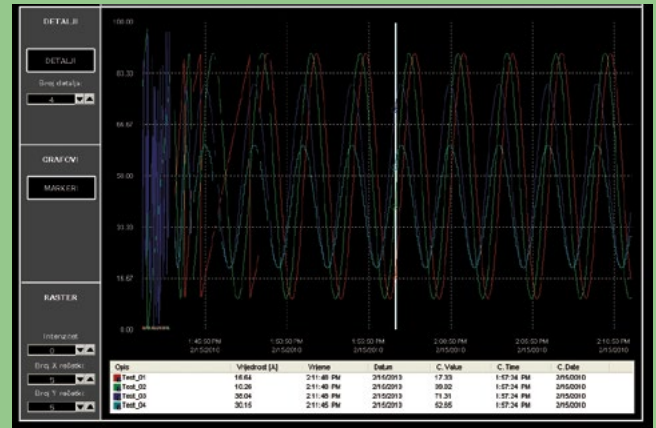
- Electrical branch circuits and lighting
- Metal curtains
- HVAC Security Systems consisted of:
 - Siemens fire system
 - Honeywell intrusion system

Benefits of the System

While the details of this project affirm the ability of ICONICS and ECCOS inženjering to seamlessly coordinate diverse subsystems, the strength of the project is revealed through control simplification. Automation scripts simplify everyday control reducing a complicated system to several keyboard commands, making the system accessible and controllable for users with little technological knowledge.



Easy-to-identify Symbols Correspond with the Museum's Systems



Trending Display for the Museum of Krapina Neanderthals

At the core of the system, ICONICS GENESIS32, using Matrikon's OPC server and a Schneider Electric M340 PLC, integrates to establish full supervision and control over all the electronic and electrical systems. The vast majority of communication is based on the local Ethernet network, while the PLC is connected with security and BMS systems through digital/analog inputs and outputs.

The communication between the central computer and the multimedia components is based on the local Ethernet network using diverse protocols including SNMP, C-BUS/LON, DMX, HTTP and ASCII.

Conclusion

ICONICS and ECCOS inženjering help bring ancient history to life. A balance of technologies powers the exceptional interactive experience of the Museum of Krapina Neanderthals.



Outside of Ondrej Nepela Stadium

Ondrej Nepela Bratislava, Slovakia



Ondrej Nepela Ice Rink Monitoring Display

About Ondrej Nepela Stadium Ice Rink

The Ondrej Nepela Stadium ice rink in Bratislava, Slovakia, near the edge of the Carpathian mountain range, held the International Ice Hockey Federation (IIHF) Ice Hockey World Championship in 2011 and is one of the world's most modern ice hockey facilities. Nicknamed the "Orange Arena" for its brightly colored staircases, the Ondrej Nepela Stadium is the oldest hockey arena in Slovakia, with a history that stretches back to the 19th century. Located in Slovakia's capital city, the ice rink lies near the famous Danube River and makes for a scenic and historical locale.

ICONICS Software Deployed

The newly retrofitted arena now has a main rink

with two training areas and a 9,766 person capacity. The old Building Management System, installed by SAUTER for Ondrej Nepela, was unable to keep up with the needs of the ice rink. To make necessary improvements, Ondrej Nepela, with the help of systems integrator Cofely, implemented ICONICS GENESIS32™ HMI/SCADA and AlarmWorX™32 Multimedia software to monitor and control the following:

- Air handling system (HVAC) including fan coils, VAV boxes and a heat exchange station
- Rink cooling technology
- Emax Management System
- Skylights

Project Summary

Using ICONICS software, Ondrej Nepela had an increase in manageability as well as in energy efficiency. With nearly 4,000 data points interfaced, Ondrej Nepela can monitor every facet of the ice rink in real time, knowing that all data and alarms are being recorded historically so that trends can be viewed and analyzed. Using ICONICS ScheduleWorX™32, over a hundred defined schedules are executed. With this introduction came a new vision for the ice rink, as it now includes Fault Detection, Alarming and Central Controlling. Fault Detection Diagnostics (FDD) has revolutionized how the ice rink operates. Instead of waiting for something to break or become a serious threat or problem, now the operators are alerted to all potential threats and can remedy them before they become a

debilitating issue. With AlarmWorX32, the ice rink has access to visualization of all points associated with an alarm. It tracks histories and includes the essential alarm trending for better understanding of fault causes.

Benefits of the System

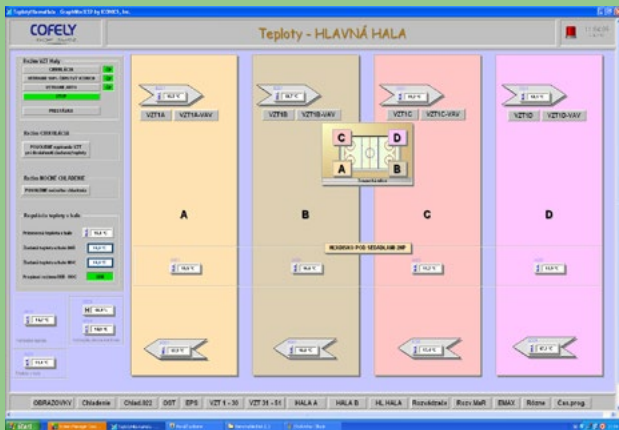
Ondrej Nepela is particularly pleased with ICONICS software's excellent graphics, tools for automatic data processing, ease of engineering through the use of aliases and the open connectivity. They are also very glad that

The home rink for HC Slovan Bratislava can now continue setting ice hockey records knowing that the rink is safe, secure and in good hands.

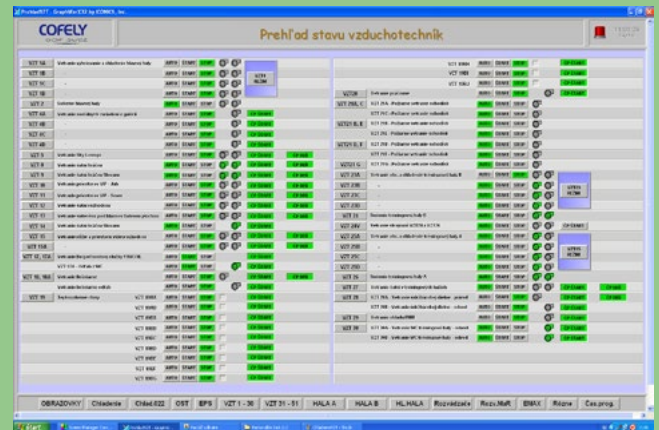
Characteristics of the System

The Ondrej Nepela Stadium Ice Rink Project is comprised of several different aspects:

- 130 DDC Controllers connected to the BMS computer
- 3,897 Data Points
- 1,039 Monitored Alarms



GENESIS32 Display for Ondrej Nepela



Ondrej Nepela Ice Rink Alarm Monitoring

ICONICS software features modularity, as this allows them many options moving forward. Thanks to the newly implemented ICONICS system, the Ondrej Nepela project is easier to monitor and control. Energy efficiency and plant manageability have both increased and the stadium looks to have an even longer history ahead of it.

Conclusion

With the ICONICS HMI/SCADA Building Management software system including GENESIS32 and AlarmWorX32 Multimedia, the “Orange Arena” operators have seen great improvements in manageability, operability and overall efficiency and new benefits are realized every day.

- 342 Trends and Historical Records
- 134 Defined Schedules through ScheduleWorX32

Exceptional Features of GENESIS32



- Excellent Graphics
- Tools for Automatic Data-processing
- Use Aliases
- Modularity
- Open Connectivity



The Pentagon Washington, D.C.



*Aerial View of The Pentagon
Washington, D.C.*



The Pentagon Building Operations Command Center

About The Pentagon

The Pentagon is the headquarters for the United States of America's Department of Defense operations. It houses more than 23,000 employees, both military and civilian, all contributing to the planning and execution of the defense of the United States.

ICONICS Software Deployed

The Pentagon/Department of Defense selected ICONICS GENESIS32™ Web-enabled, OPC-integrated HMI/SCADA suite featuring the AlarmWorX™32 Alarm Management System. An OEM version of GENESIS32 provides the building control systems for the new renovation project of the Pentagon in Washington, D.C.

"(On 9/11/01...) What was the value of this system the day it did not shut down? From my laptop, I tapped into the Pentagon's automation network and sent out commands that closed dampers and turned off fans around the building to contain the smoke."

Steve Carter
Facilities Engineer
The Pentagon

Key Features

With over 6.5 million square feet under one roof, the Pentagon is the world's largest office building complex. It has three times the floor space of the Empire State Building in New York City. The United States Capitol building would fit into any one of the Pentagon's five wedge-shaped sections.

Included in the building controls are systems for:

- HVAC
- Fire
- Security
- Lighting
- IT/Telco Critical Monitoring
- Water Systems
- Hazardous Agent Monitoring

Coming up with a design to monitor and access all of these systems was no easy task. The US Government wanted a main screen from which any one of the systems, on any floor, in any one of the five wedges, and

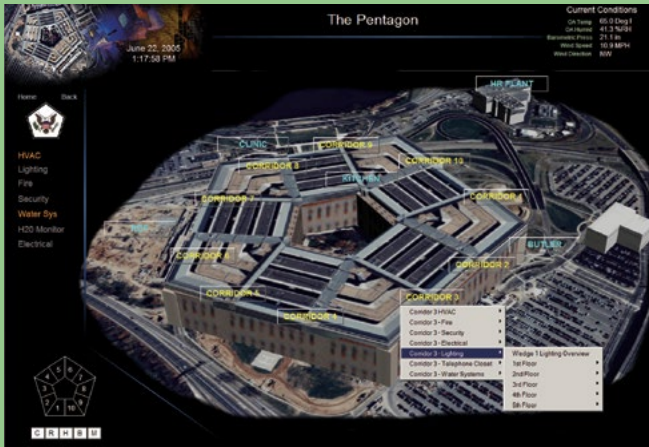
from any one of the Pentagon's five rings, could be accessed in three operator actions or less.

Project Summary

O&M Engineering, Inc. and its talented team of experts worked closely with the customer to develop a clever use of cascading pop-up menus (with sub-menus for each of the systems) placed over an enhanced aerial graphic of the building. Navigating to a given system within the building reveals rich and functionally accurate 3-D representations of the controls system information complete with animations.

Conclusion

Started in 1997, the scope of this project is so large that the renovation of the building controls systems will span more than a decade. One challenge for this application is backward compatibility over the course of the multi-year project, and ICONICS is ready to deliver. There probably is not a more extensive, more secure, more sophisticated building control system in the world.



An Overview Screen with Drilldown Menus



A Building Operations Control Screen

The amount of information is staggering, and will potentially exceed a half-million points. A team monitors these systems around the clock in the Pentagon's Building Operations Command Center (BOCC). In addition to the individual workstations for each operator, five 90-inch displays provide wall-to-wall monitoring. Should an event happen, an operator can direct any workstation display to any one of the monitors for collaborative analysis. Based on the visualization requirements, ICONICS was uniquely suited to deliver with its award-winning visualization engine included in its GENESIS32 Automation Software Suite. GENESIS32 comes with an extensive set of symbols for designing rich, informative graphics displays.

ICONICS is proud to participate in such an application with the requirement to access thousands of parameters, from thousands of screens and all at a moments notice.

Solutions Highlighted

GENESIS32

Web-Based HMI/SCADA Visualization

AlarmWorX

Multimedia OPC Alarm Management Software



Rimske Terme

Rimske Toplice, Slovenia



RIMSKÉ TERME®
 MDCCCXLVII
 BUSINESS WELLNESS SPA RESORT

*Rimske Terme Resort
 Rimske Toplice, Slovenia*



An Overview Screen of Rimske Terme Resort's BMS

About Rimske Terme

Rimske Terme is a luxurious Business, Wellness and Spa Resort, located in the town of Rimske Toplice, Slovenia (“Rimske Toplice” being Slovenian for “Roman Spa”). The location’s thermal pools have attracted visitors for centuries, with evidence of visits during the Roman Empire. The Rimske Terme resort is comprised of several buildings including Hotel Sofijin Dvor (“Sofia’s Palace”, with 43 rooms and a restaurant), Hotel Rimski Dvor (“Roman Palace”, with 68 double rooms/suites, pools and a health center with professional medical supervision) and Hotel Zdraviliški Dvor (“Spa Palace” with 75 double rooms/suites and an additional health center). The resort, which also contains a conference center, is mostly known for its spa facilities based around the area’s historic, healing thermal baths.

In 2010, the resort started on a project to update their Building Management System (BMS).

ICONICS Software Deployed

Rimske Terme, working with system integrator, Robotina d.o.o., selected ICONICS GENESIS64™ HMI/SCADA software for their new Building Management System integration project.

Project Summary

As part of its planned BMS installation, Rimske Terme wanted to integrate a number of existing automated systems, including hotel room temperature regulation, room emergency/security functions, air conditioning, lighting, and diesel fuel use. They also wanted central control over their heating/cooling (heat pump) station, pumping station, thermal water pump station and electric power station operations.

Systems Integrated:

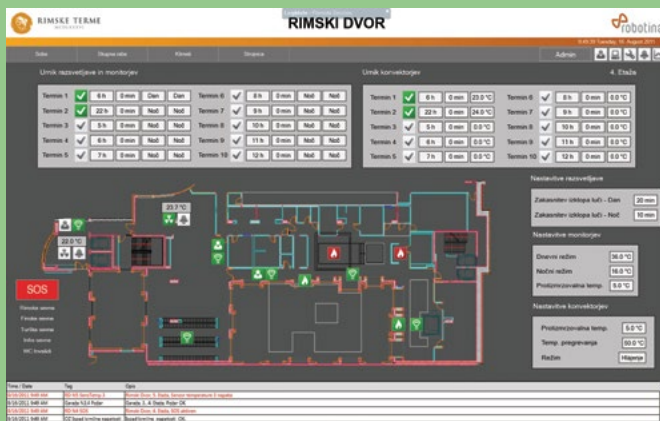
- Hotel Room Temperature Integration
- HVAC Systems
- Security Systems
- Lighting Systems
- Thermal Water Pump Station
- Fuel Storage
- Electric Power Stations

The hotel room automation required a BMS that could adapt to a few differences in each location. For instance, the heating/cooling in Hotel Sofijin Dvor and Hotel Zdraviliški Dvor is based on air diffusers, while in Hotel Rimski Dvor, it is accomplished via fan coils.

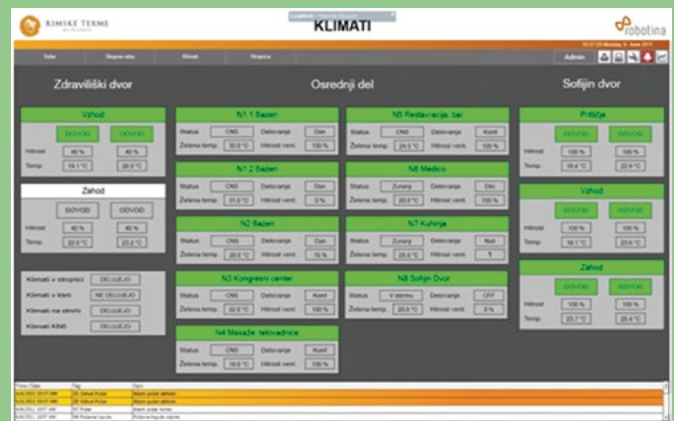
These changes are easily taken into account as the BMS is able to help set desired parameters and then monitor and regulate them. In addition, each room's security/ alarm (SOS) functions are also handled via the BMS. The parameters for all heating/cooling systems and subsystems are set through the BMS. The BMS provides continually updated statuses for each system, allowing the system administrator to adjust parameters for optimal regulation. For instance, with the air conditioning system, the BMS can automatically switch each HVAC control on or off and between operating modes (Economy, Comfort, etc.), following prepared operating schedules.

rooms. Each room includes a card holder/sensor which can detect the presence of a hotel guest and can then automatically start heating or cooling the room, as needed. In addition, each room contains sensors for detecting open windows, which are connected to the automated system and which can stop heat or cooling, further reducing unnecessary energy consumption.

As a whole, conditions are set to fit the needs of the resort's demanding guests. This means that, despite providing desired temperature regimes, the BMS also uses adaptive scheduling, integrated with



Lighting and Fan Scheduling per Floor of the Resort



Oversight of Air Conditioners

Each HVAC control module also includes a panel that allows users to set temperatures locally.

Rimske Terme has connected GENESIS64 to programmable controllers through an OPC Server. Systems and subsystems are mutually connected or integrated. For example, presence sensors provide information for heat/cooling modes and for switching lights. The complete system consists of more than 200 programmable controllers with CAN bus-connected expansion I/O modules. The controllers communicate between themselves and with the monitoring system over an Ethernet network.

Benefits of the System

As part of the BMS implementation, Rimske Terme wanted to ensure energy efficiency within its hotel

multiple functions, to provide optimal, energy efficient performance.

Since installing GENESIS64, Rimske Terme has remarked about its "simplicity of use" and the benefits of allowing for remote control. As a result, the resort has expanded its management stations, including one in hotel reception and another mobile station for maintenance purposes, all connected for remote operation and password-protected for secure access.

Conclusion

GENESIS64 provides Rimske Terme and Robotina d.o.o. with a building management software solution as stress-free as the resort's therapeutic facilities. The resort staff can relax a bit now too, thanks to ICONICS.

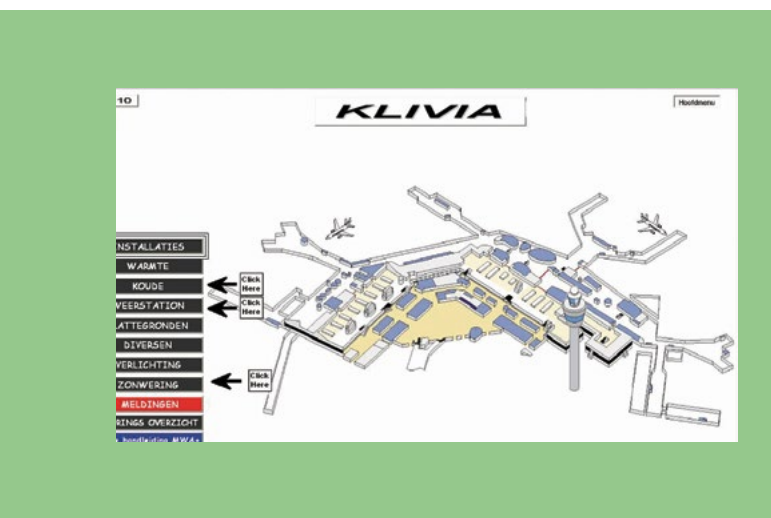


Schiphol Airport

Amsterdam, The Netherlands



*Approaching the Tower
Amsterdam Airport Schiphol*



Main Menu Screen at Schiphol Airport

About Amsterdam Airport Schiphol

Amsterdam Airport Schiphol is the national airport of The Netherlands. It's the 10th biggest airport in the world based on total number of passengers (about 47 million) and 14th based on the number of tons of cargo shipped. The airport is built as one large terminal split into three large departure halls, with further expansion planned.

ICONICS Software Deployed

Amsterdam Airport Schiphol selected an OEM version of GENESIS32™ including GraphWorX™32 and AlarmWorX™32 for this project. This suite of software tools now runs on over 30 PCs for the application of monitoring over 300,000 tags.

“The Alias functionality within the product saved us a lot of time in building displays. This enabled us to reuse the same display for another floor.”

Guy van Lingen
Project Engineer
JCI Netherlands

Key Features

The project was implemented by JCI Netherlands utilizing M5, an OEM version of GENESIS32. It runs on three Microsoft Windows terminal servers and allows the 30 operators to work on the system at the same time.

Included in the building controls are systems for:

- HVAC
- Fire
- Security
- Lighting
- Telephone
- Water Systems

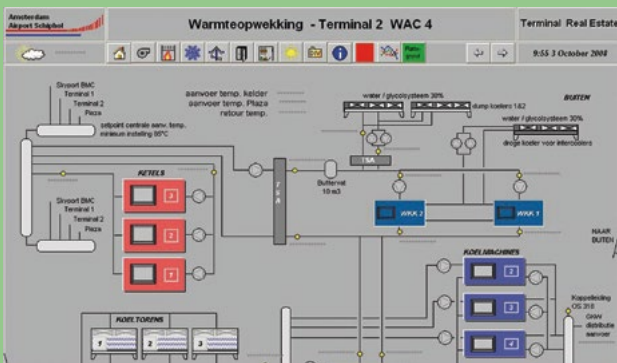
The complete project consists of 10,000 GraphWorX images. The system is equipped to handle over one million alarms and events per month.

Benefits of the System

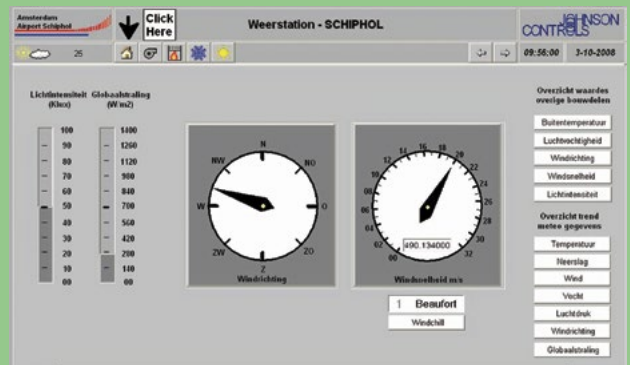
The provided solution is based on an open system, making it easier to develop bigger projects in the future. Also, it's now easy to retrieve data out of the systems without writing converters. One of the biggest advantages for the customer is easy expansion of the system to other platforms including Web browsers such as Internet Explorer (via WebHMI™) and mobile operating systems.

Conclusion

The Schiphol Project is certainly impressive. With 30 screens, 300,000 tags, three servers and 30 operator stations, it's one of the biggest Building Automation systems on the planet. The system has now been running for three years without any major complications.



A Cooling Control Screen



Weather Monitoring Control Screen

Case Study Details



Facts and figures about this ICONICS Solution and Schiphol Airport:

- Over 47 million passengers a year
- Over 1.5 million tons of cargo a year
- 300,000 tags
- 30 Screens
- 30 Operators
- 10,000 GraphWorX images

Solutions Highlighted



GraphWorX

HMI Graphical Display Package

AlarmWorX

Multimedia OPC Alarm Management Software

WebHMI

Web Based Real-time Automation Software

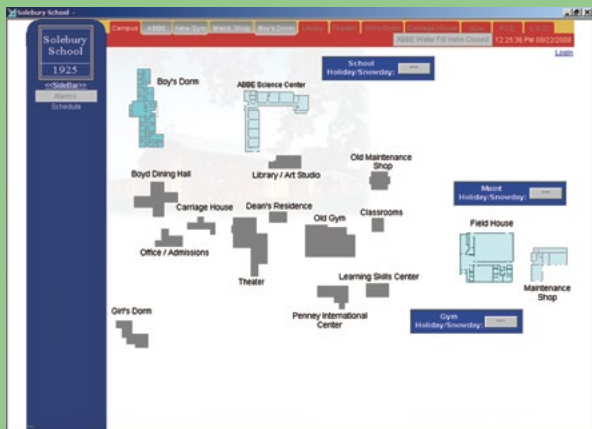


Solebury School

New Hope, PA



On Campus at Solebury School
New Hope, Pennsylvania



Main Campus Map via HMI/SCADA Application

"We have used ICONICS software products almost exclusively on our installations since 1991. Their consistent high performance and value are always major factors in the success of our projects. The versatility and fully customizable nature of the software allowed us to adapt perfectly to the varied technical issues we encountered on the Solebury campus and to precisely tailor the HMI to fit the needs of their personnel."

Walter L. Horigan
President
Vortechs Automation, Inc.

About Solebury School

Solebury School is a coed, college preparatory, boarding and day school, for 220 students in grades 7-12. Founded in 1925, Solebury's beautiful 90-acre campus is located on Phillips Mill Road, two and one half miles north of New Hope, in the heart of historic Bucks County, PA, mid-way between New York City and Philadelphia. The school prides itself on its small size, the individual attention given to students and the deep mutual respect between faculty and students. A rigorous academic program with honors and AP courses, an ESL program for International students, a Learning Skills program, and a full range of arts, athletics and activities are further distinctions of the school.

The school sought an automation solution for energy management as well as for centralized control, operation and maintenance of various systems including HVAC. Solebury School approached Vortechs Automation of Huntingdon Valley, PA for the project.

ICONICS Software Deployed

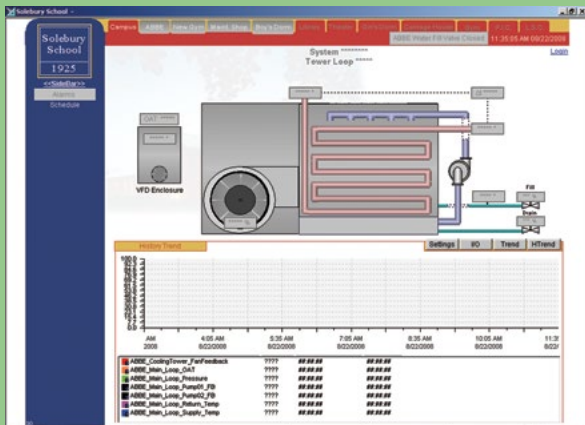
Solebury School selected ICONICS industrial automation software solutions based upon Vortechs Automation's recommendation. Among the products utilized are ICONICS' GENESIS32™ V9.1 Web-enabled OPC-integrated HMI/SCADA suite, AlarmWorX™32 Multimedia (MMX) distributed enterprise-wide alarm notification system, and ScheduleWorX™32 calendar-based scheduling tool.

Project Summary

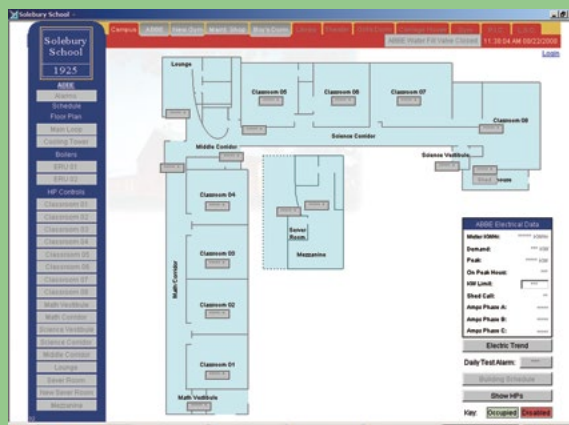
After a survey of the campus, the engineers at Vortechs Automation were sure they could help Solebury School save on energy costs through the automation of its existing heating and cooling systems. Specifically targeted were the school's science and math building, gymnasium, boy's dormitory and maintenance facility. The new Direct Digital Control (DDC) system now consists of approximately 50 KMC controllers linked together in several RS-485 sub-LAN groups, all connected to the campus Ethernet network. GENESIS32 V9.1 was selected for the industrial automation software suite's HMI

customized items including a sewer line backup detector in the main gym, occupancy sensing tied into lighting controls and water detection on the floor of the server room.

Scheduling is an important requirement for Solebury School. It's directly related to anticipated cost savings and helps meet the school's aim to be a "good environmental citizen". As soon as ScheduleWorX32 was introduced by ICONICS, the school and Vortechs Automation knew it would be a great fit for their project. Solebury School's equation for comfort, convenience, control and cost-savings is



Cooling Tower Monitoring/Control



Floor Plan for the Abbe Science Center

function.

Benefits of the System

The ICONICS software and KMC OPC Server reside on a PC located in the campus' main server room. Remote HMI is available to campus users through two browser nodes, located in the business office and in the maintenance office. Real-time data is logged to Microsoft Access. Historical data can be presented in graphical form on an equipment-specific basis. TrendWorX™32 reports, part of GENESIS32's functionality, are defined for total electrical energy consumption. Alarms are broadcast to the appropriate operators using email or text messaging. The system also includes a number of

proven with Vortechs Automation and ICONICS.

Case Study Details

ICONICS' solution for Solebury school includes:

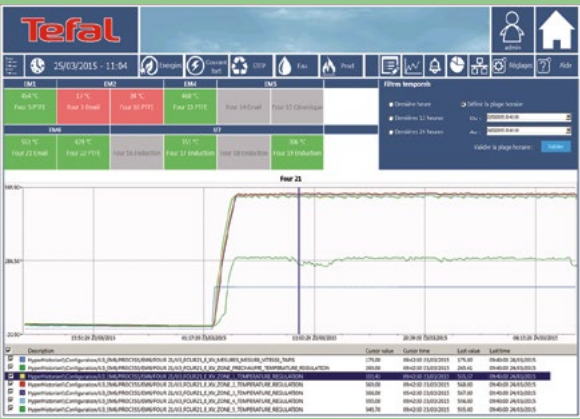
- Full Point and Click Control
- Centralized Scheduling allows school year to be programmed in advance
- Energy Management - using prioritized load shedding activated by real time utility meter data
- Pre-emptive Alarming and Central Control
- Integration with existing Microsoft Windows XP and Windows Server 2003 installations throughout the campus



Tefal SAS Rumilly, France



Tefal SAS Headquarters
in Rumilly, France



An MTS Overview Dashboard

“This transition helps us towards energy efficiency. Digital tools allow us to connect objects, such as gas or electricity meters, in order to follow, in real time, our consumption and to alert company personnel at all levels. ICONICS is a Microsoft partner and this relationship has allowed us to install a solution for our energy management that is sustainable and scalable. This energy metering project, and in particular the installation of ICONICS software, has allowed us to create energy key performance indicators, that are published at each level of the company with needed information.”

Cédric Delavallade
Energy Manager
Tefal SAS

About Tefal SAS

Tefal SAS, headquartered in Rumilly, France is a subsidiary of Groupe SEB, a “world leader in Small Household Equipment”. Groupe SEB, which estimates it sells six products across the globe per second (adding up to 200 million products sold every year throughout 150 countries), has approximately 25,000 employees spread through 29 manufacturing sites worldwide. Tefal’s Rumilly location employs approximately 1,850 people within 160,000 square feet of building space, with an additional 160 employees in Tournus, France within 21,000 square feet.

ICONICS Software Deployed

Working directly with ICONICS France, Tefal SAS selected: ICONICS GENESIS64™ HMI/SCADA

suite; Hyper Historian™ high-speed, robust data historian; AnalytiX® suite of analytical tools (including the Energy AnalytiX advanced energy management software); WebHMI™ Web-based, real-time automation software; ReportWorX™ enterprise reporting, charting and analysis software; and BridgeWorX™ real-time workflow for data bridging.

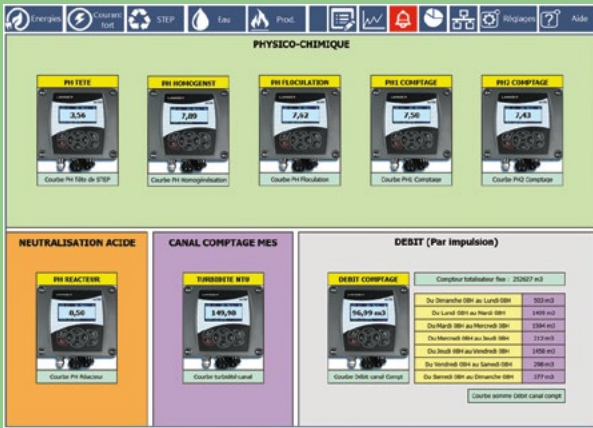
Project Summary

Every year, Tefal manufactures around 44 million products in what was a high energy-consuming process. The manufacturing process entails many

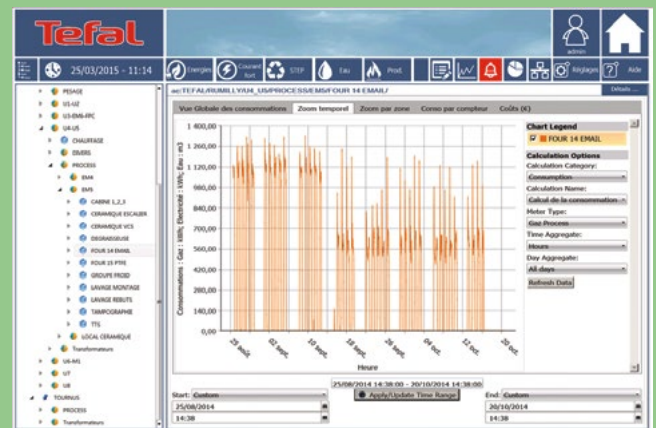
phases, including cooking, drying and cooling. The energy costs for manufacturing operations could hit as high as eight million euros, split between four million for electricity costs and four million for gas. Considering these numbers, top management at Tefal decided to launch an Energy Efficiency project to reduce manufacturing-related energy costs.

Tefal began the project by making an energy diagnosis, in order to learn real-time consumption levels towards the goal of making improvements leading to energy-related savings. The company had several initial objectives at the launch of their Energy Efficiency

ing architecture. They aimed to connect the new system to equipment already in place, using standard communication protocols such as OPC, for use of real-time data in addition to archiving and recovery. The planned solution needed to interface with multiple pieces of equipment including Allen-Bradley, Eaton Moeller and Schneider Electric PLCs (via OPC), a Socomec power device (also via OPC) and a Producim MES system (via SQL query in an Oracle database). It also needed to be easy to use, to provide access via Web clients without installation, and to manage different needs including monitoring, reporting, commanding,



*Tefal Manufacturing/Metered Data Dashboard
Made in GENESIS64*



A Process Performance Chart at Tefal

project. They wanted a map of their energy (electricity, gas and water) consumption in order to prioritize actions for the higher consuming machines, to use for future comparison of past consumption and to validate the expected financial gains compared with initial estimates. Tefal required the establishment of Energy KPIs to be published to key team members (including the site director, technical director, management controller, manufacturing manager, facility manager and multiple operators) to notify them of energy-related gains. The company also wanted a clear indication of energy/electricity availability in order to prepare for new manufacturing projects, optimize energy contracts and be able to meet French energy regulations. Tefal sought an energy management system that could be implemented without revising their exist-

GEO SCADA/mapping, alarm management and trend management. Tefal's selected solution would also need to integrate with existing Microsoft components (SQL Server, Excel, etc.), manage consumption of electricity, gas and water (including a way to easily add meters), and provide energy cost management capabilities.

A competing solution was considered, but was rejected due to it being difficult to use (not ergonomic or intuitive), missing the ability to add reports or modify parameters without being an expert, too much reliance on scripting and an inability to switch languages.

Benefits of the System

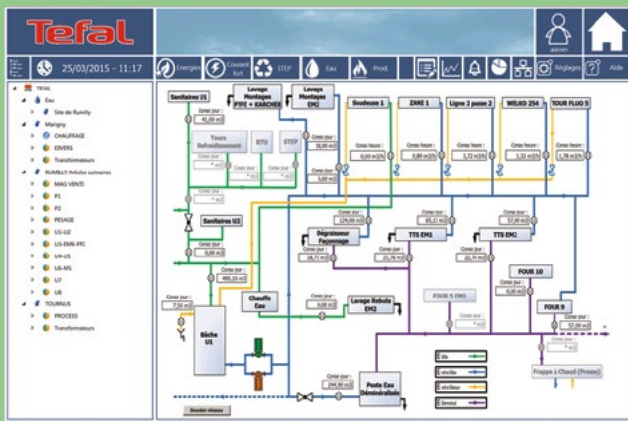
Tefal ultimately decided upon installing ICONICS software solutions, which now handles data from multiple meters and transformers, as well as energy

data coming from the PLCs. Additionally, the system handles manufacturing data from the MES system (for instance, the number of pieces manufactured) to calculate energy consumption per manufactured piece. The energy data from the existing building automation software helps to calculate Degree Days (representing the difference between the average daily temperature for a location and a baseline value (usually around 18° C or 65° F). The data from 245 energy meters, 14 energy-related PLCs, 24 power-related devices and nine manufacturing-related PLCs can be visualized in real-time dashboards via Web clients or stored via data historian.

investment by avoiding equipment energy overconsumption, which has also helped in avoiding overuse penalties by the French government.

Conclusion

Tefal SAS selected ICONICS software solutions due to ease of deployment and minimal impact on their existing systems. The company was pleased with the scalability of ICONICS software, as well as with its unified, standardized communication with equipment (meters, compressors, etc.) via OPC technology. Groupe SEB, Tefal’s parent company, plans to



Asset Monitoring at TEFAL Utilizing ICONICS HMI/SCADA



Overall Consumption View of Plant.

With its new ICONICS energy management solution, Tefal was now able to automatically accumulate energy consumption by equipment, area and site. The company could now customize dashboards to provide the best information to each different user type (facility/energy/top management/operator). They could also now connect energy consumption to production and calculate costs (such as energy per piece) and control manufacturing efficiency. Tefal appreciated the built-in quality control, identifying problems with products and having the ability to compare real-time temperatures with expected trends. In addition, Tefal benefits from trend management (including data drill-down) and the ease of use of reports through Excel. Even better, the company has seen a quick return on

deploy this solution in their nine sites in France and eventually to their 20 additional sites worldwide.

Solutions Highlighted



Energy AnalytiX

Energy AnalytiX delivers the back-end calculations, KPI analytics, data historian, reporting and rich visualization that organizations require in order to take decisive action in the management/reduction of utility costs and carbon footprints.

- Quick Deployment to Help Achieve ROI
- Cost Savings through Informed Decisions
- Cost, Consumption and Carbon Reports
- Drill down into Causes of Abnormal Energy Use

BUILDING AUTOMATION SOFTWARE SOLUTIONS

Integrate existing building automation systems with a single Web-based user interface. Imagine using a fully-integrated facility automation software solution to monitor systems from all major vendors on any device with Any Glass, Anytime™. ICONICS provides a unified management system for visualization, alarm notification, historical data, supervisory control and management information systems.

Productive facilities in today's environment demand economical operations and management. Effective facilities management means your organization can focus on its core business and on increasing the bottom line by reducing operational costs.

ICONICS has been certified by the BACnet Testing Laboratory (BTL) with the highest level of BACnet compliance, the B-AWS profile.



Visualize Your Enterprise™



University of Bristol Campus
Bristol, UK

University of Bristol Bristol, UK



An AHU Zone Monitoring Display

About University of Bristol

The University of Bristol (UoB) is one of the top ranking universities in the United Kingdom with 25 academic schools arranged across 6 different facilities. The University owns over 600 hectares of land in and around Bristol and makes use of over 370 buildings. The buildings range in age from the late 17th century to the 21st century. With such a large number of buildings, estate management is very important and a major requirement of the project was to integrate the buildings together to provide a secure, future proof centralized building management solution. For this task the UoB turned to Cougar Automation Ltd. and ICONICS' GENESIS64™.

ICONICS Software Deployed

The UoB was looking for a modern, future proof so-

lution platform that would allow them to continue to build new capabilities as new equipment and buildings were needed and connected to the Secure Data network (SDN). With this in mind, they selected Cougar Automation Ltd., a Microsoft Certified Partner and winner of numerous customer experience awards, who in conjunction with ICONICS, provided a GENESIS64 based visualization solution. Together with a calendar scheduler to integrate and manage the Trend IQ2 and IQ3 BACnet controllers across the facilities, they received a single consistent head-end visualization for all BMS functions, allowing the University to reduce training and maintenance costs, another key driver of the SDN project.

Project Summary

The University of Bristol needed a company with reliable software solutions that could meet the following objectives:

- Provide all departments of the University with accommodations of quality and functionality
- Ensure the most efficient use of all built space and deliver a plan to maximize future development
- Work to reduce the University's carbon emissions
- Enable Building Management System (BMS), Fire Monitoring, Critical Alarms, Sustainability Monitoring, etc.
- Physically secure the network for the Estates Dept.

To help achieve these objectives, especially regarding carbon emission reductions, the Estates team required access to information across the entire University campus. To that end, the University

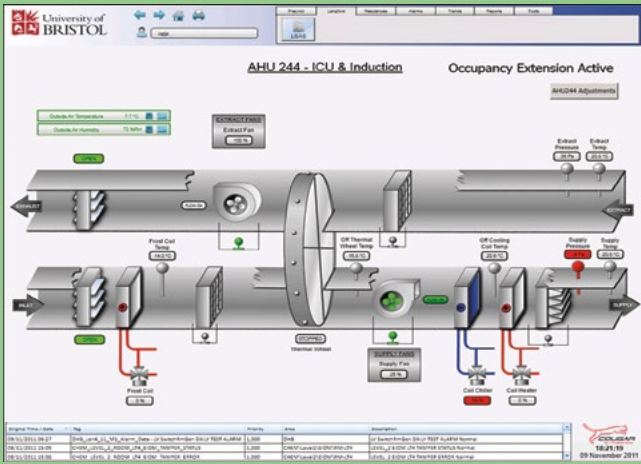
of Bristol commissioned the Secure Data Network (SDN) project.

Benefits of the System

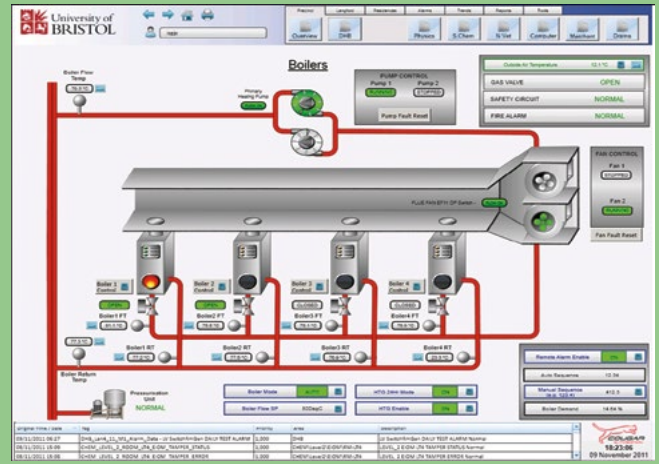
With ICONICS' products, Cougar Automation Ltd. was able to provide a solution that met the following SDN requirements:

- Connected to a wide range of devices
- Centralized Alarm Management
- Accessible from anywhere, worldwide
- User friendly
- Scalable and future-proof

engineers from other Cougar offices were able to collaborate and work on the project together with the Bristol-based engineers concurrently, on the same server. This reduced the overall project engineering costs and enabled the work to be completed much faster. The comprehensive alarms management capabilities in GENESIS64 also allowed critical BMS alarms to be routed to the Estates Security Office during non-working hours, by raising and lowering their priorities automatically, ensuring that critical facilities are continuously monitored 24 hours a day. In addition to the standard SCADA capability that GENESIS64 was able to pro-



An Expanded View of an Air Handler Unit



A Boiler Control Screen

Due to the nature of the deployment, a collaborative approach to the project was undertaken by ICONICS application support engineers and Cougar Automation Ltd. They discovered that by leveraging the open GENESIS64 infrastructure using OPC technology, SNMP, Web Services, BACnet and OLEDB, and utilizing the 64-bit web-based architecture, Cougar Automation Ltd. could create a modern and consistent user interface that could be accessed from a Web browser anywhere within the UoB network and allow the Estates Office to control and manage the facilities. One of the key benefits of using GENESIS64 for the Cougar project engineers was the capability to perform remote Web-based configuration through Workbench64. By enabling remote configuration, project

vide, the Cougar project team also utilized ICONICS BizViz™ integration capabilities with great success.

Conclusion

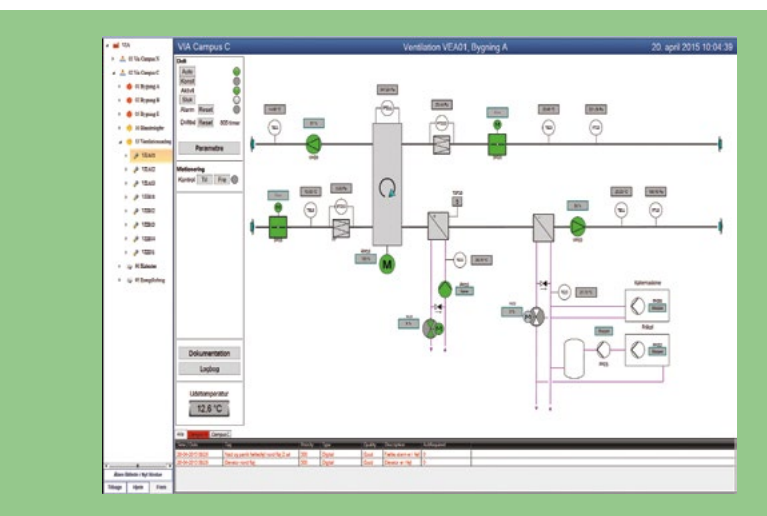
The end result was exactly what the University of Bristol was looking for, as a Project Officer explains, “The ICONICS platform is very intuitive and user friendly and we are very happy with the product. It is more than capable of doing everything that we initially want it to do regarding the BMS and critical alarms communications, alarm handling, data storage and archive data handling. We will be extending it to incorporate security systems in the future and further extending it to incorporate as much as we possibly can because the system can handle it all.”



VIA University Aarhus, Denmark



Aerial view of VIA University



Ventilation Control Screen for
VIA University's Aarhus C Campus

About VIA University

VIA University was established in Denmark in 2008, originally spread across 38 sites throughout the country. Today, the university has been consolidated within 18 sites in eight cities. The school provides a variety of educational disciplines, including Business, Design, Movies/Animation, Education, Social Sciences, Healthcare and Technology.

ICONICS Software Deployed

Working with system integrator/design consultant, Balslev Automation A/S, VIA University selected ICONICS GENESIS64™ HMI/SCADA suite, along with AlarmWorX™64 Multimedia OPC alarm management software.

Project Summary

Over the past seven years, VIA University recog-

nized their growth within Denmark, even as it sought to consolidate its campuses from 38 sites to 18. Today, the school's 18 sites are spread across 238,000 square meters, with a population of 25,000 people, including students, teachers, technical personnel and more (14 percent of which are international). As part of this simultaneous regrouping and expansion, the university began construction of new facilities, such as its Aarhus N campus, while considering new options for building management solutions.

VIA University required a software vendor who could provide a cost-effective, open building management solution for their Aarhus N (37,000 square meter) and Aarhus C (47,000 square meter) campuses. Of primary concern was the monitoring and control of campus buildings' daily operation, especially the comfort of occupants, as the university believes that an assured optimized indoor climate for students is the best environment for learning. Minimizing operational cost was also a factor in the school's decision.

VIA University has developed its own building management user's manual, revised once or twice a year, which is considered essential to optimal operations. With this in mind, the school sought a software vendor that would reduce complexity in operations, while ultimately reducing associated costs.

With Balslev Automation A/S's assistance, VIA University chose ICONICS for their software vendor. The school has many years' experience with other long established vendors in Denmark, but found them too costly for this project.

Benefits of the System

Ultimately, ICONICS was selected for being more cost-effective and for its open system based on open standards. ICONICS GENESIS64 now connects to the university’s WAGO PLCs using OPC communications. The software provides interfaces with alarm system, fire detection, access control, UPS and cooling systems, easily handling the school’s approximate 15,000 tags.

VIA University has noted its annual operational savings in comparison to before installing ICONICS software.

Solutions Highlighted

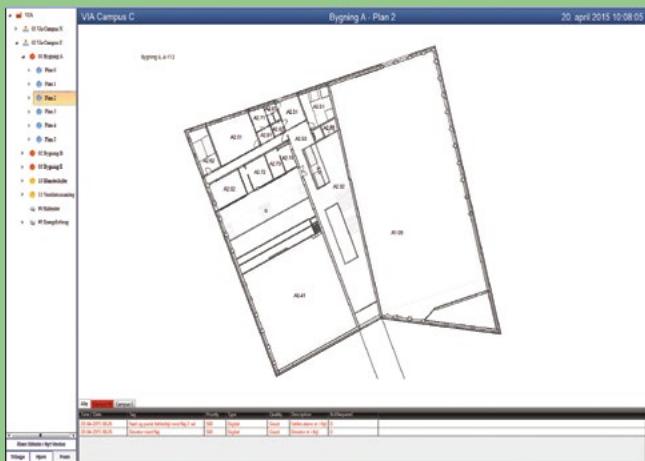


GENESIS64™

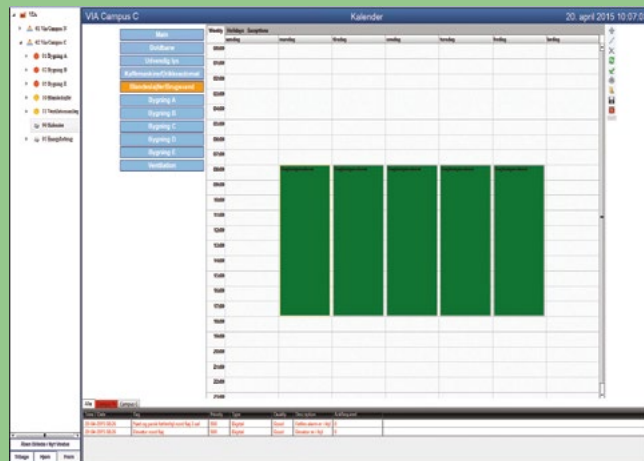
HMI/SCADA and Building Automation Suite

AlarmWorX™64 Multimedia

Multimedia OPC Alarm Management Software



VIA University's Aarhus N Campus Plan in GENESIS64



Scheduling Feature in GENESIS64 for VIA University Building Management

“We have lowered the cost of operation by selecting GENESIS64 and PLC-based controllers for BMS,” said Anders Thorsen, Technical Manager at VIA University. “We wanted open systems based on open standards; to have the freedom to select suppliers of our choice in the future. This is saving us money every year.”

Conclusion

Pleased with the Aarhus N and Aarhus C rollouts, VIA University is now considering ICONICS for its future expansion efforts. The school is considering integration with solar panels as well as facility management within other locations. Due to its cost-effective, open standards-based solutions, ICONICS is pleased to have been graded so highly by VIA University.

Case Study Details



ICONICS solution for VIA University includes:

- Building Management for Two Campuses (each over 30,000 square feet)
- Reduction of Operational Costs
- Reduction of Complexity Compared to Prior Solution
- Open System Based on Open Standards
- OPC Communications
- Interface with Approximately 15,000 Tags



University of Virginia Charlottesville, VA



*An Aerial View of the
University of Virginia Campus*



*The University of Virginia's Lighthouse System,
Built via ICONICS GENESIS64*

About University of Virginia

Founded in 1819 by Thomas Jefferson, the University of Virginia is made up of 11 schools in Charlottesville, VA, plus the College at Wise, spread out in over 500 buildings or facilities within 1,606 acres. The University offers bachelor's, master's, educational specialist, first-professional degrees (law and medicine), and doctoral degrees in a growing variety of fields. The University of Virginia was named as the No. 2 best public university in the 2014 edition of the U.S. News and World Report rankings. In the 14 years since U.S. News began ranking public universities as a separate category, the University of Virginia has ranked either No. 1 or No. 2 and it continues to rank in the Top 25 among the best of all national universities, public and private.

ICONICS Software Deployed

As part of a competitive RFP process, the Univer-

sity of Virginia selected ICONICS GENESIS64™ Building Automation suite, Hyper Historian™ high-speed, robust data historian; MobileHMI™ mobile enterprise application; AnalytiX® suite of analytical tools (including Facility AnalytiX predictive software for facilities management); WebHMI™ Web-based, real-time automation software; AlarmWorX64™ Multimedia for multimedia OPC alarm management; Alarm Analytics alarm management, reporting and analysis software; and BridgeWorX™ real-time workflow for data bridging.

Project Summary

The school required a campus-wide visualization and monitoring platform and wished to implement the project themselves, integrating any newly acquired software with their own “home-grown” systems. The new system, named “Lighthouse”, would need to tie into their own generated Big Data; a wide array of locations and equipment, including a main heating plant and two satellite plants, seven chilled water loops (in 13 plants), three primary electric substations, and over 2,800 meters (internal, external and virtual).

The University had several requirements for its new control system. It needed to support trending, reporting and billing functions. It needed to be modern and provide engaging, rich visualization. It needed to provide central alarm management and process scheduling, as well as provide a common interface for building automation system (BAS) integration for utility/facility operators, faculty and staff.

It was important to the University of Virginia that their selected solution be able to connect to a wide variety of data sources, including BACnet, Modbus, OPC, Web Services, SNMP and various other da-

tabases. Equally important was the ability to work with Microsoft's platform, including integration with Windows Server, Internet Information Services (IIS), SQL Server and Active Directory. Other considerations were if the solution could utilize cloud-based servers in addition to those on premises and what are the redundancy options.

Benefits of the System

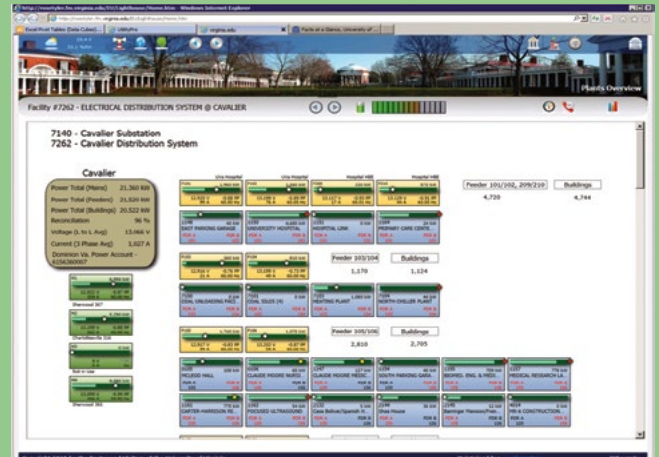
The University appreciated the ICONICS platform's asset-based navigation in dealing with energy-related equipment and meters and their existing BACnet architecture. ICONICS Hyper Historian trends over

are able to see graphic trends of utilities/energy use for timespans from an hour to a year. They can also see instantaneous demand (usage) for all trended utilities for a building along with a comparison with data from other similar buildings along with an average among comparable buildings. Users can choose their own buildings for comparison or use defaults, as well as see average, maximum or total data (either raw or normalized) by gross square footage, to use one example.

After installation, the University of Virginia was able to correct billing errors related to a variety of meter and building automation system issues, using ICONICS Hyper Historian data and visualizations to help highlight



A District Energy Summary in University of Virginia's Lighthouse System



Substation Real-time Reconciliation Screen

40,000 of the University's BAS/SCADA/asset point definitions. Each of these points contain dozens of available properties, in addition to alarms, totalizations, averages and other functions. There are over 100,000 different trend views available in the system, comprised of almost six billion data samples per year (based on default sample rate). Hourly summary data exists for multiple plants, buildings and meters, adding up to additional tens of millions of records per year.

The innovative asset-based approach now allows project engineers to easily test their own planned asset structure and definitions. University staff initially focused on setting meter definitions to eventually include in their planned building/plant energy dashboards. The iterative, collaborative process allowed the staff to quickly try multiple "looks" before deciding upon a final visualization theme. Utilizing ICONICS solutions, users

are able to see graphic trends of utilities/energy use for timespans from an hour to a year. They can also see instantaneous demand (usage) for all trended utilities for a building along with a comparison with data from other similar buildings along with an average among comparable buildings. Users can choose their own buildings for comparison or use defaults, as well as see average, maximum or total data (either raw or normalized) by gross square footage, to use one example.

Conclusion

Now that the University of Virginia has been able to justify its return on investment in ICONICS software, it plans to expand the system. Future plans include central alarm announcements and alerts for "critical" points, forecasting, and customized pages for specific research or clinical interests. The University of Virginia's Lighthouse project, with ICONICS building automation and energy management software, has become a beacon for future building operations and energy use.

Have your own story to tell?

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Customers & Partners Featured



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