



# 2014-2015 Sustainability Report

Flowserve Corporation



*Experience In Motion*

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# About This Report

This report is the 2014-2015 Sustainability Report for Flowserve Corporation, including information regarding the Flowserve Flow Control Division (FCD), the Engineered Product Division (EPD) and the Industrial Product Division (IPD). The report provides general information regarding Flowserve Corporation, including a statement from the CEO, an overview of the Flowserve approach to sustainable development, and information regarding our stakeholders, governance, and marketplace initiatives using 2014 and 2015 data.

The report highlights information specific to FCD, EPD and IPD for various performance indicators and metrics, using the Global Reporting Initiative (GRI) reporting framework and guidelines. Key indicators were selected based on review of the overall GRI indicator list, and include those that are relevant to Flowserve manufacturing, service, and repair operations. For purposes of this report, focus was placed on indicators related to safety, energy usage, emissions and waste generation. The data collection is based on a broad range of quantitative and qualitative information from multiple locations around the world representing all Flowserve product offerings and countries of operation. This report includes various types of Flowserve operating facilities and provides a comprehensive summary of our corporate sustainability program (e.g., manufacturing for pumps, seals, valves and controls; foundry operations; and service centers), and covers safety and sustainability efforts from both 2014 and 2015. Following the acquisition of SIHI in early 2015, an integration program was implemented to introduce Flowserve safety and environmental procedures and standards. As a result, indicator data for SIHI facilities has not been compiled for this report, but is planned for future reporting.

Topics within the report are organized to reflect the Flowserve overall sustainability approach which addresses market, workplace, environmental and community considerations. Sales information is also included to provide overall context and to assist with normalizing the information for comparability purposes. The report structure considers the use of the information by various stakeholders: employees and management, owners, investors, customers, and the general public.

If you have any questions concerning this report, please contact:

**Stephen Wilson**

*Corporate Director, Safety Health & Environmental Affairs  
Flowserve Corporation*

**Telephone:** (937) 226-4477

**Cell:** (937) 707-0064

**Fax:** (937) 226-4472

**e-mail:** [SWilson@flowserve.com](mailto:SWilson@flowserve.com)



# Flowserve Leadership Messages



For more than 200 years, Flowserve and our heritage companies have provided products to thousands of customers around the world. In so doing, we have attained numerous achievements in sustainability and safety. We are pleased to illustrate our most recent successes in this 2014-2015 Flowserve Sustainability Report.

Flowserve is attentive to the marketplace, the communities where we do business, the environment and our workplace. We are proud to continue our legacy as an industry leader in sustainable manufacturing practices, as well as the manufacture and service of pumps, valves and mechanical seals. Our products and services enable companies in the oil and gas, power generation, chemical, water, and general industries to effectively transport fluids with confidence.

Based on our high quality, service-oriented approach and through the ongoing commitment of our associates, we have successfully integrated sustainability principles into our products, services and operations. We know the importance of treating our employees with respect and fairness, and maintain a robust focus on safety. We work to protect the environment by monitoring and enhancing our everyday performance. Our products and services enable customers to operate in an environmentally responsible manner as well. In addition, we see the importance of making positive contributions to communities around the world.

The Flowserve team maintains a focused approach to keeping our operations, and those of our customers, more sustainable in the marketplace. We look for continued success and accomplishments in safety and sustainability.

## **Mark Blinn**

*President and CEO  
Flowserve*



With manufacturing sites and service facilities around the world and professional partnerships with leading distributors, Flowserve serves our customers through proficient technical support and unparalleled service in the areas of flow management and control. Along with our dedication to serving our customers in the marketplace, we cultivate a corporate culture based on workplace safety for employees.

Flowserve designs, manufactures, distributes and services a broad portfolio of pumps and related products, mechanical seals, industrial valves and automation solutions. We work to make our operations, and those of our customers, more sustainable, and we are proud that sustainability principles are at the heart of what we do every day. Our company continually puts sustainability and safety first. That means emphasizing the safety of our associates, reducing costs by conserving resources, minimizing potential environmental impacts and supporting local communities.

Flowserve pumps, valves and seals – backed by our industry expertise and aftermarket services – serve to keep critical processes working and vital fluids moving without the fear of loss or leaks. That renowned product reliability ensures extended service life, particularly when combined with on-site and off-site service, and industry-leading aftermarket services.

We are pleased and proud to share our progress through this 2014-2015 Flowserve Sustainability Report.

## **Thomas Pajonas**

*Chief Operating Officer  
Flowserve*



# Overview

Flowserve has a long history of recognizing the importance of sustainable development, taking into account the need to balance economic, social and environmental considerations as part of our business activities. Our desire to demonstrate our commitment and raise awareness with respect to sustainability considerations is driven by various factors.

We have always been focused on the well-being of our employees, the interests of our stakeholders, and the communities in which we live and work. At the same time, we conduct ongoing assessments of the effects of our products and activities. This has allowed us to identify opportunities for enhanced engineering of our products and services, improvements to operations and work practices, and reductions of potential environmental impacts. Furthermore, sustainability is not only important to us, it's increasingly important to our customers, employees, suppliers, investors and the public. We are committed to communicating relevant information transparently.

Our recognition of the importance of sustainable development principles is exemplified by our programs and initiatives in four key areas:

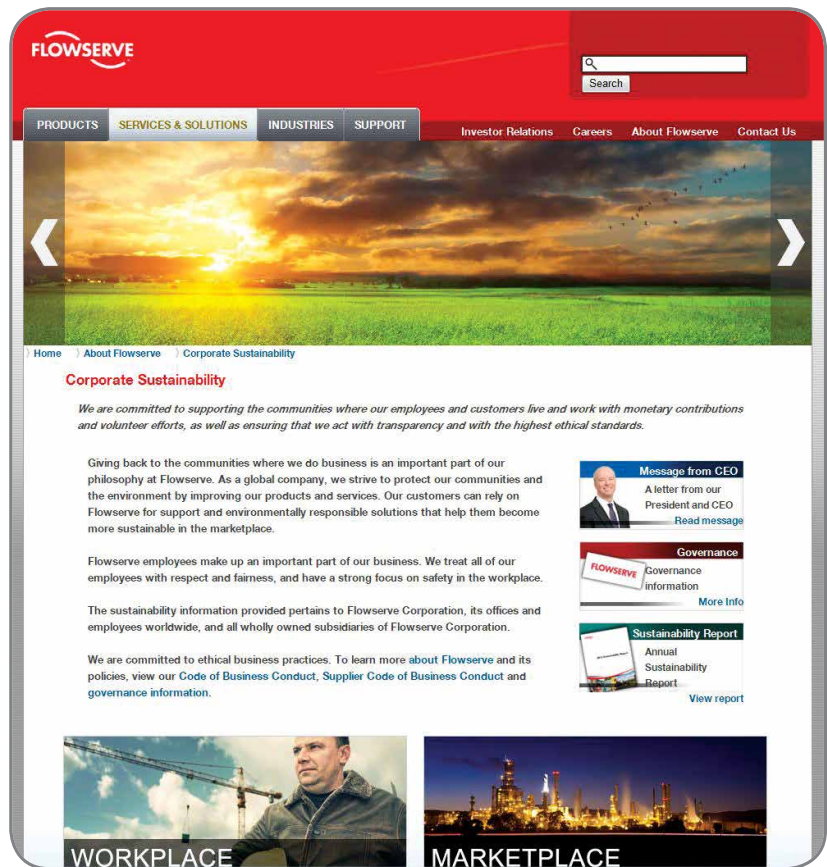
- Marketplace
- Workplace
- Environmental
- Community

## Marketplace

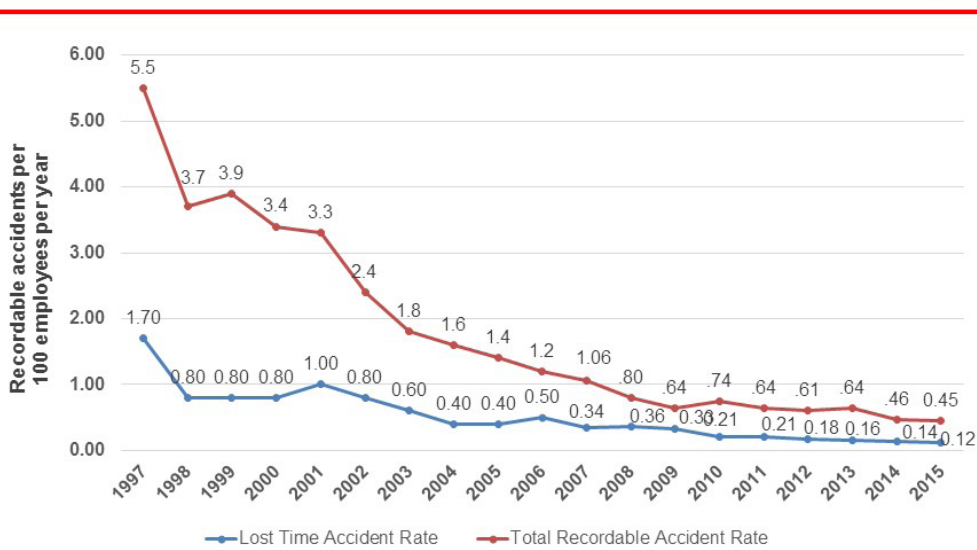
Flowserve plays a critical role with products and solutions that help our customers achieve their corporate responsibility goals.

## Workplace

Flowserve is committed to the health and safety of its driven, dedicated and focused workforce of more than 18,000 associates in more than 55 countries. Flowserve traces its commitment to the safety of our associates back nearly 90 years when a predecessor company joined the National Safety Council (NSC) and began participating in the NSC's safety awareness, training and improvement programs. Our 90-year commitment to decreasing workplace accident rates and our successes in this vital human element is illustrated in the following chart. We have succeeded in lowering associate injury rates for 27 consecutive years.



## Flowserve Corporate Accident Rates – History\*



\* Acquisitions not included in years prior to acquisition

Lost Time Accident Rate: Number of accidents resulting in a day or more away from work per 100 employees per year

Total Recordable Accident Rate: Number of accidents more serious than minor first aid events per 100 employees per year (includes lost time accidents)

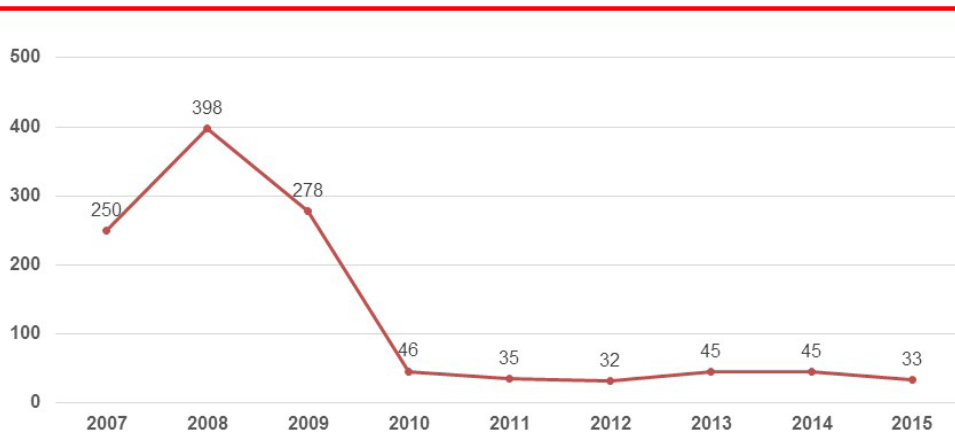
\* Acquisitions not included in years prior to acquisition

*Most noteworthy is a Workers Compensation expense index that has improved more than two-fold in the past five years. The current rate is one of the lowest in the industry, representing an actual aggregate cost savings of nearly \$8 million (USD) over five years.*

## Environmental

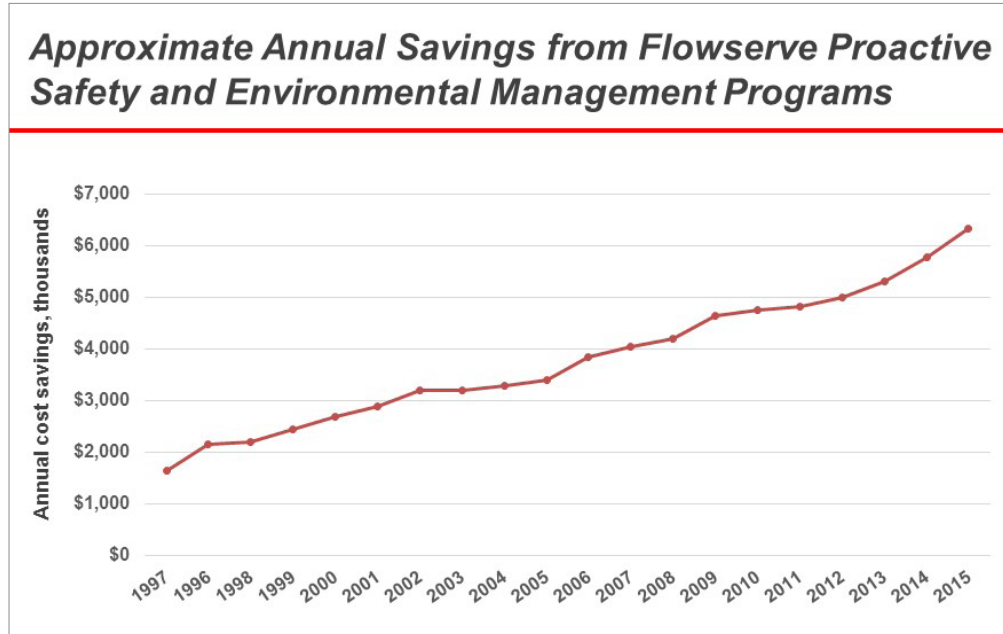
A top priority at Flowserve is protecting the environment for future generations. We do this by providing our customers with quality products which reduce emissions, minimize leaks and enhance efficiency. We continuously strive to diminish the potential effects from our operations. Our more than two-decades record of driving both hazardous and solid waste out of our operational processes – reducing emissions to air and water and eliminating solvents deemed harmful to the environment – demonstrates our long-term commitment to minimizing our environmental footprint.

## Flowserve Corporation Hazardous Waste Generation (pounds per \$1 million in revenue)



*A top priority at Flowserve is protecting the environment for future generations.*

We long ago learned the business advantages of proactive environmental practices and reducing our environmental footprint. The graph below illustrates the operational cost savings we have leveraged from our pollution prevention and waste minimization programs in the past 27 years. The aggregate total now exceeds \$60 million and is constantly growing as our associates create, implement, and succeed at reducing chemical use, emissions, and wastes, and our facilities expand their recycle, reuse, and repurpose initiatives.



## Community

Flowserve is committed to improving the lives of people throughout the world and giving back to the communities where our facilities are located. Giving back to the local areas where we do business is an important part of our philosophy. We believe we have a responsibility to the communities where our employees and customers live and work, and we constantly strive to find ways to give back. From promoting educational programs for children to volunteering at local food banks and supporting worldwide disaster recovery efforts, Flowserve and its associates are committed to efforts that improve communities.

*Sustainability principles are integrated within Flowserve – they are at the heart of what we do every day.*

## Stakeholder Engagement

Many years ago, Flowserve began efforts to understand the impacts we have as a company on our world, including our associates, communities, environment, investors and customers. The process was extensive: We scrutinized our safety performance; examined wastes and emissions from our operations; surveyed our employees to assist with identifying improvement opportunities; enhanced environmental management systems; and asked our customers for feedback through surveys and direct discussions. In 2009, we began to publicize these efforts and successes as part of sustainability communications with our stakeholders. We are proud that sustainability principles are integrated within Flowserve – they are at the heart of what we do every day.

## Governance and Ethics

### Corporate Governance Highlights

Flowserve is committed to implementing corporate governance practices that are consistent with our high standards of ethics, integrity and transparency, as well as being fully compliant with the Sarbanes-Oxley Act of 2002 and the listing standards of the New York Stock Exchange. These practices reflect the requirement that our Board of Directors oversee the company with a forward-looking governance structure implemented by diverse, independent board members who are focused on serving the interests of all our shareholders. We have developed a series of guidelines, codes of ethical business conduct, policies, corporate bylaws and reports related to our governance procedures, which are available on our corporate website, [www.Flowserve.com](http://www.Flowserve.com).

### Acting with Transparency and the Highest Ethical Standards

Through our *Code of Business Conduct* and our *Supplier Code of Business Conduct*, we provide our associates and suppliers with clear guidance regarding acceptable business conduct, requiring all employees and suppliers to adhere to the company's codes. In addition to regular communications emphasizing the importance of an ethical and transparent work culture, Flowserve commits a week each year to ethics and compliance awareness. During that week, Flowserve facilities around the world hold events that feature training and educational opportunities emphasizing ethical work practices.

The Flowserve Ethics Hotline is also a critical resource for both our employees and our customers that helps ensure we deliver on our commitment to an ethical culture. These efforts were substantiated in early 2010 when Flowserve was named one of *Forbes* magazine's 100 Most Trustworthy Companies.

*Through year-end 2015, Flowserve has trained more than 4,000 associates as Green Belts, Black Belts, Master Black Belts and Lean Practitioners. Collectively, more than 7,900 projects have been completed and more than \$637 million (USD) in savings has been achieved through the application of CIP tools.*

*Flowserve has been named to Forbes magazine's 100 Most Trustworthy Companies.*

## Safety, Health and Environmental Affairs (SHEA) Policy and Vision

Our philosophy is that safety, health and environmental affairs are integral parts of good management and production, and they cannot be separated. The Flowserve Safety, Health and Environmental Affairs (SHEA) Policy outlines the job titles and responsibilities of Flowserve management to ensure all of our safety, workplace health and environmental management programs are carried out to their maximum potential. The policy applies to all divisions, locations and subsidiaries worldwide, and is designed to ensure compliance with all applicable laws, regulations, standards and best management practices identified by Flowserve. It provides for taking the practical steps necessary to create and maintain safe and healthy working conditions, prevent injuries to employees, prevent environmental impacts through strict adherence to applicable government directives, and engage in environmental best practices. The policy also grants the top-ranking leader at each location direct responsibility for establishing and maintaining an active SHEA program. The program is subject to audits conducted at least once each calendar year by the Corporate SHEA Department. The results of these audits are shared with Flowserve senior management, who, in turn, brief the Board of Directors on SHEA goals and accomplishments.



## Flowserve SHEA Programs

Flowserve strives to foster an environment of mutual respect and teamwork in which ethics are a key driver of how all associates treat one another. From the top down, Flowserve associates work together to create and maintain safe, healthy and productive work environments that produce quality products for our customers. Employees participate in a cooperative SHEA infrastructure and maintain high performance through the use of company-required safety committees at each location. Committee members undergo advanced safety training and are empowered with the authority to resolve safety issues and/or arrange for the appropriate corrective action to be taken. Committee members interact with and mentor their peers, while spreading the “safety message” throughout facilities.

In addition to manager and supervisor involvement, all team members are encouraged to participate in the annual Safety, Health and Environmental Compliance Review performed by a member of the corporate SHEA staff. The wall-to-wall facility and records review audit consists of two parts: the compliance component and the audit component. The compliance component includes a three-part, 721-point checklist utilizing the Flowserve Safety, Environmental and Fire Prevention Checklist. This extensive checklist follows U.S. regulations and consensus standards in the United States and other international locations based on country-specific regulations or a modified U.S. checklist with ISO 14000/OHSAS 18000 principles and best practices. This portion represents the safety and environmental infrastructure that Flowserve considers necessary to be in place for long-term continuous SHEA improvement. The audit component measures the day-to-day functional aspects of accident prevention and environmental performance as every machine, building and overall location is scrutinized via a hands-on examination for safety conditions, and evaluated according to how our associates interact with these site operational components.

The goal is world-class regulatory compliance and world-class safety/environmental performance on the factory floor.

*Flowserve associates work together to create and maintain safe, healthy and productive work environments that produce quality products for our customers.*

*More than 7,000 employees worldwide have been trained on our DMAIC Lite problem-solving methodology.*

©2005, 2013 Flowserve Corporation					
FLOWSERVE U. S. FACILITY SAFETY CHECKLIST					
29 CFR ITEM	CATEGORY	TOPICS	YES	NO	COMMENTS
<b>INSPECTIONS</b>					
1903.2	Posting of Notice	1 Is the current OSHA poster posted in the workplace?			
<b>RECORD KEEPING</b>					
1904.32	Record Keeping	1 Has a summary of all occupational injuries and illnesses been compiled at the conclusion of each calendar year and been reported on OSHA Form 300?			
1904.33	Retention and Updating	2 Have all OSHA records been retained for a period of five years, excluding the current year?			
1904.32	Annual Summary	1 Is the OSHA 300 log posted each year the months of February through April for the previous year?			
<b>WALKING AND WORKING SURFACES</b>					
1910.22	General Requirements	1 Housekeeping:			
		a. Are all places kept clean and orderly?			
		b. Are all floors kept clean and dry?			
		c. Are mats or special surfaces provided for wet work areas?			
		2 Are aisles clear?			
		a. Are permanent aisles marked?			
		3 Are holes covered or protected?			
		a. Is the area free of slip/trip hazards?			
		4 Are all storage lofts clearly marked as to their load limit?			
1910.23	Lofts and Floor Openings	1 Are lofts or elevated work areas over four (4) feet protected by guardrails?			
		2 Are openings and entryways to the loft guarded?			
		3 Are lofts guarded with 4 inch toe rails?			

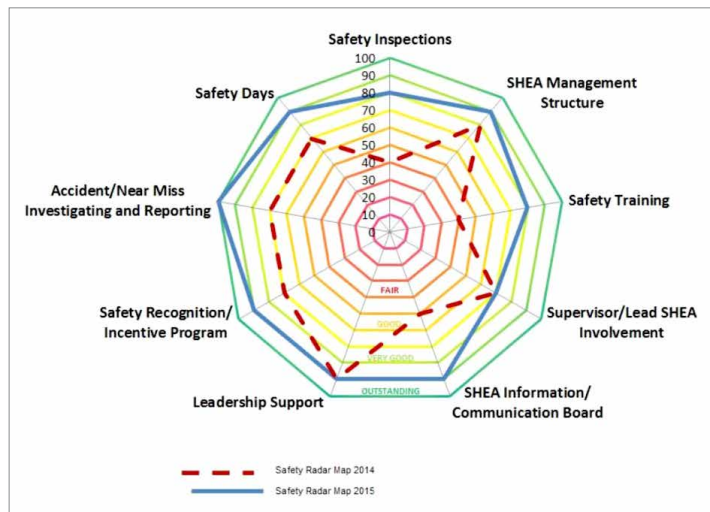
## Employee Competency Building

The Flowserve Educational Services Group operates Learning Resource Centers to meet the training needs of our global workforce. Training is standardized, deployed and measured through the use of an online Learning Management System (LMS). Training goals are established each year, including specific safety and environmental training, and are included in individual performance goals and objectives. This promotes competency building, continuous improvement and teamwork.

We use targeted, regularly scheduled training to ensure SHEA excellence. In early 2006, the Flowserve Board of Directors demonstrated their support of SHEA by approving a significant investment in PureSafety customized training programs. The programs are deployed by the LMS and currently consist of 34 modules which are available in English, Dutch, French, German, Italian, Japanese, Chinese, Portuguese and Spanish. PureSafety modules are available in languages spoken and understood by 95 percent of our associates. In addition to online training, safety training is further enhanced at the local level through the use of “All Hands” meetings and “Toolbox Talks,” which are conducted frequently on the shop floor. Additionally, Flowserve has hundreds of internally developed training resources, available to all associates through our company intranet site. These resources are updated on a continuous basis.

Site SHEA coordinators also participate in advanced SHEA training, including an overview of the SHEA Policy and Procedures manual; workplace safety and health expectations; accident reporting, goals, and performance; environmental management and reporting; audits; safety committees; associate training and self-inspections; and an internal certification program. In recent employee surveys, Flowserve associates have consistently ranked their SHEA training and the overall commitment of Flowserve to its safety principles with extremely high scores. In a 2014 engagement survey of Flowserve associates worldwide, 89% of respondents rated “workplace safety and security” as the number one favorable element.

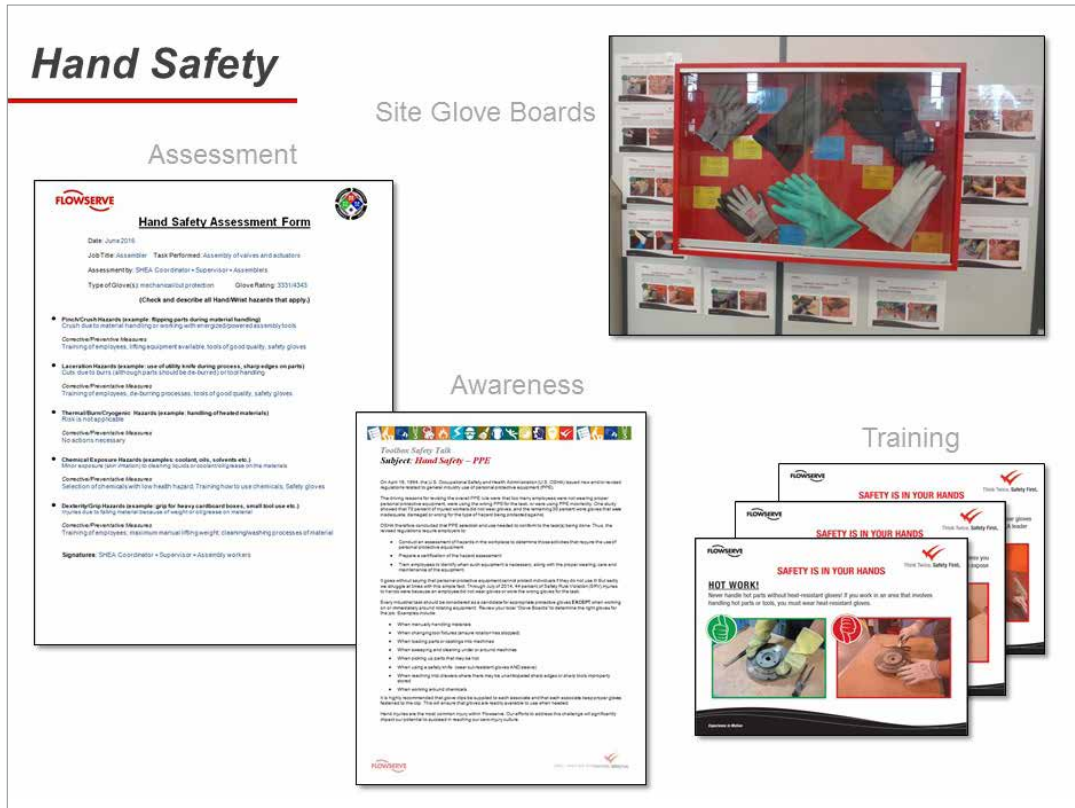
Flowserve uses a highly developed set of leading indicators and metrics within our SHEA program related to training, inspections, management, supervision, communication and reporting. This is reflected in the Safety Radar Map example for an individual facility shown below.



*We have improved our safety performance nearly 1.5 times during the past five years, and current performance levels are nearly 10 times better than industry averages.*

The Safety Radar Map is the newest addition to our Safety/Sustainability metrics toolbox used to drive continuous improvement throughout the corporation.

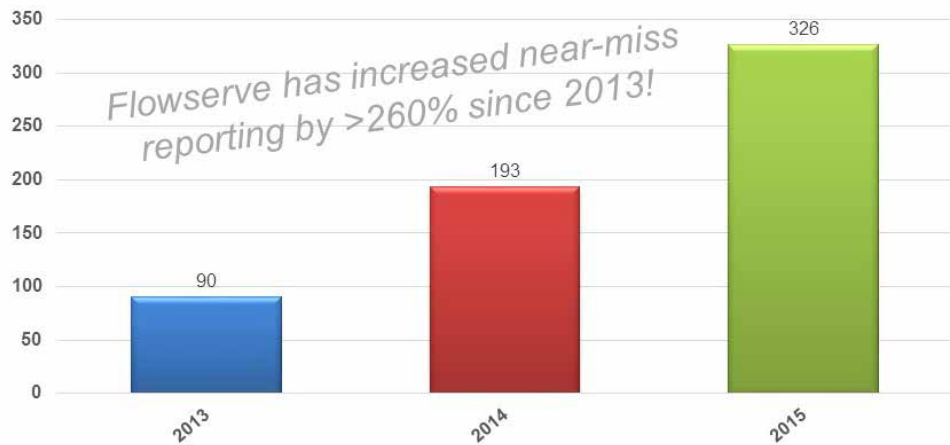
At Flowserve, we are constantly examining old and new ways to improve our safety performance to reduce workplace accidents and empower our employees to go home safely to family and loved ones each day. One of the more important initiatives in recent history is our 2015 Hand Safety Assessment and Improvement effort, which had a goal of reducing hand-related safety incidents by 10 percent per year for each of the next five years. We significantly exceeded our goal during the first year, 2015.



*Since the beginning of 2013, we have increased the rate of near-miss reporting nearly four-fold.*

As a global corporation, we recognize the importance of being a “learning organization” and taking advantage of every opportunity to enhance safety and sustainability performance across the company. One way we do this is through a global initiative to increase leading indicator or “near-miss” safety or environmental incident reporting. By focusing on this critical method of incident capture, we have engaged associates more fully than ever before in our safety and sustainability efforts, which in turn drives continuous improvement. By reporting, correcting and sharing the lessons learned from near misses and observations, we utilize an extremely valuable tool for keeping people safe and protecting property.

## Leading Indicators: Monthly Average First Aid/Near-Miss Reporting



We also seek to be a global learning organization by capturing sustainability “best practices” worldwide and share those practices throughout the corporation to further drive our sustainability accomplishments and successes. As each best practice is shared and implemented throughout the company, we reduce our potential for employee accidents/injuries, reduce our environmental footprint, increase recycling/reuse and enhance our sustainability success.

## Machine Tool Storage and Protection



### Single Rack Vertical Tool Storage

- Eliminate reaching over other tools
- Better space usage



### Tool protection

- Open tooling rack holders provide a good visual means to manage tooling, but with significant safety risks
- Use the original tooling packaging to increase protection against possible cut and laceration injuries



## Facility SHEA Audit - Abahsain



An impressive housekeeping and maintenance program includes the test area and spray paint booth. These have lowered our risk of accidents.

Finally, Flowserve devotes time each year to an increased focus on safety and sustainability. Sites hold Safety and Sustainability events that are greatly anticipated as the latest safety lessons, sustainability successes and new goals for performance improvement are shared with associates on a worldwide basis.



FCO Pasadena, Texas:  
"100 Reasons to be Safe." Photos submitted by associates.

Newark, England:  
Bake sale to benefit Macmillan Cancer Relief.



Robust commitment to safety at Springville, Utah.



Suzhou, China: Safe forklift operation competition.



Sulphur Springs, Texas: Safety Slogan contest. Winning design printed on t-shirts and given to all associates.

## Supporting Our Associates and Communities

### Supporting Our Associates

Flowserve associates around the globe are our most important asset. This is more than just a statement – it is something we live by every day. They are treated with respect and fairness, and all benefit from a superior, world-class safety and health program. Their ideas for improving the program are the driving forces behind our success. Flowserve has set safety performance records year after year for more than 27 years. For example, these charts show how our SHEA and Sustainability programs have prevented 12,718 recordable injuries and 58,936 days away from work since the 1997 creation of Flowserve, based on historical records.

In addition, the Flowserve Employee Assistance program provides support to employees and their families during natural disasters or other times of need. Our efforts on their behalf in the aftermath of Hurricanes Katrina, Rita and Ike, the Chilean and New Zealand earthquakes, and other natural disasters reflect that commitment to our associates and their families.

#### Metrics Focus Yields Increased Manufacturing Days



#### Metrics Focus Yields Reduced Accidents



**Passport**
My Passport: My Page

Welcome Stephen Wilson

My Passport Corporate IT HR IPD/EPD FCD BI&C Supply Chain CIP R & D Legal Proj Mgmt Flowserve Policies

My Page Manage My Career Develop My Employees Leadership Development

### U.S. tornados and flooding relief

#### Flowserve supports U.S. tornados & flooding relief

Message from Mark Blinn, Flowserve president and chief executive officer

I'd like to extend a personal thanks to everyone who donated to the Japan Red Cross in support of the earthquake/tsunami relief efforts. With the corporate contribution and match of your personal donations, Flowserve contributed more than \$109,000.

Unfortunately, the time has come again for us to support others in need and demonstrate the character for which we are known.

Over the last few weeks, large parts of the United States have been devastated by an outbreak of widespread severe weather. During a three day period in late April, at least 325 confirmed tornados ravaged the southeast, midwest and northeast parts of the country, resulting in more than 340 deaths and billions of dollars in damage. And right now, cities all along the Mississippi River are battling the most catastrophic flooding the region as seen in hundreds of years. Flowserve employees, customers and their families have been impacted, particularly throughout the state of Louisiana.



## Communities Where Our Associates and Customers Live and Work

Flowserve is committed to being a responsible corporate citizen and supporting the communities where our associates and customers live and work through corporate and local monetary contributions. The company also encourages associate volunteerism and participation in charitable initiatives. Many associates at locations around the world regularly participate in organized, collaborative efforts to support local at-risk youth and education programs in their communities.



## Protecting the Environment

### The Environment

Flowserve products and services enable companies in the oil and gas, power generation, chemical, water and general industries to move fluids, gases, and other materials with efficiency and confidence, minimizing loss or leaks to the environment. Flowserve products are built to last, providing outstanding value for our customers. Internally, recycling and waste reduction programs are paired with rigorous auditing and continuous improvement of internal processes to ensure minimal environmental impact. Waste reduction and elimination, recycling, emission controls, and pollution prevention programs have been, and remain, a strong focus at Flowserve.



*Waste reduction and elimination, recycling, emission controls, and pollution prevention programs have been, and remain, a strong focus at Flowserve.*

## Summary of Flowserve Safety and Environmental Successes

### 1988 through 2015

- Recipient of more than 1,400 awards from the National Safety Council (NSC)
- Presented Corporate Culture of Safety Award in 2011 by the NSC
- Named one of America's Safest Companies in 2010 by *EHS Today* magazine
- Reduced lost-time accident rate by more than 95 percent (more than 70 percent less than our peers)
- Reduced lost workday severity by more than 96 percent
- Achieved workers' compensation costs of more than 75 percent less than the U.S. manufacturing average of 3.21 percent of payroll
- Reduced U.S. workers' compensation costs by \$69.7 million
- Reduced solvent emissions going into the air by 90 percent
- Reduced hazardous waste and machining coolant shipments by 70 percent
- Reduced solid waste disposal by 50 percent
- Achieved a total environmental savings of more than \$63 million while growing from \$300 million in sales to \$4.56 billion in sales
- Prevented 12,718 recordable injuries and 58,936 days away from work, based on historical statistics since 1997

In addition, Flowserve placed in the top third of eligible companies in *Newsweek* magazine's 2014 Green Rankings, and was added to the NASDAQ Global Sustainability Index in November 2015.

*Flowserve was listed on the NASDAQ Global Sustainability Index and CDP Analytics in 2015 for environmentally conscious investors. This is the ultimate community recognition for our sustainability efforts and results.*

*Warranty Week magazine recognized Flowserve as a leader (top 18 companies) in warranty management and improvement two times in 2015.*



# Facility Sustainability Initiative Examples

## Ahaus, Germany

The facility received ISO50001 certification for its energy management system and introduced energy efficiency improvements with LED lighting and a new air compressor. These improvements save 50,000 KWh per year at a savings of \$12,400 USD annually, while eliminating the burning of 26 tons of coal, or 505,000 cubic feet of natural gas, and gases that may contribute to climate change.

## Arnage, France

Associates recycle wood, paper, cardboard, plastic and metal. There are also several recycling stations set up around the facility to collect these items, which are recycled. In 2015, the Arnage facility recycled approximately 200 tonnes of materials.



*In 2015, the Arnage, France, facility recycled approximately 200 tonnes of materials.*

## Brantford, Ontario, Canada

Associates at the facility implemented a system for reusing water within the facility's pump testing system. The solution involves use of a recovery pump that conserves water and significantly reduces disposal costs. This improved process has resulted in a 77 percent reduction in water usage and wastewater disposal costs. Since implementation, the total amount of water saved is 1,175,339 liters, amounting to 223,874 liters per year. The total cost savings related to wastewater disposal since implementation is \$135,046 (CAD) or \$25,723 (CAD) per year.

## Brunn, Austria

Associates at the facility implemented an energy savings plan in 2011 with a goal of reducing energy consumption by 20 percent by 2015. The improvements include a heat exchanger for the paint booth for energy recovery, new LED lighting, a new heating control system, employee training related to energy conservation, and other items. As a result of these improvements, the total energy consumption in 2015 was 43 percent lower than the 2010 baseline, and the energy cost has been reduced by 32 percent over the same period. The energy used at the facility is from renewable electricity production and biofuel for heating.

During first quarter 2015, Brunn began installing LED lighting in the main building and the shop floor area. Energy reduction was 247,000 kWh per year, 129 tons of coal or 2.5 million cubic feet of natural gas, which reduced energy costs by 34,000 Euro/\$38,000 (USD).

## Suzhou, China

Safety and recognition go hand-in-hand at the FSG Suzhou manufacturing facility in the People's Republic of China, which received the 2015 Government Safety Award. The award recognizes companies with excellent safety performance and no incidents.



### **Ettlingen, Germany**

In 2015, Flowserve Ettlingen implemented a combined heat and power unit. It is used to provide as much heat (498 kw) as the previous burner, and also produces power (363kw) which can be consumed at the site or injected into the power network to earn money.

A 25m<sup>2</sup> water tank was also installed to increase the operation up to 5,300 hours per year and cover one-third of the power consumption. The subsidies from this efficient technology help make the project extremely profitable. These initiatives enable Flowserve Ettlingen to help protect the environment by saving 350,000kg of carbon dioxide through this heat and power unit.



*Ettlingen*

### **Essen, Germany**

During the past decade, Essen employees have formed a partnership with ECOPROFIT, which has provided access to the world's most current energy, water, wastewater, hazardous waste, and residual waste best practices and training. By collaborating with other ECOPROFIT partners, associates exchange experiences, develop optimization concepts related to best-available techniques, determine improvement potential and conduct training to improve procedures. Flowserve Essen has received ECOPROFIT certifications several times, most recently for 2013/2014, which included recognition for reductions in energy usage, carbon dioxide emissions and wastewater discharges.

### **Etten-Leur, Netherlands**

Operations at the Etten-Leur facility use energy primarily for machining, welding and testing. To effectively manage electricity consumption, the facility continues to look for new ways to reduce energy consumption using an approach based on transparent monitoring and controlling. Using the data, the facility implemented several projects to control cost and improve performance. During the past few years, these projects resulted in an estimated cost savings of \$76,000 (USD) through reduced energy consumption, and a 200-tonne reduction of greenhouse gas emissions. Future plans include inquiries into the possibilities of using voltage regulators in manufacturing and LED lighting to further reduce energy consumption.

### **Haywards Heath, U.K.**

Haywards Heath installed a 50 kw solar panel system on the roof of the facility. Estimated annual energy savings are 100 megawatt-hour (mwh) of electricity. This renewable energy source reduces the facility's carbon footprint by 84.5 tons of carbon dioxide per year, having a positive impact on the environment.

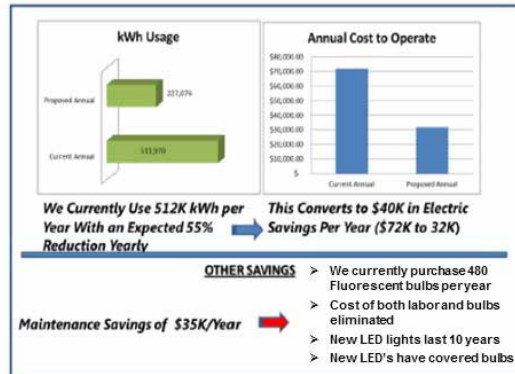


*A solar panel roof system was installed at the Hayward Heath, U.K., facility. The solar panel system is expected to provide renewable energy at an estimated cost savings of more than 100 mwh of electricity.*

## Lawrence, Massachusetts

Lawrence installed LED lighting to replace fluorescent tube lighting, which improved safety conditions and resulted in a 55 percent reduction in energy use and savings of approximately \$75,000 per year related to maintenance and energy consumption.

### Best Practice Environmental Savings – Lawrence



Fluorescent



LED

## Individual Facility Initiatives: Energy Conservation

Energy-efficiency projects and cost savings achieved at individual facilities in 2014 and 2015:

ENERGY SAVINGS (2014)			
SITE	SAVINGS	SAVINGS TYPE	IMPROVEMENT PROJECT
Roosendaal	\$33K	Gas, Water, Electric	New cooling tower, new lighting in offices and shop, new heating unit
Etten-Leur	\$270K	Gas, Electric	Energy reduction at test facility
Desio	\$32K	Electricity	Natural light ceiling panels
Hengelo	\$30K	Gas, Electric	New heating units and windows
Hengelo	\$49K	Gas, Electric	Energy saving
Raleigh	\$25K	Electric	New energy-efficient lighting for shop
Cookeville	\$27K	Electric	New compressor and lighting, awarded energy credits from TVA
Haywards Heath	\$15K	Electric	Solar panels
Tulsa	\$10K	Electric	2 new compressors
Suzhou	\$10K	Electric	New energy-efficient lighting in shop
Suzhou (Fangzhou)	\$30K	Electric	Power energy savings
Suzhou (Lisheng)	\$13K	Electric	Energy cost reduction for pump testing
Suzhou (Baiyu)	\$29K	Gas, Electric	Energy savings
Burgess Hill	\$32K	Gas, Electric	New process for phosphating
Brunn	\$13K	Gas, Electric	Heat energy reduction
Dortmund	\$68K	Gas, Electric	Reuse of compressor heat
Essen	\$25K	Electric	New packaging machine/compressed air reduction
Macle	\$38K	Electric	Energy reduction
Castlemaine	\$14K	Electric	Energy usage reduction
Singapore	\$10K	Electric	Inverter compressor air system
Ettlingen	\$217K	Water, Electric	Replacement of central washing machine
Taneytown	\$45K	Gas	Energy-saving lighting
Hastings	\$18K	Gas	Roofing project energy savings
Hastings	\$2K	Electric	LED lighting
Dortmund	\$68K	Gas, Electric	Heat recovery
Vernon	\$26K	Electric	Reconfigure test station
Beaumont	\$146K	Electric	LED lighting
Kalamazoo	\$11K	Electric	HVAC Cost Reduction
Kalamazoo	\$10K	Electric	Compressed air line upgrade
Newark	\$203K	Gas	Reduce utility costs
Coimbatore	\$7K	Electric	Power consumption reduction for compressor
Arnage	\$76K	Electric	Reduce consumable and utility costs

ENERGY SAVINGS (2015)			
SITE	SAVINGS	SAVINGS TYPE	IMPROVEMENT PROJECT
Hengelo	\$12K	Gas, Electric	Roof replacement
Singapore Valve	\$20K	Electric	LED lighting
Singapore Pump	\$1200	Electric	Office lighting cost reduction
Kashiwazaki	\$254	Electric	Collection of energy data
Mendoza	\$101K	Electric	Test lab energy cost reduction
Cheonan	\$1575	Electric	Electricity cost reduction
Singapore (Changi)	\$2002	Electric	Lighting cost reduction
Suzhou	\$3333	Electric	Nonproduction electricity cost reduction
Suzhou	\$3338	Electric	Electric energy cost reduction for pump test
Sydney	\$4233	Electric	Electricity cost reduction
Campo Grande	\$263K	Electric	Reduce electricity demand cost for pump test
Dayton Foundry	\$18K	Air, Electric	Compressed air savings
Hamburg	\$8333	Air, Electric	Compressed air supply optimization
Brunn	\$23K	Electric	Lighting energy reduction





*The Cookeville, Tennessee, facility added lighting system upgrades designed to reduce electricity usage in the facility.*



*In Desio, Italy, a new roof equipped with lights is structured to increase transparency and reduce interior lighting requirements. (Interior lights are off.)*

## Foundries

Flowserve foundries located in North America (Dayton, Ohio; Hastings, Nebraska; and Kitchener, Ontario) and Europe (Desio, Italy) produce metal casting components used in various Flowserve products. The Dayton foundry (EPD) will be closing in 2016 due to changing market conditions. This follows a long history of distinguished service, culminating as a world-class, high-alloy facility specializing in stainless steels, nickel-based alloys and other alloy types. The Kitchener foundry (EPD) is a North American leader in quick response manufacturing of large steel, stainless and aluminum bronze castings. The Hastings foundry specializes in steel components for IPD products and the Desio foundry specializes in iron components for EPD products. Each of our foundries makes unique, high-quality parts critical to flow control applications around the world.

Flowserve has developed and implemented rigorous safety and sustainability programs designed specifically for the challenges of foundry operations which ensure the safety of our associates, environmental protection and resource conservation. The key indicator data collection and reporting (for safety, energy, water, emissions and waste) includes information for Flowserve foundries.

At the Dayton foundry, the input material used in 2014/2015 includes approximately 1,800 tonnes of recycled metal, and recycled foundry sand accounted for almost 4,100 tonnes of waste that was beneficially used in the same period. This eliminated more than 3,800 cubic meters (5,000 cubic yards) of material that would otherwise end up in a landfill.

*By focusing our attention on sustainability, Flowserve has saved more than \$750,000 at our sites around the world during the past year alone.*

Flowserve has initiated energy conservation programs at facilities and foundries to reduce energy consumption of primary and ancillary equipment, such as installations of energy-efficient lighting. The Hastings facility implemented an energy management system in 2005 which has saved approximately \$50,000 annually. Electricity from renewable sources is used at both the Kitchener and Desio facilities.

Waste material including sand from casting operations is recycled or reused as noted above. As with all Flowserve facilities, hazardous waste generation is minimized. In 2014 and 2015, the combined amount of hazardous waste generated in Flowserve foundries (Hastings, Kitchener and Desio) was less than 1 tonne (0.9 ton).

# Marketplace

Flowserve moves, controls and protects the flow of materials in some of the world's most critical industries – including oil and gas, power generation, renewable energy, chemicals and water – and we use our market-leading pumps, valves and mechanical seals to move, monitor and control these vital resources. In doing so, Flowserve makes direct and important contributions to economic development in numerous countries where we have customers.

Flowserve provides community support through local associates and facilities. Our marketplace presence is closely tied to societal commitments and environmental responsibility, consistent with sustainable development principles. This includes, for example, taking into account the environmental regulatory requirements in various jurisdictions that apply to our products and affect our customers' operations. As a result, Flowserve continues a commitment to industry leadership by following Environmental Protection Agency (EPA) national standards throughout the U.S. The implementation of German environmental regulations with sealing solutions that meet the strict requirements of the 2002 Technical Instructions on Air Quality Control (TA LUFT) is supported by Flowserve, which also supports the stringent rules associated with the European Union's European Integrated Pollution Prevention and Control (IPPC) directive. In the past, Flowserve has participated in the Fluid Sealing Association's "Sealing Systems Matter" initiative that helped to "promote educated decision-making based on total life cycle costs...associated with energy consumption, water usage and environmental monitoring."

## Flowserve Heritage Brands

### Valves

Accord • Anchor/Darling • Argus • Atomac • Automax • Durco • Edward • Gestra • Kämmer • Limatorque • Logix • McCANNA/MARPAC • NAF • Noble Alloy • Norbro • Nordstrom • PMV • Serck Audco • Valbart • Valtek • Vogt • Worcester Controls

### Pumps

Aldrich • Byron Jackson • Calder • Durco • IDP • Lawrence • Pacific • Pleuger • Niigata Worthington • Scienco • Sier-Bath • SIHI • TKL • United Centrifugal • Wilson-Snyder • Worthington

### Seals

BW Seals • Durametallic • GASPAC • Interseal • Pac-Seal • Pacific Wietz

*Flowserve makes direct and important contributions to economic development in numerous countries where we have customers.*

Flowserve delivers reliable solutions for demanding technical challenges and customer applications, backed by local on-site field repair services that are readily available to serve our customers.

## Services and Solutions for Industry

Flowserve services and solutions integrate hydraulic, mechanical and materials engineering knowledge with creative operating and business solutions to:

- Create the best solutions for our customers' most challenging applications
- Improve equipment reliability and performance
- Reduce energy consumption
- Manage inventories
- Maintain flow management equipment
- Increase plant availability and output
- Develop and enhance workforce knowledge
- Improve the safety and environmental impact of operations



## Examples of Current Initiatives

As part of our marketplace focus, Flowserve provides solutions to assist various industries to attain their own sustainability goals. Some examples follow.

### Oil & Gas

**Methane to Markets:** Natural gas transmission systems convey gas under pressure utilizing compressor station technology, which is subject to losses of gas to the atmosphere at various stages. Flowserve has developed solutions to these problems that incorporate technological improvements for compressor seals, dump valves, rod packing and pneumatic devices. Not only do these solutions make sense from an economic and energy efficiency/conservation standpoint, they also reduce atmospheric emissions of methane, the primary component of natural gas, which has a global warming potential around 20 times that of carbon dioxide.

### Industrial, Chemical and Power Generation

**Carbon Dioxide Capture:** Flowserve is a pioneer in carbon capture and storage (CCS). In 1984, we provided the first centrifugal pumps used for carbon dioxide pipeline and injection service. Since then, Flowserve products have been used on numerous projects to remove carbon dioxide from process streams in gas plants, refineries, and chemical and petrochemical plants. Flowserve is also actively participating in pilot projects to study carbon dioxide capture from industrial flue gas streams. Flowserve was recently chosen to supply process pumps to be used in the carbon dioxide capture process at Mississippi Power's Kemper County Integrated Gasification Combined Cycle (IGCC) power station project.

## Renewable Energy

**Solar Power:** Flowserve pumps are used in concentrated solar power (CSP) designs. In one design, a large number of parabolic mirrors are used to concentrate the sun's energy onto receivers positioned at the focal point of each mirror. In another design, sun-tracking mirrors (called heliostats) are used to focus sunlight on a receiver at the top of a centrally located tower. In both designs, heat transfer fluid is heated and used to create steam, which is then supplied to a turbine to generate electricity. Recent CSP projects in the U.S. and Spain incorporate Flowserve pump and fluid-handling technology for movement of molten salt as the heat transfer fluid, at temperatures in excess of 500 degrees Celsius (932 degrees Fahrenheit). This includes the Crescent Dunes Solar Energy Project in Nevada and the Gemasolar project in the Andalucía region of Spain.



**Wind Power:** Flowserve supplies lift pumps, water circulation and treatment pumps for transformer cooling systems for offshore wind turbine applications.

**Cellulosic Ethanol:** Cellulosic ethanol production is based on extracting sugars from plant materials such as cost-efficient, renewable corn and sugarcane. Flowserve provides all of the products needed for each step of the chemical conversion process through other similar industrial applications. In addition, Flowserve collaborates with Verenium Corporation on a 1.4 million gallon-per-year demonstration scale facility in Jennings, Louisiana, which is designed to process sugarcane bagasse (waste) into cellulosic ethanol.

**Geothermal Power:** In 2011, Flowserve was awarded a contract to supply a new deep-well submersible pump and motor system to Germany-based Geothermische Kraftwerksgesellschaft Traunreut. Developed in conjunction with the German government to help Germany meet its renewable energy goals, this innovative system is designed to be installed at a depth of 600 meters (2,000 feet) and used to pump water at temperatures up to 140 degrees Celsius (285 degrees Fahrenheit). The pumped fluids and the resulting steam that is produced will be used to generate electricity from this renewable source.

## Water

**Desalination:** Flowserve delivers advanced products and services required in the worldwide demand for fresh water. Applications such as desalination – the conversion of salt water to fresh water – and the ability to move large volumes of water from the source to the area where it is needed are both critical to this need. Flowserve has supported the desalination industry with products used in thermal and membrane processes for more than 50 years. Flowserve expanded its products and advanced technologies to the growing global desalination markets through the acquisition of CALDER AG. Through this heritage product, Flowserve now specializes in the design, engineering and supply of energy recovery equipment and related proprietary technologies for the reverse osmosis process used in desalination plants around the world. Energy recovery equipment is critical technology within reverse osmosis that captures and



reuses waste energy, which significantly lowers net energy consumption in the desalination process. Recent projects include:

- Provision of Calder energy recovery technology for a large desalination plant in Singapore
- Provision of Calder Dual Work Exchanger Energy Recovery (DWEER) units for the Sorek desalination plant in Israel, with a capacity of 150 million cubic meters per year, making it the largest of its kind
- Provision of pumping system for the seawater reverse osmosis (SWRO) desalination plant in Carlsbad, California



**Water Supply:** Flowserve also provides solutions for water supply systems in other types of demanding conditions. In India, Flowserve recently provided a mechanical sealing solution to a water supply system used to convey water from the source location at the Godavari River, to users as far away as 200 kilometers. The solution was PSS III Split seal with specific design enhancements due to the very large diameter pump shaft and split seal components. A main requirement of this application is to utilize a split seal option so that seal change-outs could be made without disturbing the large pump drive and bearing assemblies, allowing for more efficient, energy-saving operation.

## Flowserve Products and Services

### Flow Control Division (FCD)

**Products:** FCD designs, manufactures, distributes and services a broad range of industrial valves and automation solutions, including isolation and control valves, actuation, controls, and related equipment. In addition, FCD offers energy-management products such as steam traps, boiler controls and condensate, and energy recovery systems. FCD leverages its experience and application knowledge by offering a complete menu of engineering and project management services to complement its expansive product portfolio.

FCD products are used to control, direct, and manage the flow of liquids and gases, and are an integral part of any flow control system. Our valve products are most often customized and engineered to perform specific functions within each customer's unique flow control environment. Our flow control products are primarily used by companies operating in the chemical (including pharmaceutical), power generation, (nuclear, fossil and renewable), oil and gas, water management, and general industries, including aerospace, pulp and paper, and mining.

Our valve, automation and controls products and solutions portfolio represents one of the most comprehensive in the flow control industry. The products are used in a variety of applications, from general to the most severe and demanding services, including those involving high levels of corrosion, extreme temperatures and/or pressures, zero fugitive emissions and emergency shutdown.

Our “smart” valve and diagnostic technologies integrate sensors, microprocessor controls, and software into high-performance integrated control valves, digital positioners, and switchboxes for automated on/off valve assemblies and electric actuators. These technologies permit real-time system analysis, system warnings and remote indication of asset health. These technologies have been developed in response to the growing demand for reduced maintenance, improved process control efficiency and digital communications at the plant level. We are committed to further enhancing the quality of our product portfolio by continuing to upgrade our existing offerings with cutting-edge technologies.

**Operations:** FCD has 55 sites worldwide, including 38 manufacturing facilities, 18 Quick Response Centers (QRCs), some of which are co-located with manufacturing facilities, and two Research and Development facilities. The QRCs provide rapid response, fast delivery and field repair on a global scale for our customers.

**Safety:** In 2015, the FCD total recordable accident rate was 0.52, the lost-workday rate was 0.14, and the lost-time severity rate was 3.5. We continue to see improvement compared to previous years, and these rates remain well below U.S. valve manufacturing industry rates.

**Energy, Emissions and Waste Management:** For all divisions, we continue to compile energy usage and emissions information at the facility level to assist with reporting and identifying areas for improvement. Hazardous waste generation for FCD facilities in 2015 was approximately 32 pounds (14.5 kg) per \$1 million (USD) in sales, which is well below our corporate goal of 90 pounds (41 kg).

## Engineered Product Division (EPD)

**Products:** Our largest business segment is EPD, through which we design, manufacture, distribute, and service engineered pumps and pump systems, mechanical seals, auxiliary systems, replacement parts, and related equipment. The business primarily consists of long-lead-time, highly engineered, custom-configured products, which require extensive test requirements and superior project management skills.

EPD products and services are primarily used by companies that operate in the oil and gas, power generation, chemical, water management and general industries. We market our pump and mechanical seal products through our worldwide sales force, regional service and repair centers, or through independent distributors and sales representatives. A portion of our mechanical seal products are sold directly to other original equipment manufacturers for incorporation into rotating equipment requiring mechanical seals.

Our pump products are manufactured in a wide range of metal alloys and with a variety of configurations to meet the critical operating demands of our customers. Mechanical seals are critical to the reliable operation of rotating equipment in that they prevent leakage and emissions of hazardous substances from the rotating equipment, and reduce shaft wear on the equipment caused by the use of non-mechanical seals.

Flowserve Services and Solutions integrates our global service network, engineering knowledge and technologies to offer creative operating and business solutions to:

- Improve equipment reliability and performance
- Reduce energy consumption
- Manage inventories
- Maintain flow management equipment
- Increase plant availability and output
- Develop and enhance workforce knowledge
- Improve the safety and environmental impact of operations

**Operations:** EPD has 142 facilities worldwide, including 35 manufacturing facilities, 114 QRC facilities, some of which are co-located with manufacturing facilities, and five engineering facilities. EPD has foundries located in Dayton, Ohio (high alloy and titanium foundries); Desio, Italy (iron foundry); and Kitchener, Ontario, Canada, (high alloy foundry). We provide engineered aftermarket services through our global network of QRCs. A large portion of EPD's service work is performed on a quick-response basis, and we offer 24-hour service in all of our major markets.



**Safety:** In 2015, the EPD total recordable accident rate was 0.39, the lost-workday rate was 0.10 and the lost-time severity rate was 3.8. We continue to see improvement compared to previous years, and these rates remain well below U.S. pump manufacturing rates.

**Energy, Emissions and Waste Management:** For all divisions, we continue to compile energy usage and emissions information at the facility level to assist with reporting and identifying areas for improvement. Hazardous waste generation for EPD facilities in 2015 was approximately 30 pounds per \$1 million (USD) in sales, well below our corporate goal of 90 pounds.

### Industrial Product Division (IPD)

**Products:** Through IPD, we design, manufacture, distribute and service pre-configured engineered pumps and pump systems, including submersible motors, for industrial markets. Our globalized operating platform, low-cost sourcing and continuous improvement initiatives are essential aspects of this business.

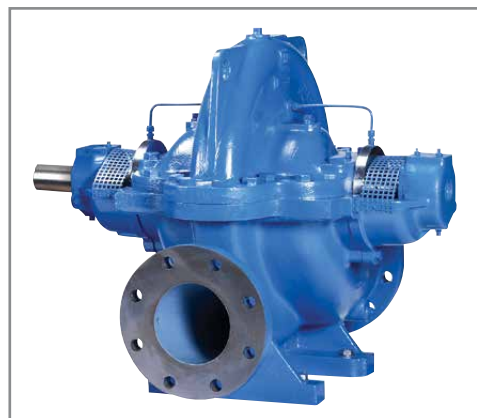
IPD's standardized, general purpose pump products are primarily utilized by the oil and gas, chemical, water management, power generation and general industries. We manufacture approximately 40 different active types of pumps available in a wide range of metal alloys and non-metals with a variety of configurations to meet the critical operating demands of our customers.

We market our pump products through our worldwide sales force, regional service and repair centers, or through independent distributors and sales representatives. We provide an array of aftermarket services including product installation and commissioning services, spare parts, repairs, re-rate and upgrade solutions, advanced diagnostics, and maintenance solutions through our global network of QRCs.

**Operations:** IPD has 19 facilities worldwide, including 13 manufacturing facilities and 13 QRCs, some of which are co-located with manufacturing facilities. IPD has one steel foundry in Hastings, Nebraska.

**Safety:** In 2015, the IPD total recordable accident rate was 0.69, the lost-workday rate was 0.13, and the lost-time severity rate was 0.3. We continue to see improvement compared to previous years and these rates remain well below U.S. pump manufacturing industry rates.

**Energy, Emissions and Waste Management:** For all divisions, we continue to compile energy usage and emissions information at the facility level to assist with reporting and identifying areas for improvement. Hazardous waste generation for IPD facilities in 2015 was approximately 45 pounds (20 kg) per \$1 million (USD) in sales, approximately half of our corporate goal of 90 pounds.



## Scope and Boundaries

The following sections provide information regarding safety and environmental performance using Global Reporting Initiative (GRI) indicator protocols and focusing on those aspects that are most relevant to FCD, EPD and IPD operations. The GRI is an organization that has developed the world's leading sustainability reporting framework.

Flowserve has adopted this framework for this report, including the use of GRI guidelines and indicator protocols presented in the following sections. Data was collected from various facilities based on records from January 1, 2014, through September 30, 2015. The partial data for 2015 was extrapolated as needed to represent the entire calendar year.

In general, the information presented herein reflects the activities conducted by the FCD, EPD and IPD manufacturing and service facilities, and foundries in the course of their operations within, but not outside, the physical facility limits. The activities conducted by suppliers and outside contractors are not within the scope of the data collection program. Also, sales and administrative offices external to the manufacturing and service facilities, and heritage SIHI facilities, are not included.

In some cases, operations for multiple Flowserve product divisions are conducted within individual facilities. The labor and environmental indicator data used in this report is for the entire facility, without any distinction between divisional operations.



## Countries

Flowserve facilities included within the reported indicator data are located in these countries: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Czech Republic, Finland, France, Germany, India, Indonesia, Italy, Japan, Kazakhstan, Madagascar, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Taiwan, Thailand, Turkey, United Arab Emirates, United Kingdom, United States of America, Venezuela and Vietnam.

## Number and Type of Facilities

The current total number of Flowserve facilities is 220 (including 218 manufacturing and service facilities and two corporate offices). In general, all 218 facilities are included within the reported indicator data. In some cases the reported indicator data is based on a sample of facilities. As noted above, heritage SIHI facilities (38 total) are not included in the reported information.

# Workplace

Workplace data collection and reporting in 2014 and 2015 focused on three key aspects (employment, safety and training) and the associated GRI indicators, as outlined in the tables and text below. Our workplace safety performance data and training information represents the entire organization (excluding heritage SIHI facilities).

## Employment

### GRI Indicator LA1 (G4-10)

At the end of 2015, the total number of employees was more than 18,000 (based on 220 facilities in four geographic regions), working primarily on a full-time, permanent contract basis. Approximately 30 percent of that total were covered by a collective bargaining agreement.

Flowserve Facilities and Employees by Region – 2015		
Region	Number of Facilities	Number of Employees (end of 2015)
Asia/Pacific	50	3,946
Europe/Middle East/Africa	63	6,295
North America	82	5,996
Latin America	25	1,866
<b>Total</b>	<b>220</b>	<b>18,103</b>

*Note: Employee data shown in the above table includes manufacturing/service facilities (218 total) and two corporate offices.*

Compilation of quantitative information regarding employment types (full-time or part-time), contract types (permanent or temporary), and supervised workers was initiated for previous data collection and continues using a sample of facilities. The information is being used to assist in developing plans for future reporting.

## Safety

### GRI Indicator LA7 (G4-LA6)

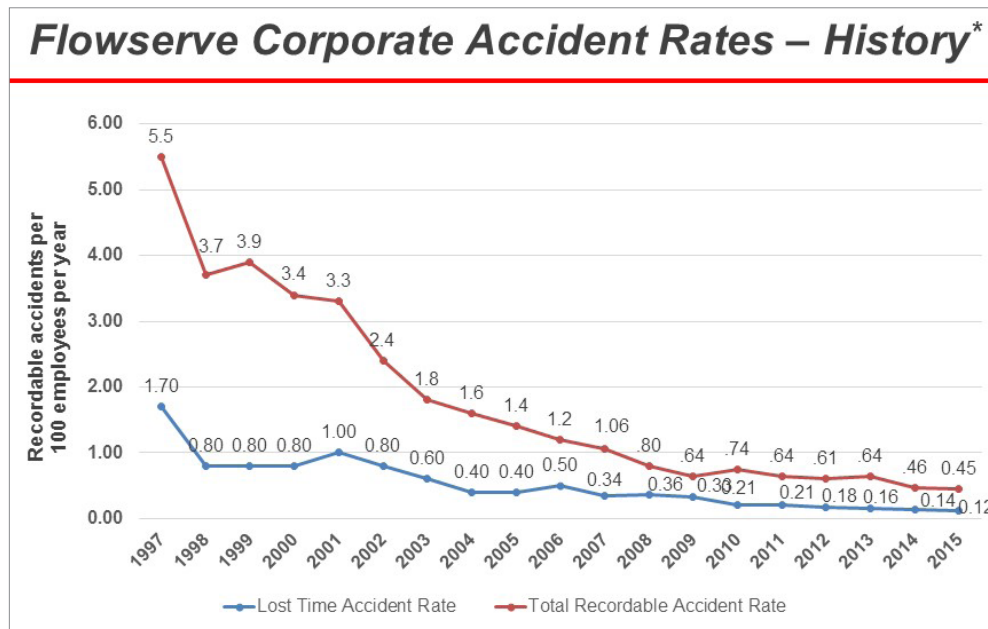
Employee safety has always been a key focus for Flowserve. In 2015, the total recordable accident frequency rate was 0.45, the lost-workday frequency rate was 0.12, and the lost-workday severity rate was 3.3 for continuing operations. (See chart below.) These values are normalized for every 200,000 hours worked based on U.S. Occupational Safety and Health Administration (OSHA) reporting requirements and those used in other countries. (The system used for compiling the safety data is based on OSHA recordkeeping requirements, for both U.S. and international facilities. Lost workdays are determined based on scheduled workdays beginning the day following an accident.) There were no fatalities at any Flowserve facilities in 2014 or 2015. Information regarding overall absentee rates is not available. The overall rates shown below include accidents and occupational diseases.

#### Flowserve Facilities Accident Rates – 2015

Region	Total Lost-Workday Accident Rate (Lost-Time Frequency Rate)	Lost-Time Severity Rate	Doctor Case Frequency Rate	Total Recordable Accident Frequency Rate
U.S.	0.11	3.6	0.8	0.91
International	0.15	4.2	0.2	0.36
Sales/Mkt/Admin	0.02	0.2	0.02	0.05
Overall	0.12	3.3	0.3	0.45

**Note:** Data shown in the above table includes manufacturing/service facilities (218 total) and two corporate offices.

For comparison purposes, the average Total Lost-Workday Accident Rate (Lost-Time Frequency Rate) for U.S. manufacturers of pump and valve products is 1.2, and the average Total Recordable Accident Rate is 5.2 (from 2014 U.S. Bureau of Labor Statistics data). The 2014 rates for Flowserve facilities are well below these industry averages, as has been the case for many years. Our safety record is a reflection of the commitment of our employees and the diligence of Flowserve safety programs and professional staff, and is exemplified by the historical decrease in lost-workday and total recordable accidents. (See chart.)



*Employee safety has always been a key focus for Flowserve.*

Lost Time Accident Rate: Number of accidents resulting in a day or more away from work per 100 employees per year

Total Recordable Accident Rate: Number of accidents more serious than minor first aid events per 100 employees per year (includes lost time accidents)

\* Acquisitions not included in years prior to acquisition

## Training

### GRI Indicator LA10 (G4-LA9)

Employee training is routinely conducted to provide initial and continuing instruction related to technical, professional, quality, sales, administration, safety/health/environment and other topics, specific to employees' needs. This is tracked for various employee categories (management, professional, manufacturing, service/repair, application engineers, sales and office). A sample of approximately 40 global facilities indicates approximately 20 hours of formal training per employee per year in 2014 and 2015. The actual value is higher when taking into account other types of on-the-job training.

For example, Flowserve employees participate in an estimated average of 10 hours of formal safety training per year. Additional training takes place informally and frequently on the shop floor during safety Toolbox Talk sessions and safety "all hands" meetings (between four and eight sessions per month) for a total of 22 safety training hours per year. The catalog of employee training modules includes a broad list of topics as shown below.

Flowserve PureSafety Training Suite Content	
(English, Spanish, French, Portuguese, Italian, Mandarin, Dutch, German and Japanese)	
<b>Access to Medical and Exposure Records</b> <b>Asbestos Awareness</b> <b>Basic Rigging Part 1</b> <b>Basic Rigging Part 2</b> <b>Bloodborne Pathogens</b> <b>Environmental Overview</b> <b>Fire Extinguisher Safety</b> <b>Flammable and Combustible Liquids</b> <b>Hand, Wrist and Finger Safety</b> <b>Hand, Wrist and Finger Safety Around Heavy Equipment</b> <b>Hazard Communication</b> <b>Housekeeping on the Job</b> <b>Industrial Ergonomics</b> <b>Lockout/Tagout</b> <b>Machine Guarding</b> <b>Materials Handling</b> <b>Office Ergonomics</b>	<b>Office Safety</b> <b>Personal Protective Equipment (PPE) Part One - Introduction</b> <b>PPE Part Two – Head Protection</b> <b>PPE Part Three – Eye and Face Protection</b> <b>PPE Part Four – Hand and Arm Protection</b> <b>PPE Part Five – Body Protection</b> <b>PPE Part Six – Foot Protection</b> <b>PPE Part Seven – Hearing Conservation</b> <b>PPE Part Eight – Respiratory Protection</b> <b>PPE Part Nine – Electric Protective Devices</b> <b>PPE Part Ten – Levels of Protection and Protective Gear</b> <b>Preventing Back Injury</b> <b>Preventing Slips, Trips and Falls</b> <b>Recognizing Electrical Hazards</b> <b>Returned Goods Safety</b> <b>Safety Orientation</b> <b>Stormwater Pollution Prevention</b>

Local SHEA coordinators and managers also participate in advanced SHEA trainings, including an overview of the SHEA Policy and Procedures manual, workplace safety and health expectations, accident reporting, accident goals and performance, environmental management and reporting, audits, safety committees, associate training and self-inspections, and an internal certification and recertification program. A total of 618 Flowserve associates have completed – Manager or Coordinator – level certification training.

The Flowserve SHEA Certification Program is designed to provide both fundamental and advanced training in SHEA principles as well as knowledge of the Flowserve system for implementing these principles on a global basis. The program has two certification levels.

Level I is designed for individuals who function as site SHEA Coordinators. These individuals have more than one area of responsibility and often perform multiple functions at small-to-mid-sized sites within Flowserve. The two-day Level I course is intended to provide these individuals with the basic principles of human safety management, accident prevention, electrical/chemical/mechanical safety and environmental protection, as well as how Flowserve applies these principles to achieve world-class SHEA performance. At the conclusion of the program, the attendee will understand and be able to apply these principles at their assigned location.

The Level II certification is designed for those individuals from larger facilities whose primary role is site SHEA Manager. Level II certified associates will attend the Level I program and take the exam, plus a third day of more intensive training and application of SHEA management principles. This program has been very successful with a positive impact on overall safety performance.

The Flowserve SHEA Recertification Program was developed to enable local SHEA coordinators and managers to maintain high levels of SHEA competence. In addition to classroom training, participants have the opportunity to interact with peers, which enhances their knowledge base. Through 2015, a total of 283 associates have been recertified.

## Environmental

Environmental data collection and reporting for Flowserve facilities in 2014 and 2015 focused on six key aspects (energy usage, water consumption, climate change, air emissions, water emissions, and waste disposal and recycling) and the associated GRI indicators, as outlined below.

### Energy Sources

Energy sources used by Flowserve facilities include direct sources (e.g., combustible fuels) and indirect sources (e.g., purchased electricity). Natural gas represents the main source of direct energy, with some facilities also reporting the use of other fuels including heating oil, fuel oil, kerosene, diesel, gasoline, propane, LPG and acetylene. Indirect energy sources for each facility include purchased electricity, generated in part from renewable sources. At some facilities, indirect energy (e.g., heated water and electricity) is also provided via combined heat and power plants and district heating systems.

Examples of Flowserve facilities that use combined heat and power (CHP) and/or renewable energy sources include:

- Brunn, Austria - 100 percent of heating and electrical consumption is from renewable sources, including hydroelectric power and a local CHP plant that uses biomass material only
- Coimbatore, India - Solar power systems are used at the site for lighting and water heating
- Desio, Italy - Approximately 30 percent of electrical power provided to the facility is generated from renewable sources
- Essen, Germany - Electricity and heat is provided from a local CHP plant
- Haywards Heath, U.K. - Energy is provided from a solar power system using roof panels
- Linköping, Sweden - District heating and electricity are provided by a local CHP plant which uses renewable biomass material, while municipal waste provides most of the energy used at the facility



## Energy Usage

### GRI Indicators EN3 and EN4 (G4-EN3)

Total energy usage in 2015 for Flowserve manufacturing facilities is approximately 1.2 million Gigajoules. Direct energy sources account for approximately 36 percent of the total amount of energy used, while indirect energy sources account for 64 percent.

Energy usage for 2014 and 2015 is shown in the following tables.

**Estimated Energy Usage (Gigajoules)  
Flowserve Facilities - 2015**



### Energy Usage Summary

Flowserve Manufacturing Facilities Energy Usage – 2014			
	Direct Energy (Gigajoules)	Indirect Energy (Gigajoules)	Total Energy (Gigajoules)
EPD	275,486	394,265	669,751
IPD	64,405	85,265	149,670
FCD	171,276	235,089	406,365
<b>Total</b>	<b>511,167</b>	<b>714,619</b>	<b>1,225,786</b>

Flowserve Manufacturing Facilities Energy Usage – 2015			
	Direct Energy (Gigajoules)	Indirect Energy (Gigajoules)	Total Energy (Gigajoules)
EPD	239,898	427,201	667,099
IPD	52,831	91,378	144,209
FCD	144,620	254,540	399,160
<b>Total</b>	<b>437,349</b>	<b>773,119</b>	<b>1,210,468</b>

As shown above, the estimated overall energy usage is comparable for both years, with a slight reduction in 2015 compared to 2014. The estimated normalized energy use for the combined 2014/2015 period (total) is 261 Gigajoules per million USD in sales.

## Energy Conservation

### GRI Indicator EN5 (G4-EN6)

Flowserve facility personnel have undertaken efforts to identify energy conservation opportunities at individual facilities. These efforts have resulted in reductions in energy usage at multiple facilities, which is reflected in the reported energy usage described in the previous charts.

See also the Facilities Sustainability Initiatives section of this report for more information regarding energy conservation measures being implemented at individual Flowserve facilities.

*Flowserve facility personnel have undertaken efforts to identify energy conservation opportunities at individual facilities.*

## Water Consumption and Recycling

### GRI Indicators EN8 and EN10 (G4-EN8, G4-EN10)

Water sources at Flowserve facilities are almost exclusively provided from municipal supply sources. Typical water uses include potable supply, cleaning and limited process operations. In some facilities, water is also used for cooling purposes. Additionally, water is recycled as much as possible.

The estimated total water usage for 2014 was approximately 696,000 cubic meters (approximately 184 million U.S. gallons) and the estimated total water usage for 2015 was approximately 628,000 cubic meters (approximately 165 million U.S. gallons). The estimated water usage values for 2014 and 2015 are similar to the amounts reported for the preceding two-year period. However, there was a year-over-year reduction in water usage from 2014 to 2015. (See chart below for an estimated breakdown of water usage for each division for 2014 and 2015.)

Flowserve Manufacturing Facilities Water Usage – 2014 and 2015		
	2014 Water Usage (Cubic Meters)	2015 Water Usage (Cubic Meters)
EPD	395,675	357,583
IPD	80,388	71,308
FCD	220,250	199,072
<b>Total</b>	<b>696,313</b>	<b>627,963</b>

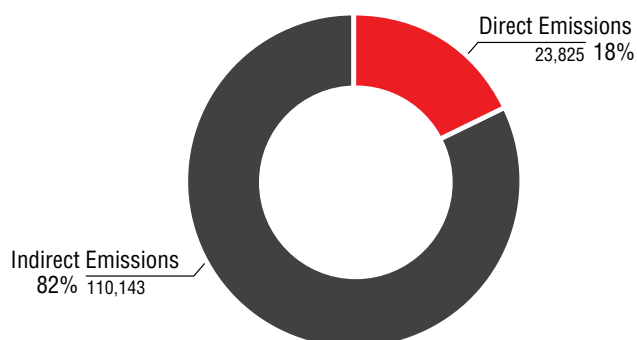
## Climate Change

### GRI Indicator EN16 (G4-EN-15, G4-EN16)

The estimated total equivalent carbon dioxide direct and indirect emissions based on energy usage in 2015 for Flowserve manufacturing operations is approximately 134,000 metric tonnes. Only 18 percent of this amount is attributed to direct emissions.

Calculations were performed using Greenhouse Gas (GHG) Protocol methods. Emissions related to direct energy usage were calculated using standard factors based on the type of fuel. Emissions related to indirect energy usage were calculated based on regional and country, specific emission factors for power utilities.

**Estimated GHG Emissions (Tonnes CO<sub>2</sub>e)  
Flowserve Facilities - 2015**



Estimated greenhouse gas emissions based on energy usage for 2014 and 2015 are shown in the tables below.

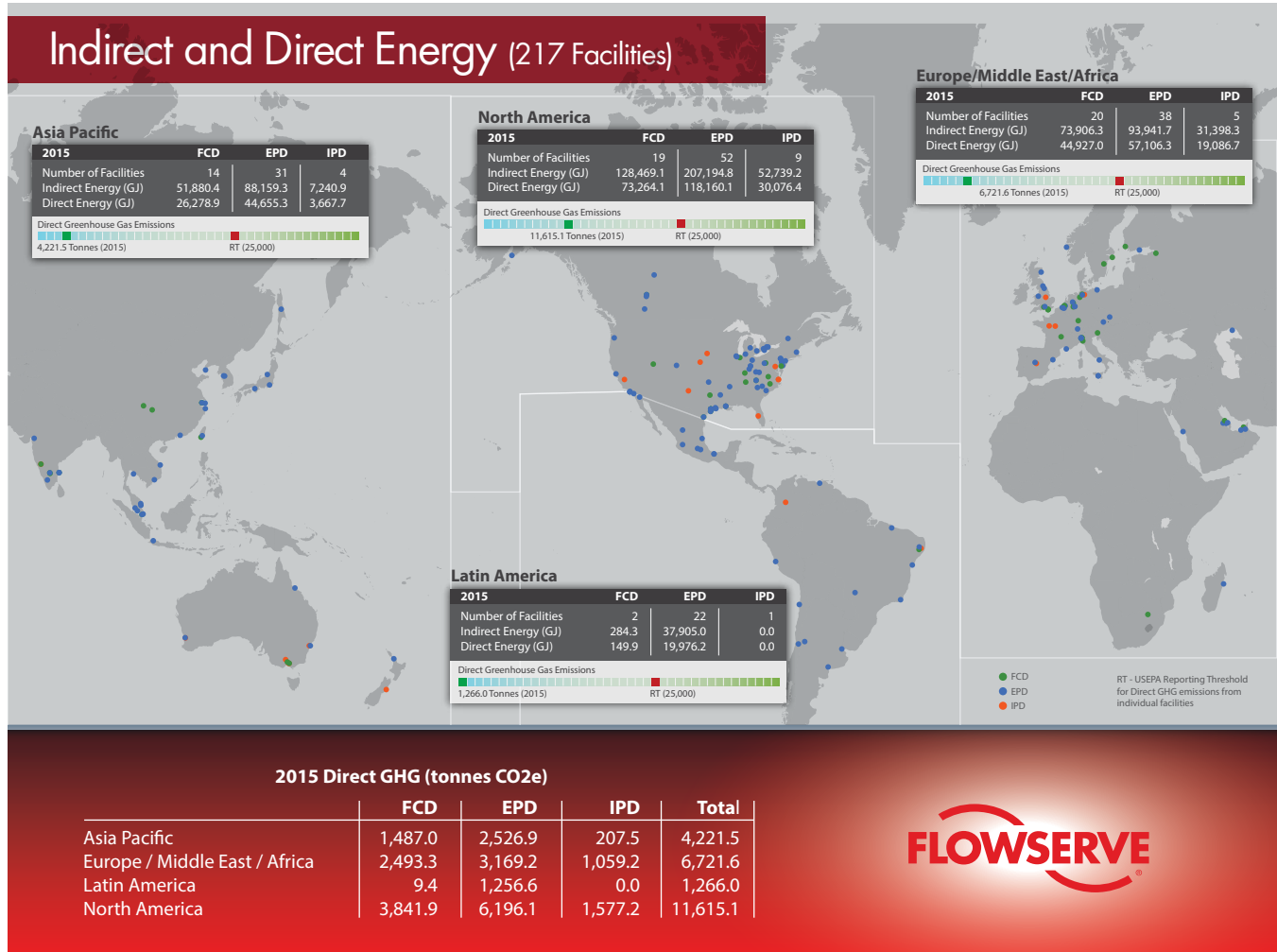
### Greenhouse Gas Emissions Summary

Flowserve Manufacturing Facilities GHG Emissions – 2014			
	Direct Emissions (Tonnes CO <sub>2</sub> e)	Indirect Emissions (Tonnes CO <sub>2</sub> e)	Total Emissions (Tonnes CO <sub>2</sub> e)
EPD	13,225	60,149	73,374
IPD	3,011	13,323	16,333
FCD	8,164	38,788	46,952
<b>Total</b>	<b>24,400</b>	<b>112,260</b>	<b>136,659</b>

Flowserve Manufacturing Facilities GHG Emissions – 2015			
	Direct Emissions (Tonnes CO <sub>2</sub> e)	Indirect Emissions (Tonnes CO <sub>2</sub> e)	Total Emissions (Tonnes CO <sub>2</sub> e)
EPD	13,149	59,271	72,420
IPD	2,844	12,952	15,796
FCD	7,832	37,920	45,752
<b>Total</b>	<b>23,825</b>	<b>110,143</b>	<b>133,968</b>

As shown above, the estimated overall GHG emissions are comparable for both years, with a slight reduction in 2015 compared to 2014. The estimated normalized emission amount for the combined 2014/2015 period (total) is 28.9 tonnes carbon dioxide equivalent per million USD in sales.

Also, the estimated direct greenhouse gas emissions (associated with on-site fuel combustion) for individual Flowserve facilities are all well below the U.S. EPA reporting threshold of 25,000 tonnes carbon dioxide equivalent. Moreover, the estimated total direct greenhouse gas emissions for Flowserve facilities worldwide for 2014 and 2015 are below the 25,000 tonne threshold.





## Air Emissions

### GRI Indicators EN19 and EN20 (G4-EN20, G4-EN21)

Air emissions at Flowserve manufacturing facilities are associated with process activities and routine building operations. Air emissions are monitored in accordance with facility-specific permits as applicable for compliance purposes. Flowserve conducts annual reviews for all facilities to determine compliance with regulatory requirements, permits and authorizations. Ozone depleting substances (i.e., CFCs, HCFCs, halons and methyl bromide) are not used in any Flowserve facility process operations. The volatile organic compound (VOC) air emissions for eight reporting facilities ranged from less than one to approximately 20 tonnes in 2014 and 2015, and other types of air emissions included small amounts of nitrous oxides, sulfur oxides and particulate matter, which are reported for facilities where data is available.

## Water Emissions

### GRI Indicator EN21 (G4-EN22)

Water emissions from process operations at Flowserve facilities are discharged to municipal sewer systems in accordance with local authorizations. Prior to discharge, wastewater is pretreated, if necessary, and monitored as required to meet municipal requirements. Flowserve conducts annual reviews for all facilities to determine compliance with regulatory requirements, permits and authorizations.



## Waste Disposal and Recycling

### GRI Indicator EN22 (G4-EN23)

The wastes that are generated at Flowserve manufacturing facilities include both hazardous and nonhazardous wastes, all of which are managed and disposed of in accordance with applicable regulatory requirements and Flowserve Policy and Procedures. Examples of hazardous wastes generated in 2014 and 2015 include flammable liquids, paint waste, parts washer solvents, other waste liquids and batteries.

The estimated total amount of hazardous waste generated for FCD, EPD and IPD facilities in 2015 is approximately 147.6 tonnes (based on U.S. waste definitions), which was removed for off-site treatment and disposal, or re-use. Many facilities generated no hazardous waste.

The normalized amount of hazardous waste generated in 2015 is 33 pounds/\$1 million (USD) in sales, which is well below the corporate goal of 90 pounds/million (USD). Flowserve has reduced global hazardous waste creation and disposal by more than 70 percent since 1988.

Examples of nonhazardous wastes include cutting fluids, coolants, lubricating oils and absorbent materials; general solid waste; abrasive blast cleaning media; containers/drums; packaging materials and wood pallets; and other recyclable material (scrap metal, paper and cardboard). Flowserve has reduced waste machining coolant disposal by 70 percent since 1988, and, at most locations, partners with a vendor who recycles the waste coolant into a reusable product. In addition, we have reduced our solid waste disposal quantities by more than 50 percent since 1988.

The estimated amount of nonhazardous waste generated at Flowserve facilities in 2015 was approximately 32,000 tonnes, much of which was sent for recycling or other beneficial use. Variability between waste quantities among individual facilities has been noted and appears to be related to inclusion of operational waste and event waste within the overall quantities, subject to review of additional data when available.

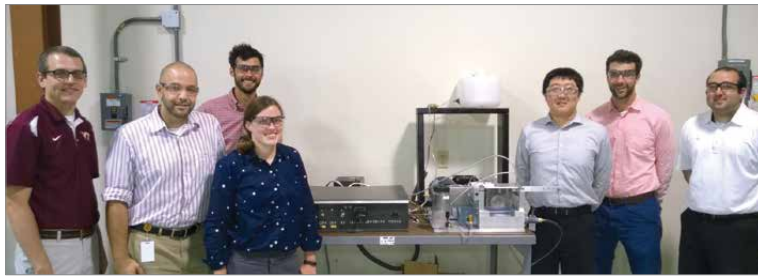


## Community, Employee Volunteerism and Giving

Around the world, Flowserve is committed to being a responsible corporate citizen and supporting the communities where our associates and customers live. We encourage associate volunteerism and participation in charitable initiatives, even offering a Volunteer Time Off program where associates can use approved time off to volunteer in their communities.

Among other charitable causes, Flowserve employee volunteer hours and financial contributions help students stay in school, foster lifelong learning through the use of technology, provide scholarships and support at-risk youth so they can grow up to live happy, successful lives. Following are just a few examples.

For the past seven years, 10 Research & Development (R&D) engineers from the Bethlehem, Pennsylvania, facility have served as industry mentors through the Penn State Learning Factory. The industry-sponsored program enables engineering students to gain hands-on experience by working on client-based design projects.



Bethlehem, Pennsylvania

Thirteen Flowserve associates from the Kalamazoo, Michigan, site came together to volunteer for the non-profit First Day Shoe Fund, which provides new athletic shoes to children in kindergarten through fifth grade who qualify for free and reduced lunches in Kalamazoo County. Flowserve associate volunteers gave new socks to the youngsters, took their shoe measurements, and asked them their favorite colors and other preferences.



Kalamazoo, Michigan

*Flowserve is committed to being a responsible corporate citizen and supporting the communities where our associates and customers live and work.*

In Putnam County, Tennessee, which is home to the company's Cookeville site, a record-breaking winter ice storm crippled the area as the resulting ice and snow blocked access to major roads, felled thousands of trees and snapped power lines. Flowserve associates offered time and money to the local relief effort. Each morning, Flowserve efforts were coordinated with local fire department officials.



*Putnam County, Tennessee*

Flowserve was a sponsor at the world's largest conference for women engineers and students, The Society of Women Engineers Conference and Career Fair (SWE15), in Nashville, Tennessee. Flowserve staffed a booth and phone-charging station at the career fair, which was a popular gathering place where Flowserve representatives could share information with participants. Flowserve was represented by associates from six sites: Bethlehem, Pennsylvania; Chesapeake, Virginia; Cookeville, Tennessee; Irving, Texas; Raleigh, North Carolina; and Taneytown, Maryland.



*Nashville, Tennessee*

In Taneytown, Maryland, Flowserve associates collected 6,223 items for the local Taneytown Elementary Food Pantry. The organization assists needy students, their families and surrounding Maryland communities. Associates at the local Flowserve site intend to continue their support of the community with similar food drives in the future.



*Taneytown, Maryland*



The first Irving-based Diversity & Inclusion (D&I) Day event was attended by over 250 Flowserve associates from World Headquarters (WHQ) and the Global Technology and Training Center (GTTTC). The event featured information on D&I, foods from different cultures, music, games and a photo booth. The event helped Flowserve recognize and celebrate the diversity of its employees to help raise diversity awareness and enhance employee inclusion, engagement and connection.

# DIVERSITY & INCLUSION



Irving, Texas

Flowserve has partnered with Texas A&M University's undergraduate research organization, the Talent Incubator Program (TIP). TIP is a globally recognized undergraduate research organization that enables a rigorously selected group of students to interview for internships by sponsored companies. TIP helps participants gain not just theoretical knowledge in the classroom, but real application-oriented experience through participation in research projects with topics ranging from Best Practices in Equipment Management to Internet Sales Channel Strategies.



Irving, Texas

Flowserve leaders, engineers, sales representatives and Human Resources (HR) associates from the Vernon, California, site participated in the 41st annual National Society of Black Engineers (NSBE) conference in Anaheim, California. Flowserve associates staffed a career fair booth to provide conference attendees with information about current and potential Flowserve opportunities, collected and assessed resumes, and completed on-site interviews. In addition to the career fair booth, other associates attended the conference and participated in engineering and/or development-related workshops, information sessions, and panel discussions on professional and leadership development.



*Vernon, California*

The Flowserve, Santa Clara, Mexico, site was recognized by the Mexican Social Prevision and Labor Secretariat as a “Family-Responsible Company.” This award recognizes a company’s efforts to offer its employees compatibility between job and family. The recognition promotes best labor practices that benefit working people, including family balance, gender-equal opportunities, and the prevention of workplace violence and sexual harassment. The award was presented during an official ceremony presided by Federal Government Mexican Authorities.



*Santa Clara, Mexico*

In Santiago, Chile, Flowserve operates a Quick Response Center (QRC) where Flowserve associates’ children were invited on-site for a safety presentation featuring Napo, who is featured in a series of animated films that introduce workplace safety and health topics in a fun, engaging way. The Santiago facility has been recognized by the Chilean National Safety Association for achieving 47 months without accidents. As of December 2015, the site’s 45 employees accumulated 666,290 man-hours without a Lost-time accident (LTA).



*Santiago, Chile*





In Coimbatore, India, Flowserve sponsored a science trip for 45 orphaned children. The youngsters, ages 11-14, live in a home sponsored by Ashraya Charitable Society and attend a nearby government-supported school. The children were accompanied by Flowserve associates to the G.D. Naidu Museum & Industrial Exhibition and the Regional Science Centre. This trip is representative of the ongoing commitment of Flowserve to improve the lives of children throughout the world.

In Coslada, Spain, Flowserve associates, along with Dignified Smile (a Non-Governmental Organization), gave back to the local community by donating more than €2,000 (\$2,278 USD) in food and personal hygiene products to needy adults and children. In addition to giving back to the community in which they work, the Flowserve facility is committed to ISO 14001, an international standard related to preserving the environment.

In Hamburg, Germany, 30 Flowserve associates and family members laced up their sneakers and participated in the HSH Nordbank Run. The event raises money to help underprivileged children gain the benefits of joining sports clubs. Flowserve associates and family members ran with 23,100 other participants, who altogether raised €155,000 for the cause.



Hamburg, Germany

In Desio, Italy, Flowserve is involved with the local community through Flowserve Academy. The academy has nine internal trainers who help local technical schools improve student knowledge about lean manufacturing, safety, technical drawings and other skills. These Flowserve employees have also assisted Nuova Iride, a work co-op for disabled workers; La Meridiana in building a local hospice; and Wamba Smart Onlus Association for children with Spinal Muscular Atrophy. In addition, 60 Flowserve associates took part in a race to raise money for ADMO, an Italian bone marrow donor organization, and provided luncheon hospitality for 30 needy residents.

# Awards

## Safety

Flowserve has a long history of U.S. and international recognition for safety and environmental accomplishments. Most notably, each year since 1991, Flowserve has participated in the U.S.-based National Safety Council (NSC) award and recognition program. The award program recognizes participating member companies for key safety performance milestones.

For 2014-2015, Flowserve safety management successes have been recognized by NSC, which awarded 182 facilities with recognition accolades for outstanding safety performance during the year. The 2014-2015 recognition brings the total number of NSC awards to more than 1,400 since 1991.

Flowserve merited industry leader distinction from the NSC for 2014 performance with Leduc, Alberta, Canada, and Santa Clara, Mexico, earning the Industry Leader Award, which recognizes safety performance in the top 5 percent of all NSC member award recipients. All locations that earn the Industry Leader Award are considered among the safest workplaces in the world.

Flowserve also received the following honors:

- 24 sites earned the Million-Hour Award for more than 1 million work hours without a lost-time accident
- 83 sites received the Perfect Record Award for an entire year without a lost-time accident
- 74 sites earned the Occupational Excellence Achievement Award for a total lost-workday accident rate less than 50 percent in their peer groups

*In 2015, Flowserve received 150 National Safety Council Awards, including two Industry Leader Awards.*



## Safety Performance

### Flowserve Earns 182 National Safety Council Awards for 2014-2015 Performance

#### 2014 Industry Leader Award

*(Top 5% of all NSC member award recipients and one of the safest workplaces in the world)*

- EPD – Leduc, Alberta, Canada
- EPD – Santa Clara, Mexico

#### Million Hour Awards

*(Greater than 1 million work hours without a Lost Time Accident)*

- |  |  |
|--|--|
| ▪ EPD – Santa Clara, Mexico (5 million)      | ▪ FCO – Bremen, Germany (1 million)      |
| ▪ EPD – Etten-Leur, Netherlands (4 million)  | ▪ EPD – Brunn, Austria (1 million)       |
| ▪ FCO – Raleigh, North Carolina (4 million)  | ▪ EPD – Caserta, Italy (1 million)       |
| ▪ EPD – Moosic, Pennsylvania (3 million)     | ▪ IPD – Chesapeake, Virginia (1 million) |
| ▪ EPD – Baton Rouge, Louisiana (2 million)   | ▪ EPD – Desio, Italy (1 million)         |
| ▪ EPD – Campo Grande, Brazil (2 million)     | ▪ IPD – Hamburg, Germany (1 million)     |
| ▪ FCO – Cookeville, Tennessee (2 million)    | ▪ IPD – Hastings, Nebraska (1 million)   |
| ▪ FCO – Ettlingen, Germany (2 million)       | ▪ EPD – Hengelo, Netherlands (1 million) |
| ▪ FCO – Tamil Nadu, India (2 million)        | ▪ FCO – Lynchburg, Virginia (1 million)  |
| ▪ IPD – Newark, England (2 million)          | ▪ IPD – Taneytown, Maryland (1 million)  |
| ▪ EPD – Al Rushaid, Saudi Arabia (1 million) | ▪ EPD – Temecula, California (1 million) |
| ▪ IPD – Arganda, Spain (1 million)           | ▪ EPD – Tulsa, Oklahoma (1 million)      |

## 2014-2015 National Safety Council Awards

### 2014 Industry Leader Award

*(Top 5% of all NSC member award recipients and one of the safest workplaces in the world)*

<b>Engineered Pump Operations:</b>	Santa Clara, Mexico
<b>Services &amp; Solutions Operations:</b>	Leduc, Alberta, Canada

### Million Hour Award

*(Greater than 1 million work hours without a lost-time accident)*

<b>Engineered Pump Operations:</b>	Santa Clara, Mexico (5 million) Etten-Leur, Netherlands (4 million) Campo Grande, Brazil (2 million) Brunn, Austria (1 million)	Caserta, Italy (1 million) Desio, Italy (1 million) Hengelo, Netherlands (1 million)
<b>Flow Control Operations:</b>	Raleigh, North Carolina (4 million) Cookeville, Tennessee (2 million) Ettlingen, Germany (2 million)	Tamil Nadu, India (2 million) Bremen, Germany (1 million) Lynchburg, Virginia (1 million)
<b>Industrial Pump Operations:</b>	Newark, England (2 million) Arganda, Spain (1 million) Chesapeake, Virginia (1 million)	Hamburg, Germany (1 million) Taneytown, Maryland (1 million) Hastings, Nebraska (1 million)
<b>Seal Operations:</b>	Baton Rouge, Louisiana (1 million) Temecula, California (1 million)	Tulsa, Oklahoma (1 million)
<b>Services &amp; Solutions Operations:</b>	Moosic, Pennsylvania (3 million)	Al Rushaid, Saudi Arabia (1 million)

## Perfect Record Awards

(Completion of an entire year without a lost-time accident)

<b>CORP:</b>	Irving, Texas – Learning Resource Center	
<b>Engineered Pump Operations:</b>	Brantford, Canada Brunn, Austria Campo Grande, Brazil Caserta, Italy Coslada, Spain Coimbatore, India Desio, Italy	Etten-Leur, Netherlands Hengelo, Netherlands Kawasaki, Japan Lawrence, Massachusetts Santa Clara, Mexico Suzhou, China Vernon, California
<b>Flow Control Operations:</b>	Bangalore, India Burgess Hill, Consort, England Burgess Hill, Victoria, England Chengdu, China Cookeville, Tennessee Dammam, Saudi Arabia Essen, Germany Ettlingen, Germany Hubli, India Jebel Ali, U.A.E.	Johannesburg, South Africa Linkoping, Sweden Raleigh, North Carolina Sao Caetano, Brazil Springville, Utah Veerasandra, India Suzhou, Baiyu, China Suzhou, Fangzhou, China Veerasandra, India Villach, Austria
<b>Industrial Pump Operations:</b>	Addison, Illinois Arnage, France Castlemaine, VIC, Australia Chesapeake, Virginia Hamburg, Germany	Hastings, Nebraska Hastings, Nebraska – Foundry Hubli, India Newark, England
<b>Seal Operations:</b>	Abahsain, Saudi Arabia Baton Rouge, Louisiana Buenos Aires, Argentina Bridgeport, New Jersey Changi, Singapore Dortmund, Germany Dubai, U.A.E. Gohren, Germany Jakarta, Indonesia Kalamazoo, Michigan Olomouc, Czech Republic	Port Arthur, Texas Rancho Dominguez, California Roosendaal, Netherlands Santiago, Chile Sao Caetano, Brazil Shanghai, China Tarragona, Spain Temecula, California Tlaxcala, Mexico Woodridge, Illinois
<b>Services &amp; Solutions Operations:</b>	Al-Khobar, Saudi Arabia Bangalore, India – Engineering Center Barcelona, Venezuela Bethlehem, Pennsylvania Bridgeville, Pennsylvania Buenos Aires, Argentina Chennai, India Coacalco, Mexico Deer Park, Texas	Kaohsiung, Taiwan Kitchener, Ontario, Canada Leduc, Alberta, Canada Moosic, Pennsylvania Rayong, Thailand Santa Clara, Mexico Scranton, Pennsylvania Tuas, Singapore West Chicago, Illinois

## Occupational Excellence Achievement Awards

(Completion of an entire year without a lost-time accident)

<b>CORP:</b>	Irving, Texas – Learning Resource Center	
<b>Engineered Pump Operations:</b>	Brantford, Ontario, Canada Charlotte, North Carolina Lawrence, Massachusetts	Memphis, Tennessee Santa Clara, Mexico Vernon, California
<b>Flow Control Operations:</b>	Angleton, Texas Baton Rouge, Louisiana Boothwyn, Pennsylvania Cookeville, Tennessee Corpus Christi, Texas Deer Park, Texas Edmonton, Alberta, Canada	Houston, Texas – Limitorque, Houston, Texas – PMV Kingsport, Tennessee Louisville, Kentucky Portage, Indiana Raleigh, North Carolina
<b>Industrial Pump Operations:</b>	Addison, Illinois Chesapeake, Virginia Chesapeake, Virginia – Scienco Fresno, California	Hastings, Nebraska Hastings, Nebraska – Foundry Lakeland, Florida Plainview, Texas
<b>Seal Operations:</b>	Angleton, Texas Ashland, Kentucky Baton Rouge, Louisiana Benicia, California Bridgeport, New Jersey Broomfield, Colorado Cincinnati, Ohio Coatzacoalcos, Mexico Corpus Christi, Texas Dayton, Ohio-Titanium Casting Operations Dunbar, West Virginia Edmonton, Alberta, Canada El Dorado, Arkansas	Florence, South Carolina Ft. McMurray, Alberta, Canada Guadalajara, Mexico Homer, Alaska Kalamazoo, Michigan Midland, Michigan Port Arthur, Texas Rancho Dominguez, California Scarborough, Ontario, Canada Tampico, Mexico Temecula, California Tlaxcala, Mexico Woodridge, Illinois
<b>Services &amp; Solutions Operations:</b>	Bethlehem, Pennsylvania Bridgeville, Pennsylvania Coacalco, Mexico Dayton, Ohio – Global Tech Center Dayton, Ohio – Titanium Casting Operations Deer Park, Texas Fairfield, New Jersey Greer, South Carolina Houston, Texas – FEDD Kingsport, Tennessee – Eastern Chemical	Kitchener, Ontario, Canada Leduc, Alberta, Canada Moosic, Pennsylvania Rancho Dominguez, California Santa Clara, Mexico Sarnia, Ontario, Canada Scranton, Pennsylvania Vancouver, Washington West Chicago, Illinois Woodbridge, Ontario, Canada

## Other Notable Awards

- Mosquera, Colombia, earned the White Cross Merit Medal for having the highest-rated safety program within the Colombian manufacturing sector.
- Arnage, France, earned Manual of Improvement of Safety Enterprises (MASE) certification for the second year in a row. MASE is a French standard developed to measure safety and environmental systems in business facilities.
- Kashiwazaki, Japan, received the Japan ECO-21 certification for improved environmental practices and overall sustainability program excellence.
- Essen, Germany, received recertification for the Oko-Profit program which included their efforts for the reduction of CO2 emissions.
- Tlaxcala, Mexico, earned “Igualdad Laboral entre hombres y mujeres,” a state certification award for labor equality between men and women.
- **NEWSWEEK SUSTAINABILITY RANKING:** 131st place in the U.S. list (an improvement of 215 spots). 14th in the Industrials Sector, Capital Goods Industry Group (an improvement of 17 spots).



## Facility Achievements

In addition to the achievements listed, Flowserve facilities have been recognized locally for their safety and environmental accomplishments, including the following examples:

### **Brunn, Austria**

Flowserve Brunn has attained certification for quality, environmental and safety management under ISO 9001, ISO 14001 and OHSAS 18001 standards.

### **Essen, Germany**

Flowserve Essen has received ECOPROFIT certifications several times, most recently for 2013/2014, which included recognition for reductions in energy usage, carbon dioxide emissions and wastewater discharges.

### **Haywards Heath, UK**

Flowserve Haywards Heath has attained certification for environmental and safety management under ISO 14001 and OHSAS 18001 standards.

### **Mezzago, Italy**

Flowserve Mezzago has attained certification for environmental and safety management under ISO 14001 and OHSAS 18001 standards.

### **Suzhou, China**

Flowserve Suzhou has attained certification for environmental and safety management under ISO 14001 and OHSAS 18001 standards.

### **Villach, Austria**

Flowserve Villach has attained certification for quality, environmental, energy and safety management under ISO 9001, ISO 14001, ISO 50001 and OHSAS 18001 standards. The facility also received a National Award for “Best Apprentice Company” related to job training.

Many other Flowserve facilities have attained certification or recognition for their management systems and achievements, some of which include:

- ISO 14001: Coslada, Spain; Ettlingen, Germany; Hengelo, Netherlands; Santa Clara, Mexico; Tamilnadu, India; Tlaxcala, Mexico
- OHSAS 18001: Desio, Italy; Mosquera, Colombia; Shanghai, China
- ISO 50001: Ahaus, Germany; Roosendaal, Netherlands
- Safety Certificate Contractors (SCC) standard: Antwerp, Belgium; Etten-Leur, Netherlands; Gohren, Germany; Hengelo, Netherlands; Roosendaal, Netherlands; Terneuzen, Netherlands
- Eco 21: Kashiwazaki, Japan
- Bizsafe Level 4: Singapore
- Star Energy: Jakarta, Indonesia

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*Experience In Motion*

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**Flowserve Corporation**

5215 North O'Connor Boulevard

Suite 2300

Irving, Texas 75039

[flowserve.com](http://flowserve.com)

**North America**

**Latin America**

**Europe**

**Middle East**

**Africa**

**Asia Pacific**

