Cleaner Air, Cleaner Water

OSIsoft, Long Used for Performance Measurement, Now Boosts Environmental Sustainability

by Mark Levenson

.

OSIsoft, based in San Leandro, California, delivers the PI System, the industry standard in enterprise historians, as the core of its real-time infrastructure platform.

At age 64, J. Patrick Kennedy still plays a great game of tennis. But, as he's the first to admit, it's not the same game of tennis he played almost half a century ago in high school.

"I find that as I get older, the game is less about pure force and more about placement," says Kennedy. "It's about conserving your energy and directing the ball right where you want it to go."

Kennedy might just as well be talking about the environmental sustainability. That's another interest of Kennedy's—a professional interest this time, given that Kennedy is Founder and Chief Executive Officer of OSIsoft, the San Leandro, California-based maker of the PI System: a real-time performance management infrastructure that measures and records the activity of equipment, products, and processes throughout a company.

Although Kennedy and OSIsoft didn't set out to become major players in the global effort for environmental sustainability, that's the way it's turned out. OSIsoft's software products help companies worldwide to address this pressing global issue. Many companies know only their aggregated energy or water consumption and their carbon emissions—long after the fact. OSIsoft provides companies with timely information about exactly where and how energy is being consumed and emissions generated. This information is made available to those who can act on it in a timely way, and see the result. Companies use this data to identify work practices and faults that result in resource loss, address those inefficiencies and, thus, reduce greenhouse gas production while lowering their resource consumption.

The same approach works for all industries such as power generation, chemical plants, and water and waste. In waste treatment, for example, if water turbidity or salt-levels get too high, a water utility can change its plant flows until they return to acceptable levels, avoiding

upsets in processing. Since most municipal treatment plants produce much of their own energy from waste, this also enables them to maximize electrical production and avoid a drain on power or natural gas resources.

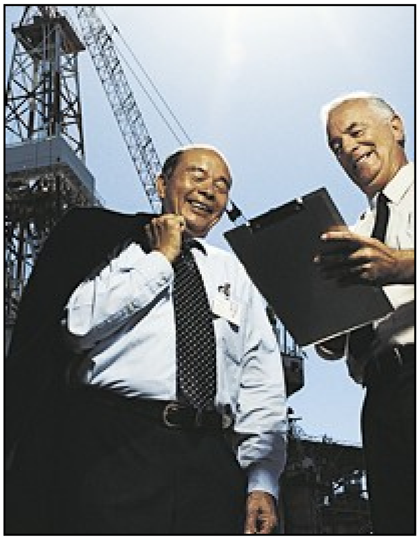
In many of the industries that produce goods and services, energy is the largest operating expense and getting larger. “Energy conservation, carbon emissions, and water quality will continue to be crucial environmental issues for years to come—but OSIsoft’s software is proving to be an important technology solution to help monitor, measure, and report on these issues,” says Rob Bernard, Chief Environmental Strategist at Microsoft. “The company is delivering highly cost-effective and practical software that companies can take advantage of today to do their part to fight global warming and promote environmental sustainability.”

OSIsoft’s role in enhancing the environment would seem to be a shift for a company founded by a chemical engineer—Kennedy holds a PhD in the subject—but helping companies to make better use of often-inaccessible information they already hold is a form of industrial process improvement, which is a main function of chemical engineering. Over the years, companies have used OSIsoft software to boost manufacturing efficiency, to improve safety levels, extend run times, and to meet compliance requirements such as environmental reporting, Sarbanes-Oxley legislation, and pharmaceutical Good Manufacturing Practice.

“It’s their information,” says Kennedy. “But to put it to work, it has to get to people with sufficient accuracy, timeliness, and fidelity to be of use and to be understandable by the typical worker. That is why we believe strongly in the Office platform. All plant personnel can use a Microsoft® Office Excel® spreadsheet or go to a Microsoft Office SharePoint® site for their information. Our job is to deliver it fast and to let them know it is there.”

A large and growing use of OSIsoft software is helping companies measure and monitor energy and other resource consumption, conserve energy use, reduce their carbon emissions, and improve water quality. The fear of global warming has accelerated interest in carbon footprint reduction, of course, as have government requirements at a variety of levels—from the international Kyoto Protocol to national laws in Europe and elsewhere, to enacted or pending legislation in a growing number of states.

> “OSIsoft’s software is proving to be an important technology solution to help monitor, measure, and report on these issues.”
>
> Rob Bernard
> Chief Environmental
> Strategist,
> Microsoft



OSIsoft is uniquely positioned to help companies address these various environmental issues. Because the world’s largest companies have long had the biggest stake in gaining and using information from their plant operations, half of the world’s largest 1,000 companies already use OSIsoft PI System, by the company’s estimate. And because most companies that use OSIsoft software can compute their greenhouse gas emissions from a myriad of data, they already have a key tool in the fight against those emissions. OSIsoft software may already be monitoring as much as 25 percent of the world’s carbon emissions.

“We’re in a position to educate companies that use our software to compute their energy use and emissions and then to report them to their information workers,” says Kennedy. ”The next logical step is for them to take advantage of that information to reduce their carbon footprint.”

One of the growing number of companies that’s done just that is Rhodia, one of the world’s largest chemical manufacturers. The company’s Brazilian and Korean operations produce nylon and, as a byproduct of that process, a greenhouse gas called nitrous oxide. Rhodia used OSIsoft’s PI System software to develop trend data and real-time, event-driven calculations to facilitate carbon emission reductions. As a result, Rhodia has eliminated the production of 15 million tons of carbon dioxide per year—the same environmental impact as taking four million cars off the road.

Another of OSIsoft’s customers is the Halifax Regional Water Commission (HRWC), the first regulated water, wastewater, and storm water utility in Canada. HRWC is a fully-metered utility that provides drinking water to about 325,000 residents of Halifax Regional Municipality (HRM) through a 1,300km (more than 1,000 miles) pipe network.

The PI System enables HRWC to collect, analyze, and disseminate data from more than 120 meters across its treatment and distribution facilities. With this information, it can then determine the period of a leak, the amount of leakage, and narrow the location to a specific district-metered area. Consequently, the PI System has been a key contributor to HRWC’s daily reduction in leakage of almost 9 million gallons of potable water. This reduction translates to a savings of more than U.S.$550,000 per year.

OSIsoft software is also helping to address energy consumption in an area that affects virtually every large company and every person with an e-mail address

> “We’re in a position to educate companies that use our software to compute their energy use and emissions, and then to report them to their information workers.”
>
> J. Patrick Kennedy
> Founder and CEO,
> OSIsoft

or access to the Internet: the data center. Data centers may account for between 1.2 and 2 percent of all electricity consumed in the United States—and, if counted as its own industry, would be the fastest-growing electrical energy consumer in the U.S. and one of the top five in terms of energy use. Microsoft, which is rapidly expanding its datacenter operations to support its Microsoft Live and related service offerings, is one of the growing number of companies using OSIsoft software to help conserve data center energy consumption.

Just as Microsoft turned to OSIsoft for help to reduce its datacenter energy use, OSIsoft turned to Microsoft for help to make its software possible. OSIsoft software was developed using Microsoft tools, runs on the Microsoft Windows Server® operating system, and delivers information directly to popular Microsoft products—such as internal Web portals and spreadsheets—that many companies already use. (See sidebar.)

"We chose to partner with Microsoft because we're a customer-driven company and that's what our customers wanted," says Kennedy. "Second, we like to win—and Microsoft is the winning platform."

Kennedy says he sees only growth for the use of OSIsoft software to help cut resource use and promote environmental sustainability. The U.S. federal government hasn't yet adopted carbon emissions regulations that will spur widespread adoption of emission-reduction technology, but a growing number of states have, which creates pressure on the federal government that Kennedy says makes federal regulation inevitable. And a growing number of companies are adopting OSIsoft technology in advance of such regulation, says Kennedy, because they can use the software today to help address issues of safety, corporate governance, and manufacturing efficiency, while getting ready to meet carbon legislation when that legislation is passed. Moreover, they're coming to see such technologies not as a burden imposed by regulators, but as a competitive advantage and source of profitability.

Meanwhile, much of the rest of the world—from South America to Europe to China—is already engaged in reducing carbon footprints and taking advantage of the nascent carbon-credit market whereby companies with high emissions purchase credits from companies with low emissions.

Kennedy says he's optimistic about the potential of technology—including his company's software—to help reduce

> "We chose to partner with Microsoft because we're a partner-driven company and that's what our customers wanted."
>
> J. Patrick Kennedy
> Founder and CEO,
> OSIsoft

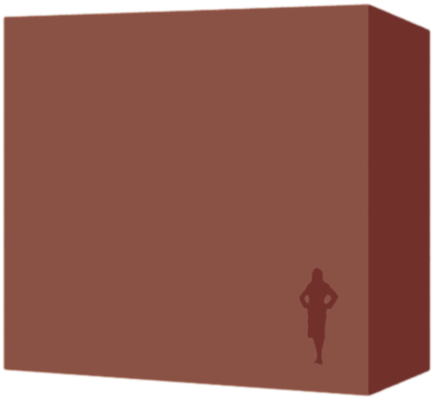
energy consumption and to make a real difference in levels of greenhouse gas emissions, water quality, and, eventually, global warming.

"We have a saying around here," says Kennedy. "Technology got us into this mess—and technology will get us out of it."

Under The Hood

OSIsoft PI System is a real-time, event-driven enterprise infrastructure that uses an Office Business Application (OBA) based on Microsoft Office SharePoint Server 2007, Office Excel Services and Visual Studio® Tools for Office. The result makes operational data available to employees in the familiar business productivity environment—Microsoft Office—in which they already work. OSIsoft Datalink uses Excel Services to bring operational data directly into Office Excel spreadsheets that are accessible through role-based intranet portals running on Office SharePoint Server 2007. OSIsoft's RtWebParts, also running on Office SharePoint Server 2007, support virtual teams that can collaborate across time zones and organizations.

Built on Windows Server 2008 and Microsoft SQL Server® 2005, the PI System creates a streaming archival database from more than 500 types of operational data sources, including enterprise resource planning systems such as SAP R/3 and Oracle. It then uses Office SharePoint Server 2007, Excel Services, and PerformancePoint® Server 2007 to transform the data into dynamic real-time plant floor reports and key performance indicators that users can view with the familiar Microsoft Office interface. OSIsoft's PI system enables creation of dynamic plant floor OBAs and gives companies user-friendly ways to combine real-time data with other data sources, associate that data with equipment or other assets in SAP, and impose business rules to detect meaningful real-time events. The results can be viewed in rich, process-oriented displays or on thin-client dashboards.



Learn more about OSIsoft at:
www.osisoft.com

Learn more about Microsoft
resources for ISVs at:
www.microsoft.com/isv

Document published: April 2008