

The Boeing site in Everett, Wash., earned its ISO 14001 environmental management certification in 2006. Boeing's goal is to have all its major manufacturing facilities be ISO 14001-compliant by the end of 2008.

ED TURNER PHOTO

14001

A number of reasons

ISO 14001 certification will play a major role in companywide effort to boost environmental performance

By JUNU KIM

What does the number 14001 have to do with Boeing? It's not a Zip Code of a major Boeing site. And it's not the numerical designation of a well-known Boeing airplane.

At Boeing, 14001 is important for environmental reasons—specifically for ISO 14001, the worldwide environment-related standard. ISO 14001 is the internationally recognized gold standard for organizations that want to implement or improve an environmental management system.

So far, three Boeing facilities have earned ISO 14001 certification: Exmouth, Australia; Everett, Wash. (see Page 25 of the February 2007 *Boeing Frontiers*); and Portland, Ore. Those sites have documented numerous environmental improvements (see box on Page 22). Boeing's objective is for all of its major manufacturing sites to earn their ISO 14001 certification by the end of this year, Environment, Health and Safety executives said.

ISO 14001 certification will help the company continue to improve its environmental performance. This gives Boeing the foundation to do better in this important area by establishing a clear organization and management system to lead improvements—while also bringing together existing companywide efforts.

“Adopting ISO 14001 is an important early step that supports other environmental actions,” said Mary Armstrong, vice president, Environment, Health and Safety. “That certification will help all of Boeing do a better job of reducing our waste and pollution, being better neighbors, and critically to embed the thoughts and actions into our work that will drive further improvements in environmental performance for our products and services.”

INSIDE ISO 14001

ISO 14001, overseen by the International Organization for Standardization, provides a model for organizations that want to implement or improve an environmental management system so they can improve their environmental performance. More than 100,000 organizations worldwide have earned their ISO 14001 certification.

An environmental management system is set of processes, systems and practices an organization uses to reduce its environmental impact and to operate more effectively. “A common environmental management system is a powerful tool

that lets us track our performance across the company,” said Aileen Yankowski, director, Compliance and Services, the EHS organization that's leading the ISO 14001 effort across Boeing. “It drives continual improvement, which enhances our environmental and business performance.”

ISO 14001 doesn't mandate performance targets; in other words, it doesn't demand that a company cut its greenhouse gas emissions by a certain percentage. Instead, it bolsters an organization's ability to monitor and continually improve its environmental performance. It includes requirements, examples, descriptions and options that help with implementing an environmental management system.

What does it take to earn certification? Representatives from the certified sites said that every employee at that location had to know how his or her activity affects the environment. They also need to know that there's an environmental management system, and that the site has an environmental policy that includes their organization's commitment to pollution prevention, compliance, environmental protection and continual improvement. Also, employees were reminded that they have a role in helping reduce their impact through cutting waste, conserving materials and energy, and preventing spills.

Jutta Jaunzemis, environmental advisor in Exmouth, recalled that at the outset

of her site's ISO 14001 journey, employees there feared that the certification process would mean a lot of work and would significantly affect their ability to get their own jobs done. But that skepticism changed, she said, once employees realized that this wouldn't mean extra work—and, in fact, "was already part of the way in which they conducted their daily activities."

Also helping the effort, Jaunzemis said, was having a designated person on hand who could help implement, maintain and provide ongoing support to the different work areas and personnel. "Initial and ongoing awareness training and actually experiencing benefits produces more positive attitudes," she said.

Once a site earns its certification, it needs to look for ways to continually improve its environmental management system.

The priority at Everett this year is to "drive environmental stewardship," said Frank Migaiolo, Environmental Affairs manager in Everett. "We have some very aggressive environmental performance targets to reduce Everett's environmental footprint in the next five years."

Making those targets challenging is increases in airplane production, after Commercial Airplanes' three straight years of 1,000-plus jetliner orders. Yet, Migaiolo said, "Everyone wants to help reduce our environmental footprint, so employees are self-motivated to find improvements." He added that teams in Everett are evaluating opportunities to make additional improvements in many environment-related fields, including greenhouse gas emission, water usage, recycling and participation in alternative commuting.

Steve Mason, Environment, Health and Safety manager at the Boeing Fabrication Facility in Portland, Ore, added that the major component of ISO is about the people. "Employee involvement in our program through suggestion systems, communication, events and training is key to maintaining certification. Our culture is one of no secrets and everyone part of the solution, which enables us to keep our commitment," he said.

WORKING FROM ONE PLAYBOOK

A critical part of ISO 14001 is developing and implementing robust environmental management systems. If an organization has a common environmental management system, the organization's entities can work from the same playbook.

The ISO 14001 team at Boeing current-

ly is implementing these common tools with sites that are participating in the certification effort:

- A single Environmental Policy
- A single Environmental Management System Manual
- A single database to report significant environmental effects and the site's plans to reduce the environmental impact
- A single ISO 14001 registrar for the company
- Common communication tools and templates

In addition, the EHS team is creating a suite of Lean+ tools, including one to help teams use an Accelerated Improvement Workshop to measure their carbon footprint.

"Other industries have incorporated environmental thinking into their business. We need to get this right, so we're building the tools that will help all of Boeing," said Mark Arvizu, Employee Engagement leader for Environment, Health and Safety. Arvizu added that employees should expect to see more information about these tools in upcoming months.

To ensure that Boeing is indeed making

improvements, its environmental strategy incorporates metrics, transparency and accountability.

The company has already rolled out its environmental-performance goals (see Page 10 of the February 2008 *Boeing Frontiers*). These targets were set by the Environment, Health and Safety policy council. In addition, Boeing will roll out an environmental report later this year. The report will summarize Boeing's environmental strategy and its commitment to action—including reporting the company's footprint, improvement targets and performance to plan.

To bolster its accountability, Boeing is a member of groups of businesses aiming to improve their performance in this area.

- Boeing is one of more than 40 companies on the Pew Center on Global Climate Change's Business Environmental Leadership Council. The center—a nonprofit environmental advocacy organization supported by The Pew Charitable Trusts, an independent organization that aims to serve the public interest—created the leadership council based on the belief that



Thanks to an idea from Jeff Speak, the Boeing site in Portland, Ore., now recycles the plastic packaging used for cutters and tooling inserts for five new machines at this facility.

MICHAEL WARD PHOTO

business engagement is critical for developing efficient, effective environmental solutions.

- Boeing is a member of the World Business Council for Sustainable Development, a global association of about 200 companies. Through the council, member companies can explore sustainable development, share knowledge, experiences and best practices, and advocate business positions on these issues.

- Boeing is participating in the Climate Leaders program organized by the U.S. Environmental Protection Agency. Climate Leaders participant companies commit to complete a companywide inventory of their greenhouse gas emissions, set long-term reduction goals—which Boeing

already undertakes—and annually reports their progress to the EPA.

In addition, Boeing’s Shared Services Group, which is responsible for site services, energy conservation and much facilities work, leads Boeing’s participation in the joint U.S. Department of Energy and EPA Energy Star program for energy management. It also heads Boeing’s role in the U.S. Green Building Council, a nonprofit organization dedicated to sustainable building practices that develops and administers the Leadership in Energy and Environmental Design building standards.

THE ROLE OF LEAN+

ISO 14001’s connection to continual improvement should sound familiar to

Boeing employees: This concept is a tenet of Lean+, one of four Boeing company-wide growth and productivity initiatives. The objective of Lean+ is to continually seek and implement process improvements—and to share these ideas with others around the company.

Because Lean+ behaviors are part of the Boeing culture, Boeing employees can support ISO 14001 and Boeing’s environmental activities by applying their existing ways of thinking.

“Lean+ is a natural ally of the environment,” said Jerry Lancour, Lean+ integration leader for Environment, Health and Safety. “When you drive out inefficiency to boost productivity, you almost always save energy and reduce real waste,

**By the numbers:
Environmental improvements**

Boeing sites in Exmouth, Australia; Everett, Wash.; and Portland, Ore.—all of which are ISO 14001 certified—have documented myriad improvements in environmental performance. Shared Services Group and the operating groups at these locations have played a key role in implementing these and many other projects focused on reducing Boeing’s environmental footprint and increasing operating efficiency. Here’s a look at some of the many numbers relating to this work.



KRISTIN ANDERSON PHOTO

Norm McLeod (left), a shift supervisor at the power plant, and Jutta Jaunzemis, environmental advisor, check water-filtration equipment at the Exmouth, Australia, site, which is ISO 14001-certified.

6,000

Megawatt hours saved in Everett through electrical system improvements. That’s enough to light more than 2,000 homes for one year and equals a reduction of more than 1,200 tonnes (1,323 tons) of greenhouse gas emissions.

15.8 billion

Number of BTUs Everett saved by improvements to a natural-gas system. This amount of energy equals 840 tonnes (926 tons) of greenhouse gas emissions.

1,100

Pounds (500 kilograms) of R-22 refrigerant, an ozone-depleting compound, no longer used in Everett’s 40-83 building, thanks to retrofitting air-conditioning equipment. This change also cut electrical energy consumption by 256,000 kilowatts annually.

44.5

Percentage reduction in the volume of waste sent to landfills by Exmouth in 2007, compared to 2006, thanks to recycling efforts.

25

Percentage decrease in water consumption at Exmouth in 2006, compared to the previous year.

8.7 million

Pounds (4 million kilograms) of metal recycled by Portland in 2007.

93.9

Percentage of all solid waste recycled—which includes metal chips—by Portland in 2007.

and you often reduce space requirements. All of that adds up to environmental improvement.”

That statement isn't lost on Jeff Speak, a Numerical Control Mill Operator at the Boeing Fabrication facility in Portland, Ore.

Last fall, Speak and his teammates were setting up a new flow line for the machining of 787 engine mounts. That flow line included five new machines, and the components for these machines featured lots of plastic packaging for both cutters and tooling inserts.

At first, this packaging wound up in a refuse bin, but Speak wondered whether it could be recycled. He mentioned this idea to officials at Portland. After some inquiries

and a meeting with relevant representatives from Boeing Fabrication and Environment, Health and Safety, the decision was made in December to put the components in with the recyclables. Perhaps not so coincidentally, the Portland site in 2007 recycled 93.9 percent of its solid waste—including metal chips.

Said Speak: “It’s really great that we’re always looking for better ways to do things around here.” ■

junu.kim@boeing.com

St. Louis electronics recycling event set

Are you a St. Louis—area Boeing employee or retiree—or a family member of one—with unwanted electronic equipment? If so, a group of Boeing employees in St. Louis can help you recycle these items.

Boeing Employees for Environmental Protection (BEEP), a Boeing-sponsored club, will conduct an electronics recycling collection event on Thursday, March 27. Unwanted electronic equipment can be dropped off from 7:00 a.m. to 9:00 a.m. in the 270G parking lot (across Campus Parkway from the 270 building) in St. Louis and from 3:00 p.m. to 5:00 p.m. in the 505H parking lot in St. Charles.

BEEP is partnering with Web Innovations and Technical Services (WITS), a St. Louis—based nonprofit corporation that specializes in reuse and recycling of electronic equipment, for this event. WITS specializes in rebuilding and recycling PCs and making donated systems available to local individuals and organizations that are unable to afford new equipment. WITS will accept any items that run on electricity, except large appliances; all unusable electronics are recycled.

WITS charges a donation of \$10 for each television and \$5 for each monitor, laptop and microwave oven; all other electronics items are taken for free. Please note that this event is for personal items only—and not for Boeing-owned equipment. WITS cannot accept anything with a Boeing property sticker.

BEEP and WITS conduct collections in March, June and September.

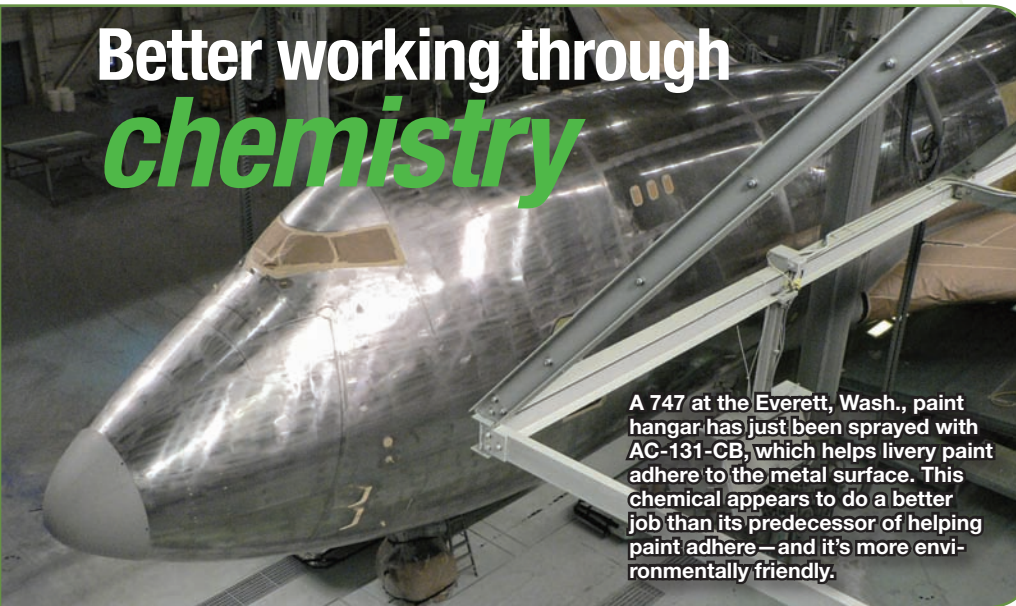
BEEP encourages the company’s St. Louis—area employees to participate in recycling and reuse programs that help the environment. It also provides a means for participating in these efforts in the workplace. For more information about BEEP, visit <http://beep.stl.mo.boeing.com/aboutBEEP.jsp> on the Boeing intranet. To learn more about WITS, visit www.witsinc.org.

gallons/606,000 liters in 2007) and eliminated hazardous wastewater. What’s more, the change may finally resolve the paint-adhesion problems on rivets—which would improve customer satisfaction.

AC-131-CB is scheduled to be implemented at the paint hangars in Seattle and Renton, Wash., by this month.

—Junu Kim

Better working through chemistry



A 747 at the Everett, Wash., paint hangar has just been sprayed with AC-131-CB, which helps livery paint adhere to the metal surface. This chemical appears to do a better job than its predecessor of helping paint adhere—and it’s more environmentally friendly.

Airlines are proud of the liveries painted on their airplanes. It follows, then, that they’re unhappy with the condition known as “rivet rash”—the loss of paint from aluminum rivet heads, which can detract from an airplane’s livery.

As part of an effort to reduce rivet rash, the Everett, Wash., paint hangar switched out a chemical in the painting process—and also contributed to environmental improvements. This change demonstrates how business improvements can have an environmental benefit.

To help paint adhere to the metal surface, the hangar previously used a chemical called Alodine 1000. This substance contains a chromium compound and needed to be washed off the airplane, which created wastewater containing hazardous chemicals.

Last April, the Everett paint hangar switched from Alodine 1000 to AC-131-CB. The sub-

stance is a Boeing-invented sol-gel-based material, manufactured by AC TECH under license from Boeing. AC-131-CB is chromium-free and forms the chemical bond on the surface of the airplane after evaporation—meaning it doesn’t need to be rinsed off.

According to Ronald Wu, chemical engineer with Material & Process Technology Chemical Technology, paint shop employees had mixed feeling about this product initially, but they understood that AC-131-CB had quality, cost and environmental benefits. “We did many test trials and received valuable inputs from the paint hangar employees,” Wu said. “Together with the painters, we improved the AC-131-CB application method significantly to make it a successful implementation.”

With this chemical substitution, the paint hangars reduced rinse water usage (160,000