



THINK BEYOND

2018 SUSTAINABILITY REPORT



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A portrait of Scott Rowe, President and Chief Executive Officer, smiling. He is wearing a dark suit, a light blue shirt, and a patterned tie. The background is a blurred outdoor scene with green trees and a modern building with blue glass windows under a clear blue sky.

LEADERSHIP MESSAGE

Each day, our associates strive to create and deliver extraordinary flow control solutions that make the world better for everyone.

Flowserve made significant progress in 2018 that will have a lasting impact for years to come, including the launch of our Flowserve 2.0 Transformation program. We delivered solid financial performance, improved our organizational health and incorporated sustainable efforts across our company.

Our commitment to create unparalleled products and services enables us to deliver value for our customers, shareholders and the environment. From offering our customers emission-reducing products to leveraging renewable energy sources at our facilities – we are making strides in our efforts to make the world a better place.

In 2019 and beyond, we will build on our momentum to be a vital force for good in the communities in which our associates and customers live.

A handwritten signature in black ink, consisting of stylized, flowing letters that appear to read 'S. Rowe'.

Scott Rowe

President and Chief Executive Officer



Europe's Largest Flood Control Project

The Afsluitdijk, a 300-foot wide and 20-mile long dike, has protected the Netherlands from catastrophic flooding for more than 80 years with the help of concrete volute pumps (CVPs) constructed and installed by a Flowserve predecessor company. However, rising sea levels and extreme weather conditions have threatened the causeway's ability to endure.

In the early 2000s, the Netherlands launched a massive renovation project that includes the installation of new pumps to increase the drain capacity of the Afsluitdijk to discharge surplus water into the Wadden Sea during severe storm conditions, while simultaneously complying with more stringent environmental requirements. Flowserve's CVPs are utilized in the project and offer a reliable, efficient, environmentally conscious and cost-effective solution that will help protect the country and its citizens for decades to come.

The CVPs combine Flowserve's most efficient hydraulics and pumping capabilities with a fish-safe hydraulic impeller design, making them safe for fish and other aquatic life. Flowserve is providing six CVPs to the project, capable of delivering a total of 846,000 cubic meters per hour – which equates to nearly six Olympic-sized swimming pools of water per minute.

Upon completion of the new pumping stations, currently expected in 2022, the Afsluitdijk's new pumping stations will be the largest in Europe.



OVERVIEW

For more than 200 years, Flowserve has moved, controlled and protected the flow of materials in the world's most critical industries.

Through our unmatched combination of products, engineering and aftermarket services, we help our customers achieve tangible business results: lower operating costs, optimized performance, prolonged equipment life, mitigated risks and higher productivity.

Flowserve employs more than 17,000 associates in 300-plus locations around the world, including approximately 170 quick response centers that provide aftermarket parts and services to customers in the oil and gas, renewable energy, chemicals, power generation, and water industries. Flowserve also offers more than 100 distinct pump models and a wide range of valve and seal products.



17,000+
Employees



Operations in 50+
Countries



300+ Locations
Worldwide



170+ Quick Response
Centers



In alignment with our company values, we recognize the importance of sustainable development, taking into account the need to balance economic, social, and environmental considerations as part of our business activities.

As a global company, we strive to protect our communities and the environment by improving our products and services. To minimize potential environmental impacts, we provide our customers with quality products that reduce emissions, minimize leaks and enhance efficiency.

Additionally, we drive both hazardous and solid waste out of our operational processes – reducing emissions to air and water and eliminating solvents deemed harmful to the environment. Customers can rely on Flowserve for support and environmentally responsible solutions that help them become more sustainable in the marketplace.

Flowserve defines sustainability as meeting the needs of the present and enabling future generations to meet theirs. Corporate sustainability extends far beyond environmental sustainability to address social responsibilities and long-term economic viability. As such, our sustainable efforts are exemplified across four key pillars: Workplace, Marketplace, Environment and Community.



GOVERNANCE AND ETHICS

No matter where we live or what language we speak, we are committed to conducting our business worldwide with ethics, integrity and trust.

Our values drive how we treat each other, our customers, suppliers, partners and even our competitors. By combining uncompromising character, transparent business behavior, mutual respect, and world-class products and services, we seek to build an enduring culture that creates satisfied customers, engaged employees and sustainable, profitable growth.

Flowserve operates through governance practices that are consistent with our high standards of ethics, integrity and transparency, as well as being designed to be fully compliant with the Sarbanes-Oxley Act of 2002 and the listing standards of the New York Stock Exchange. Through our purpose, values, Code of Conduct and Supplier Code of Conduct, we provide associates and suppliers with clear guidance regarding acceptable business practices, requiring employees and suppliers to adhere to the company's codes.

A series of guidelines, codes of ethical business conduct, policies and corporate bylaws related to our governance procedures, are available on www.flowserve.com.



Developing Carbon Capture Technology

Carbon capture is the industrial process to capture carbon dioxide and other toxic gasses from emission sources and inject it into the subsurface for permanent storage as rock. Carbon capture technology has been shown to be effective at reducing toxic gases from emission sources and is now being explored as a solution to also capture carbon dioxide and other toxic gases from the atmosphere in a cost-effective and environmentally benign manner to reduce atmospheric carbon dioxide levels worldwide.

Carbon capture relies on a process in which carbon dioxide and other toxic gases are mixed with water using Flowserve's SIHI KPH 85227 series compressors, where the gases are dissolved in the water and then the solution is injected down into the earth in a rock layer. Initial applications of carbon capture using Flowserve's SIHI KPH 85227 series compressors has shown that carbon captured and injected into the earth was turned into rock in the subsurface in less than two years.

Companies and organizations developing and improving carbon capture technology continue to rely on Flowserve for one-of-a-kind applications that provide innovative solutions to some of the most difficult issues facing the industry and the world.



COMMITTED TO SAFETY AND SUSTAINABILITY

Together, through our values and actions, we inspire those around us to make the world safer and more sustainable for the future.

As a company, we are committed to creating an incident and injury-free environment. Our commitment to safety extends beyond the workplace and helps ensure we are creating and delivering safe products and services to our customers and partners around the world.

Our philosophy is that health, safety, and environment affairs are integral parts of good business. As such, Flowserve strives to foster an environment where associates work together to improve our safety to ensure we go home safely to family and loved ones each day.

We recognize the importance of continuous improvement and leverage every opportunity to enhance safety and sustainability performance across the company. Today, our associates feel empowered to speak up and report safety concerns and opportunities, which helps reduce potential accidents and injuries and makes Flowserve a safe place to work.

Safety – one of our core values at Flowserve – is a vital part of who we are. Flowserve’s people-first culture helps ensure we remain fully committed to the safety of our associates – the driving force behind our success.

For more than 22 years, we have set safety performance records year after year. Since 1997, we have been able to prevent 15,721 recordable injuries and 71,755 lost work days through our Safety, Health and Environmental Affairs programs. Additionally, we have accrued more than \$70 million USD in annual savings from our proactive safety and environmental management programs.

In 2018, we had record-setting safety performance, including the lowest Lost Time and Total Recordable rates in company history. When we focus on safety, we can reduce operational cost, improve efficiencies, create quality products and meet delivery schedules.

Today, associates actively use preventative measures, such as Last Minute Risk Assessments and Stop Work Authority, which enables us to be more proactive about our safety.

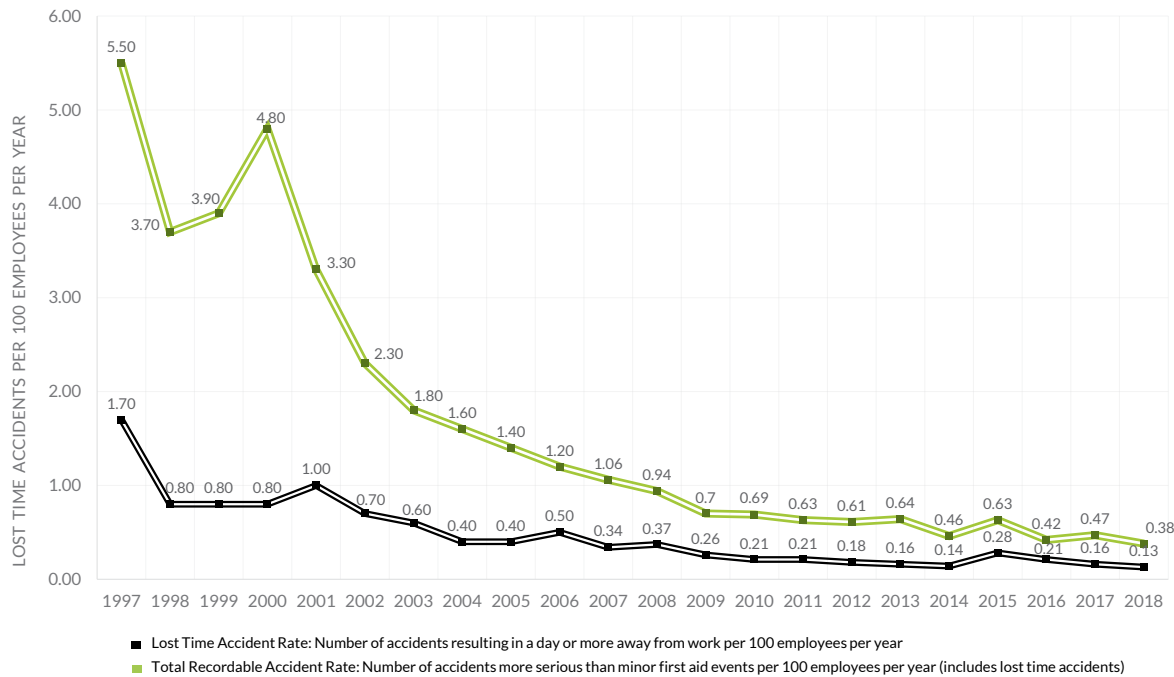


Flowserve Among Most Sustainable U.S. Companies

In 2018, Flowserve was ranked the 19th most sustainable company in the U.S., and ranked fourth in the industrial category, according to Barron’s, a respected financial magazine. Barron’s top 20 list included well-known global companies such as Cisco Systems, Microsoft and Colgate-Palmolive.

Flowserve’s ranking is a reflection of the performance of our corporate sustainability efforts. Barron’s ranking system is based on 300 performance indicators in five categories: Shareholders, Employees, Customers, Planet and Community.

History of Flowserve Corporate Accident Rates





WORKPLACE

Workplace

Our purpose, ***Together, we create extraordinary flow control solutions to make the world better for everyone,*** is the reason why we come to work.

Together – because you can go fast alone, but we can go farther together.

Extraordinary – because we want our associates to be ambitious and continuously raise the bar.

Better for Everyone – for ourselves, our customers, our shareholders and the communities where we live and work.

When people understand why they come to work and how their contributions impact the company as a whole, we create an inspired and engaged workforce that delivers the best products and services to our customers.

Our values, People; Safety; Integrity; Innovation; Ownership; and Excellence, are the guiding principles for how we achieve our purpose. By living our core values, we can ultimately reach our purpose.

We believe diversity and inclusion make us a better, stronger company. As such, we strive to provide a workplace that puts people at the heart of everything we do.

Flowserve supports employee resource groups (ERGs) designed to promote diversity and professional growth. Groups include the Veteran, Women's, PridePlus, Young Professionals, Black Professionals, Pan-Asian and Hispanic/Latino Organization for Leadership & Advancement ERGs.

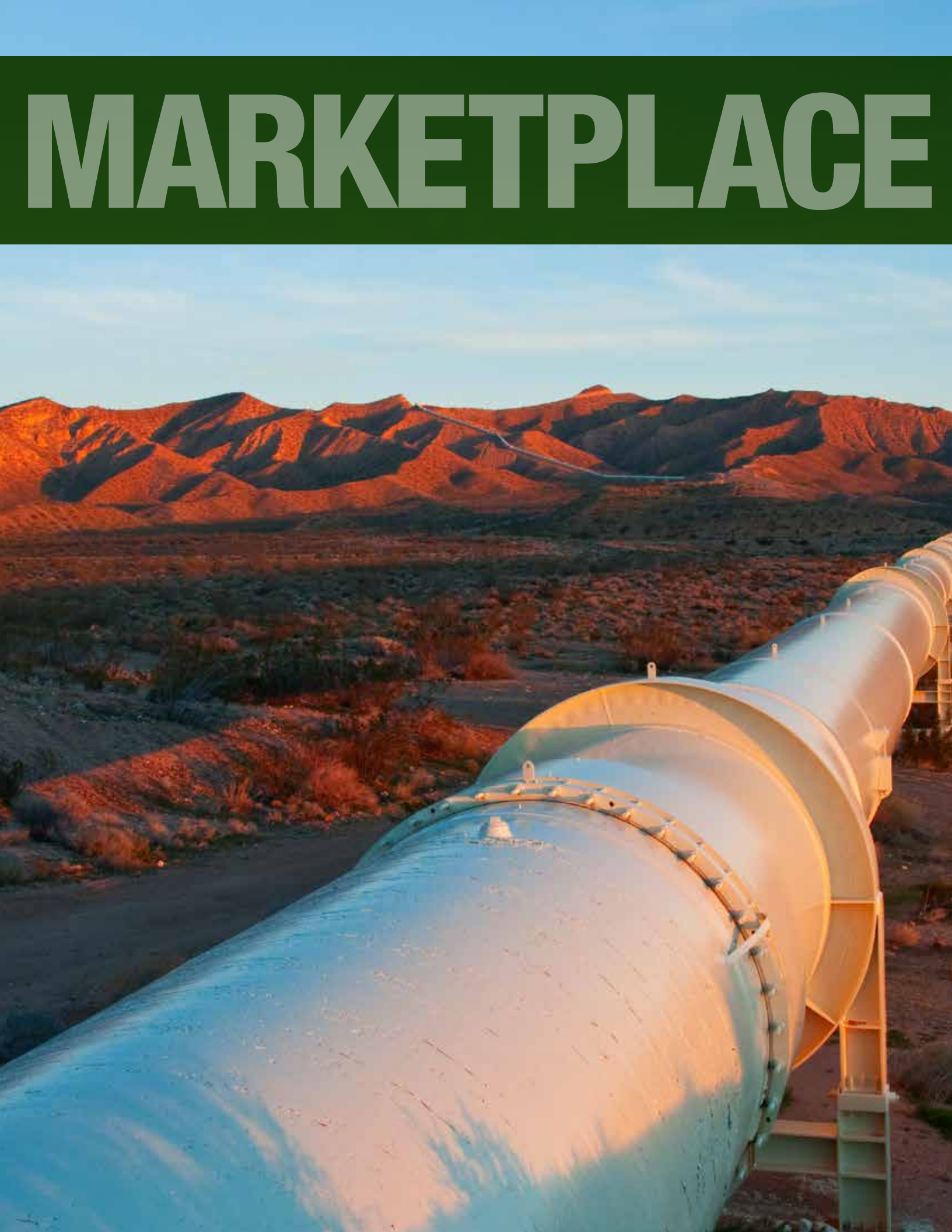
With more than 17,000 associates in 300-plus locations around the world, our people bring with them a wealth of knowledge and expertise, diverse backgrounds and distinct perspectives.



Grand Opening of Largest Flowserve Campus in the Netherlands

The history of the Etten-Leur facility dates back almost 60 years ago, under the Byron Jackson brand. Approximately 20 years later, a dedicated factory to produce mechanical seals was created in Roosendaal, a town close to Etten-Leur. And now, another 40 years later, these two sites have merged to create one Flowserve campus, better enabling future growth and supporting the Flowserve 2.0 Transformation.

This campus is equipped with an extensive machine park and a state-of-the-art warehouse in which more than 20,000 different parts are stored. The campus also accommodates a large team of experienced engineers, a seal hub, a pump parts manufacturing center, two quick response centers (both pumps and seals), and a test center (both pumps and seals), as well as supporting departments, including IT, HR and Finance.



MARKETPLACE

Marketplace

To help solve the biggest flow-control challenges, customers worldwide rely on the product lines, engineering, project management and service expertise of Flowserve.

Flowserve moves, controls and protects the flow of materials in critical industries, 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.

In addition to conventional power, energy and chemical applications, Flowserve offers products and services related to solar power, biomass, geothermal and biofuel/ethanol projects. In the water industry, Flowserve provides critical components needed for water supply, desalination, wastewater treatment, agriculture, and water management.

Our marketplace presence is closely tied to societal commitments and environmental responsibility, consistent with sustainable development principles. As such, Flowserve provides community support through local associates and facilities. This includes, for example, taking into account the environmental regulatory requirements in various jurisdictions that apply to our products and affect our customers' operations.

Flowserve continues to be an industry leader through its commitment and support of the United States' Environmental Protection Agency (EPA) national standards, German environmental regulations with sealing solutions that meet the strict requirements of the 2002 Technical Instructions on Air Quality Control (TA LUFT), and the European Union's European Integrated Pollution Prevention and Control (IPPC) directive.



Desalination Success in Singapore

With enough water to serve about 200,000 people, the Tuas Desalination Plant in Singapore recently received the 2019 Desalination Plant of the Year award by the Global Water Intelligence Awards organization. The \$153 million USD seawater desalination facility produces up to 30MIGD (136,380m³/d) of water and leverages Flowserve engineering and pumps to deploy a dual DAF/UF pre-treatment system and two-pass seawater reverse osmosis (SWRO) desalination process. More than 50 Flowserve pump units help enable the plant's desalination services, such as intake, pre-treatment and high-pressure membrane feed.

Flowserve equipment is installed in desalination plants all over the world. The majority of mega SWRO projects rely on Flowserve pumps or energy recovery devices (ERDs).

Flowserve Pumps Division

Our largest business segment is our Flowserve Pumps Division (FPD), through which we design, manufacture, distribute and service specialty, custom and other highly-engineered pumps and pump systems, pre-configured industrial pumps, mechanical seals, auxiliary systems and replacement parts, replacement parts and upgrades and related aftermarket services. FPD includes products in both our engineered and industrial pump portfolios. Engineered products include longer lead time, highly-engineered specialty pump products and systems and mechanical seals that are generally manufactured within shorter lead times. Industrial products include service engineered and pre-configured industrial pumps and pump systems. FPD also manufactures replacement pumps and upgrades and provides a full array of replacement parts, repair and support services.

FPD Products

We manufacture more than 40 different active types of pumps and approximately 100 different models of mechanical seals and sealing systems. Our FPD pump products are manufactured in a wide range of metal alloys and with a variety of configurations to reliably meet the operating requirements 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. We also manufacture a gas-lubricated mechanical seal that is used in high-speed compressors for gas pipelines and in the oil and gas production and process markets.

FPD products and services are primarily used by companies that operate in the oil and gas, petrochemical, chemical, power generation, water management and other general industries. Our products are currently manufactured at 41 plants worldwide, 14 of which are located in Europe, 13 in North America, eight in Asia Pacific and six in Latin America.



New Engineering Center in Budapest Supports Design-to-Value Innovation

Flowserve recently created a new Global Technology and Engineering Center (GTEC) in Budapest, Hungary, that features a dedicated design-to-value center of excellence. The GTEC-Budapest facility, which opened in July 2018, allows subject matter experts from product design authority teams to partner with supply chain, operations and product management staff in benchmarking Flowserve and competitor products.

The development of this facility is a direct result of one of the global workstreams within the Flowserve 2.0 Transformation: Product Rationalization. A key element of this initiative is the application of design-to-value (Dtv) tools and processes that will make Flowserve product offerings more competitive in our target markets. The Dtv process focuses on using voice of the customer and benchmarking tools to understand what features and functionality our customers value, identifying the current design best practices, and coupling those to minimize the costs required to deliver the desired features and functionality.

FPD Services

We provide engineered aftermarket services through our global network of 145 quick response centers (QRCs), some of which are co-located in manufacturing facilities, in 50 countries. Our FPD service personnel provide a comprehensive set of equipment services for flow management control systems, including installation, commissioning, repair, advanced diagnostics, re-rate and retrofit programs, machining and comprehensive asset management solutions. We provide asset management services and condition monitoring for rotating equipment through special contracts with many of our customers that reduce maintenance costs. A large portion of FPD's service work is performed on a quick response basis, and we offer 24-hour service in all of our major markets.

Flow Control Division

Flowserve's Flow Control Division (FCD) designs, manufactures, distributes and services a broad portfolio of engineered and industrial valve and automation solutions, including isolation and control valves, actuation, controls and related equipment. FCD leverages its experience and application know-how 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, power generation, oil and gas, water management and general industries. Our products are currently manufactured in 21 manufacturing facilities, five of which are located in the U.S., 10 in Europe, five located in Asia Pacific and one in Latin America.



FCD Products

Our valve, automation and controls product and solutions portfolio represents one of the most comprehensive in the flow control industry. Our products are used in a wide variety of applications, from general service 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.

Our valve automation products encompass a broad range of pneumatic, electric, hydraulic and stored energy actuation designs to take advantage of whatever power source the customer has available. FCD’s actuation products can utilize the process fluid flowing through the pipeline as a source of power to actuate the valve. Our actuation products also cover one of the widest ranges of output torques in the industry, providing the ability to automate anything from the smallest linear globe valve to the largest multi-turn gate valve. Most importantly, FCD combines best-in-class mechanical designs with the latest in digital controls in order to provide complete integrated automation solutions that optimize the combined valve-actuator-controls package.



Restoring a Water Pump on the Arabian Peninsula

The utility company that regulates water and electricity services in the Sultanate of Oman, which relies on a variety of rotating equipment to distribute potable water for human consumption and for agricultural and industrial needs, contacted Flowserve about a Flowserve pump that had performed reliably for more than a decade and was slowing down and creating a chain reaction of issues.

Flowserve coordinated with our local distributor to remove the pump, identify the root cause of the performance issues, and service it in our QRC in Abu Dhabi, UAE. We determined the issues were due to minor corrosion of the casing material and a deteriorating volute surface as a result of pumping raw water for more than 10 years.

Our technicians performed a number of restorative actions, including grit-blasting the inside of the casing to remove corrosion, treating the pump casing with an epoxy-based coating, replacing seal chamber inserts and replacing other worn components. The pump was returned to service and showed marked improvements from its pre-service performance, including an approximately 48% increase in pumping capacity, an approximately 2% overall increase in pump efficiency, and a reduction in annual energy costs of almost \$32,000 USD.

FCD Services

Flowserve provides a broad array of aftermarket equipment services, such as installation, advanced diagnostics, repair and retrofitting. The aftermarket business, which is primarily served by our worldwide network of quick response centers (QRCs) strategically located to serve our customers' operations, provides a variety of service offerings for our customers including spare parts, service solutions, product life cycle solutions and other value-added services.

FCD operates 28 QRCs worldwide, including two in Europe, nine in North America, 10 in Asia Pacific and seven in Latin America.

Our service personnel provide comprehensive equipment maintenance services for flow control systems, including advanced diagnostics, repair, installation, commissioning, retrofit programs and field machining capabilities. A large portion of our service work is performed on a quick response basis, which includes 24-hour service in all of our major markets.

We also provide in-house repair and return manufacturing services worldwide through our manufacturing facilities. We believe our ability to offer comprehensive, quick turnaround services provides us with a unique competitive advantage and unparalleled access to our customers' installed base of flow control products.





Integrated Solutions for Concentrated Solar Power Plants

In 2011, Flowserve products were instrumental in the first ever commercial-scale concentrated solar power project in the Andalusia region of Spain. The 19.9-megawatt Gemasolar power plant relies on seven Flowserve vertical turbine pumps to collect solar energy. This power plant was also the world's first solar power plant to use molten salt as the heat transfer fluid, allowing the plant to generate electricity for 24 hours a day for months at a time. To this day, the Andalusia solar plant supplies solar electricity to up to 25,000 nearby homes in the region.

Since that project in 2011, Flowserve has continued to be a leader in the industry in product innovation, performance and reliability. Notably, in 2015, Flowserve provided pumping systems to the 160-megawatt Ouarzazate Concentrating Solar Power Complex in Morocco and the 50-megawatt Bokpoort Concentrating Solar Power Project near Groblershoop, South Africa.

The Flowserve pumping systems at the heart of these two plants use heavy-duty, radially split, between bearings pumps for heat transfer fluid and vertical turbine pumps for molten salt service. The pumps use variable frequency designed to regulate pump speed and optimize the efficiency of the system at elevated temperatures and pressures. In addition to these pumps, Flowserve also supplied boiler feed water, condensate extraction, cooling water and auxiliary heat transfer fluid pumps for these projects.

Our Flowserve Pumps Division and Flow Control Division work hand-in-hand to develop pre-engineered, engineered, and special purpose pumps and systems and to provide optimally designed and fully integrated process equipment for all concentrated solar power services.

Flowserve provides complete system responsibility so the concentrated solar power generators can focus on their mission – harnessing the clean energy of the sun to reduce carbon emissions in the atmosphere. With its extensive experience in power generation, unmatched pumping technology and best-in-class technical know-how, Flowserve continues to be the trusted choice for renewable energy generation.



A Reliable Component of Flare Gas Recovery in Aggressive Environments

Flare gas is one of the major factors contributing to climate change, with oil production facilities around the world burning off approximately 140 billion cubic meters of natural gas annually, causing more than 300 million tons of carbon dioxide to be emitted to the atmosphere. In addition to the environmental impact, flaring natural gas has a significant economic impact value of approximately \$20 billion USD or the equivalent of 750 billion kilowatt hours of electricity.

One way to prevent toxic substances from entering the atmosphere is to use a flare gas recovery system, which can recapture up to 98% of emissions for use in other plant processes, such as heating gas systems. Flare gas recovery systems also reduce noise and thermal radiation, operating and maintenance costs, air pollution and gas emissions, and fuel gas and steam consumption.

While there are many compressors available for flare gas applications, liquid ring compressors stand out due to their design and reliability, making them ideal for use in aggressive environments. The reliability of a liquid ring compressor is rooted in the liquid ring formed from the operating liquid in the compressor, instead of a mechanical piston, as an energy carrier to compress gases and vapors. Liquid ring compressors can compress nearly all gases and vapors without any metallic parts contacting one another, which is advantageous because sliding parts are subject to vibration and wear, which can impact efficiency and leads to increased maintenance, downtime and mechanical failure.

Flowserve's offering of liquid ring compressors integrates the latest developments in liquid ring compressor technology, with up to a three-stage compression configuration that improves upon previous generation compressors resulting in lower internal losses, optimized intermediate pressures, higher isothermal efficiency and lower volume flow loss at high-discharge pressures. This design also can require less power and water consumption. As more oil and gas operations contend with larger volume flows, they will continue to leverage compressors like Flowserve's SIHI liquid ring compressors.



ENVIRONMENT

Environment

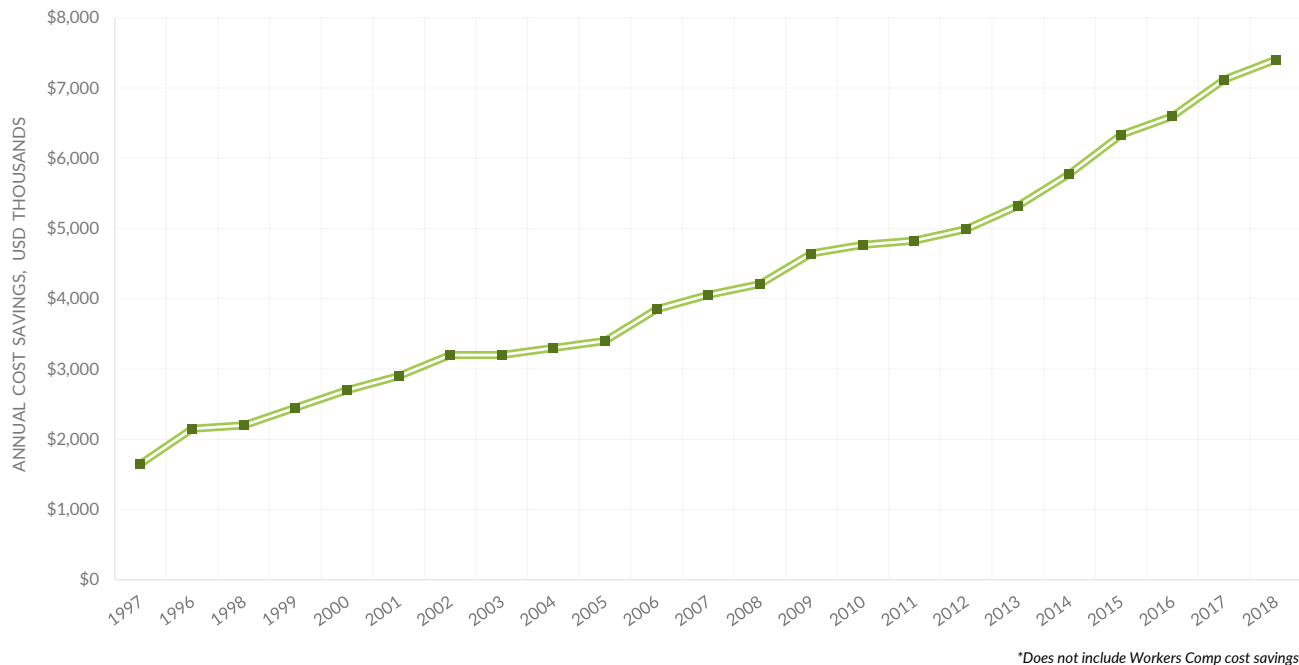
Around the world, Flowserve is striving to create extraordinary flow control solutions to make the world better for everyone. A top priority at Flowserve is protecting the environment for future generations. We do this by providing our customers with quality products, which reduce emissions, minimize leaks and enhance efficiency.

Flowserve products and services enable companies to move fluids and other materials with efficiency and confidence, minimizing loss 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.

For more than two decades, we have driven both hazardous and solid waste out of our operational processes – reducing emissions to air and water and eliminating solvents deemed harmful to the environment. Additionally, through proactive safety and environmental management programs, such as pollution prevention and waste minimization, we have been able to aggregate more than \$70 million USD in operational cost-savings.

Approximate Annual Savings From Flowserve's Proactive Safety and Environmental Management Programs



Environmental Reporting

Environmental data collection and reporting for Flowserve facilities in 2018 focused on six key aspects: energy usage, climate change, water consumption, air emissions, water emissions, and waste disposal and recycling as well as the associated Global Reporting Initiative (GRI) indicators.

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.

Leveraging Renewable Energy Sources

Many Flowserve facilities use combined heat and power (CHP) and/or renewable energy sources. Below are a few facilities that are leading in this area.

- **Coimbatore, India** – Solar power systems are used at the site for lighting and water heating
- **Desio, Italy** – Approximately 20% of the electrical power provided to the facility is generated from renewable sources
- **Linköping, Sweden** – District heating and electricity from a local CHP plant, which uses renewable biomass material and municipal waste, provides most of the energy used at the facility
- **Villach, Austria** – District heating is provided from a local plant that uses biomass and waste heat



Leading the Way to Protect the Environment

Flowserve's Al-Rushaid facility received the official certification of environmental compliance from the Kingdom of Saudi Arabia's General Authority of Meteorology and Environmental protection (GAMEP), which is responsible for controlling industrial pollution. The facility is the first among its competitors to receive this certification. The certification process includes environmental screening, best available techniques (BAT) analysis, environmental impact assessment (EIA), environmental emergency response plan (EERP) review, and groundwater monitoring program and procedures evaluation.

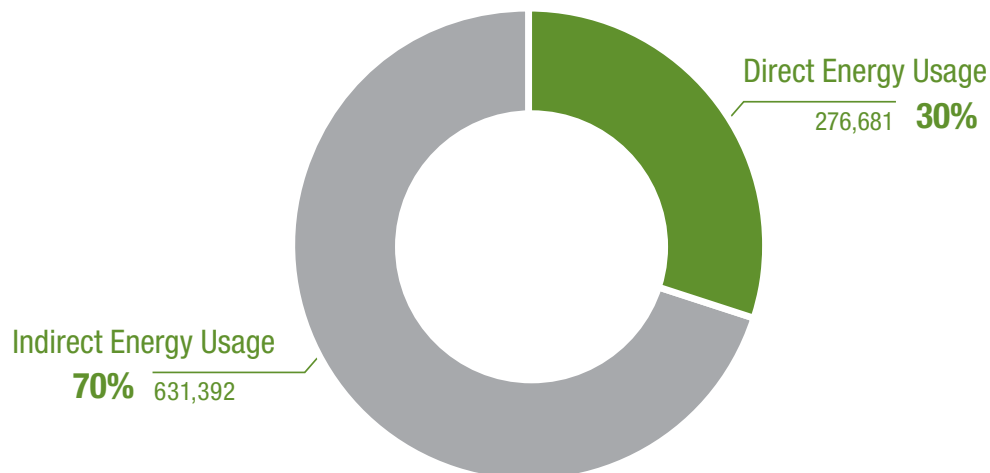
The facility is located in the Al Khobar area of Dammam, which is situated on the Arabian Gulf and serves as the capital city of Saudi Arabia's Eastern Province. The office and plant serve chemical, oil and gas, power, water resources and general industrial customers in the Kingdom of Saudi Arabia and neighboring countries. The facility's quick response center supports the service requirements of Flowserve and other manufacturers' pumps ranging from large horizontal multistage and double-casing barrel pumps to a variety of vertical pumps.



Energy Usage and Conservation

Flowserve associates have undertaken efforts to identify energy conservation opportunities at individual facilities. Total energy usage in 2018 for Flowserve manufacturing facilities is approximately 900,000 gigajoules. Direct energy sources account for approximately 30% of the total amount of energy used, while indirect energy sources account for 70%. Energy usage for 2018 is shown in the chart below.

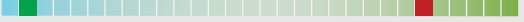
**Estimated Energy Usage (Gigajoules)
Flowserve Facilities - 2018**




Indirect and Direct Energy

Data as of December 31, 2014

Asia Pacific

2018	Total
Number of Facilities	34
Indirect Energy (GJ)	70,198.90
Direct Energy (GJ)	24,382.64
Direct Greenhouse Gas Emissions	
	
1,458 Tonnes (2018)	RT (25,000)

Latin America

2018	Total
Number of Facilities	25
Indirect Energy (GJ)	40,885.00
Direct Energy (GJ)	13,734.20
Direct Greenhouse Gas Emissions	
	
585 Tonnes (2018)	RT (25,000)

GHG Emissions from Direct Energy Sources (tonnes CO₂e)

	FPD	FCD	Total
Asia Pacific	1,225	233	1,458
Europe / Middle East / Africa	5,892	2,073	7,965
Latin America	568	17	585
North America	3,901	1,586	5,487

Global GHG Total from Direct Energy: 15,495

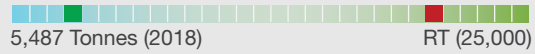
North America

2018

Total

Number of Facilities	66
Indirect Energy (GJ)	317,765.04
Direct Energy (GJ)	92,213.94

Direct Greenhouse Gas Emissions



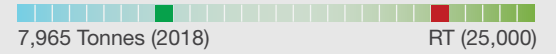
Europe/Middle East/Africa

2018

Total

Number of Facilities	69
Indirect Energy (GJ)	202,542.90
Direct Energy (GJ)	146,349.90

Direct Greenhouse Gas Emissions



- FCD
- FPD

RT - USEPA Reporting
Threshold for Direct GHG
emissions from individual
facilities

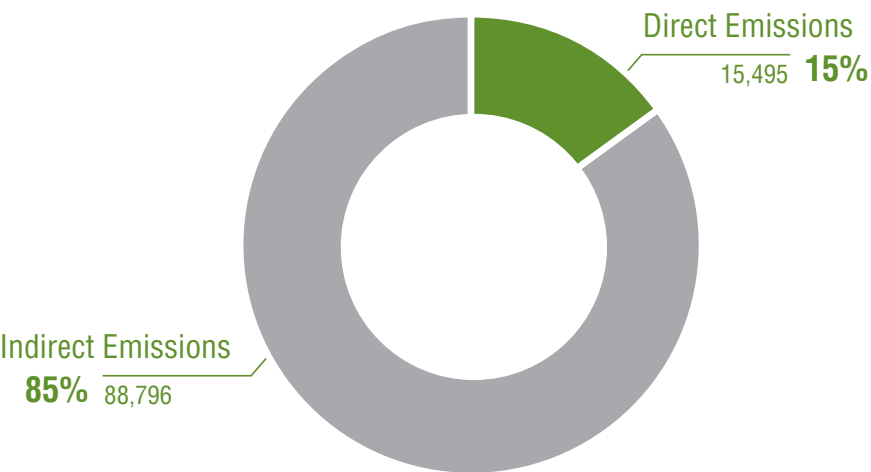


Climate Change

The estimated total equivalent carbon dioxide direct and indirect emissions based on energy usage in 2018 for Flowserve manufacturing operations is approximately 104,000 metric tons (“tonnes”). Only 15% 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 CO2e)
Flowserve Facilities - 2018**

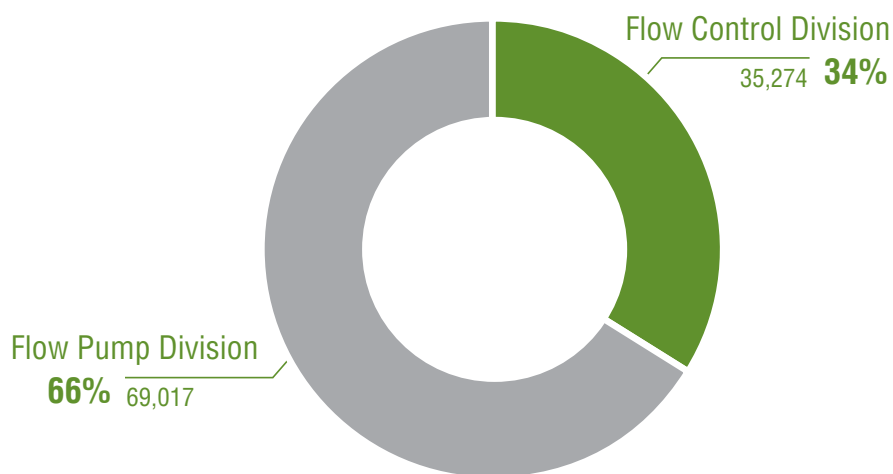




Greenhouse Gas Emissions

The estimated direct greenhouse gas emissions (associated with on-site fuel combustion) for individual Flowserve facilities are all well below the standard reporting threshold of 25,000 tonnes carbon dioxide equivalent. Moreover, the estimated total direct greenhouse gas emissions for Flowserve facilities worldwide for 2018 are below the 25,000 tonne threshold, which is a typical reporting requirement in various countries.

**Estimated GHG Emissions (tonnes CO₂e)
Flowserve Business Segments - 2018**

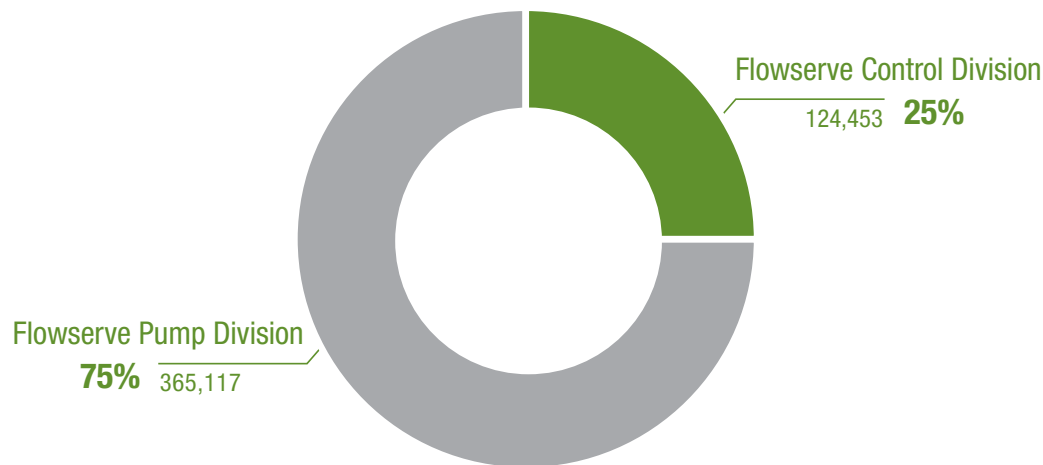




Water Consumption

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 or reused as much as possible. Many Flowserve facilities utilize closed systems for recycling water needed for pump testing operations.

**Water Consumption (cubic meters)
Flowserve Business Segments - 2018**



Air Emissions

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.

Water Emissions

Water emissions from process operations at Flowserve facilities are discharged to municipal sewer systems or wastewater treatment facilities 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

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 2018 include flammable liquids, paint waste, parts washer solvents, other waste liquids and batteries.

The estimated total amount of hazardous waste generated for Flowserve facilities in 2018 is approximately 43.8 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 2018 is 42 pounds per million USD in sales. This is well below the corporate goal of 90 pounds per million USD in sales. Flowserve has reduced global hazardous waste creation and disposal by more than 70% since 1988.

The estimated amount of nonhazardous waste generated at Flowserve facilities in 2018 is approximately 43,870 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.

Reducing Waste

Flowserve has reduced waste machining coolant disposal by 70% 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 over 50% 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, cardboard).



COMMUNITY

COMMUNITY

Flowserve is committed to improving the lives of people throughout the world, giving back and making a positive impact 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 make the world a better place, 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 our associates are committed to making a difference.

Recently, Flowserve launched a new community impact program, Flowserve Cares. The program takes a global approach to the way we serve our communities in the following core areas: at-risk youth; education; disaster recovery; and local issues.

We encourage associate volunteerism and participation in charitable initiatives, and support these endeavors through the Flowserve Volunteer Time Off program, which permits approved time off from work for associates to give back.

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

Throughout Flowserve's history and across the organization, individual facilities have regularly come together to donate their time, skills and efforts to local charitable causes.



Teaming Up Against Breast Cancer

In October 2018, associates at our facilities in Arnage, France and Dallas, Texas, participated in a run/walk to raise awareness and research funds to end breast cancer.

Flowserve Arnage-based female associates joined more than 7,000 participants during the Les Demoiselles du Bugatti association's all-female 5K run/walk at the famous circuit des 24 Heures in Le Mans, France.

Across the other side of the world, Dallas-based associates supported the 2018 Susan G. Komen Dallas Race for the Cure. More than 56 Flowserve associates and/or associate family members registered to participate in the race. Collectively, the company raised and donated funds to the 2018 Susan G. Komen Dallas Race for the Cure, which will help support breast cancer research and care.



A Good Neighbor in the Community: Tlaxcala, Mexico

Flowserve associates accomplish extraordinary tasks every day. In Tlaxcala, Mexico, our associates are not only committed to the safety and sustainability of Flowserve's commercial operations, but they are also changing the face of their local community.

"Maintaining an active life is a good life" rings the motto of the facility. To further support this mantra and really make it come to life, associates built a local sports site where associates and their families can engage in activities during lunchtime and outside of work. Beyond that, associates regularly participate in running marathons for charitable causes.

In 2018, the group participated in Volkswagen's race for a better environment. For every runner, the automotive company donated a new tree to be planted in the Popocatepetl National Park. Other notable races our associates have participated in include the Race for Women's Abuse Prevention; Kardias Race, which supports the Heart Disease Association; Exer Site race through which donations are raised for children's cancer treatments at the local hospital; and the Puebla University race, which donates profits to low-income students.

In addition, Flowserve's local Diversity & Inclusion committee organized a toy drive to help bring joy to children in two communities during the holiday season. The first, San José Teacalco, is a small town located 50 minutes from the Tlaxcala campus. Of its 1,071 households, 209 are single-room dwellings with dirt floors. The second community is Titichilco, where 20% of the population is illiterate, and another 27% have incomplete basic education. Tlaxcala associates collected and donated more than 500 toys to these communities.

Bettering local environments and supporting community initiatives are both active parts of the Flowserve sustainability vision. Tlaxcala is an excellent example of how promoting a better environment externally creates a positive environment internally.



Making a Difference Across the United States

Each year, our associates reach into their hearts to give back to their communities by partnering with local and government agencies to bring joy to hundreds of children and families during the holiday season.

In 2018, Flowserve associates at our Vernon, California facility joined the city's fire department and Rotary Club to participate in the Vernon United Steel Workers Union's 12th Annual Toy Drive. More than 300 new toys were distributed to children at Vernon City Elementary School. Ranging in age from 4 to 11, the students included special-needs children and those from low-income households.

Associates from our QRC in Pasadena, Texas hosted a food and toy drive for the Houston Food Bank and the local fire department's Toys for Tots program. Associates accumulated 2,258 units of food, more than \$1,000 USD in donations for toys, and 202 toys that they helped distribute at the fire department. The toy drive was organized as a "penny wars" competition in which different items were given different point values. The QRC with the most points won a pizza lunch party paid for by the other facilities. The whole experience not only encouraged teamwork within each QRC, but it also unified our facilities to work together to give back to our local communities.

For 78 years, our associates in Kalamazoo, Michigan have organized an annual toy drive and food basket program to benefit families in need. Flowserve matches donations from Kalamazoo associates, doubling the impact of each employee gift. Flowserve Kalamazoo partners with The Salvation Army, a local grocery store and a local trucking company to identify the families, purchase the food at a discount price and deliver the food to our facility, respectively. Associates then deliver the food and gift baskets to the families in need during their personal time.

Flowserve's commitment to making the world a better place begins at the local level, but impacts our communities at-large.

ENDNOTES

Scope and Boundaries

The information regarding safety and environmental performance is based on GRI indicator protocols. Data was collected from more than 190 facilities based on records from January 1, 2018, through December 31, 2018.

In general, the information presented within the report reflects the activities conducted by 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. Ten facilities (including one customer-integrated facility, two joint ventures, three corporate offices, and four sales and administrative offices) external to the manufacturing, and service 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.

Business Segments

During the latter part of 2018 and in connection with the Flowserve 2.0 Transformation, we determined that there are meaningful operational synergies and benefits to combining our EPD and IPD reportable segments into one reportable segment, the Flowserve Pump Division (FPD). As a result, in 2019 we began reporting a two operating segment structure, FPD and FCD, and prior periods will be retrospectively adjusted to reflect the new reportable segment structure.

Countries

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

Number and Type of Facilities

For this report, 204 manufacturing and service facilities were identified as part of the reporting scope, of which 192 make up the aggregated 2018 environmental data represented within.



Summary of Energy Usage, Water Usage and GHG Emissions

Flowserve Manufacturing Facilities Energy Usage – 2018			
	Direct Energy (Gigajoules)	Indirect Energy (Gigajoules)	Total Energy (Gigajoules)
FPD	212,132	412,485	624,621
FCD	64,545	218,906	283,451
Total	276,681	631,392	908,073

The estimated normalized energy use for 2018 is 237 Gigajoules per million USD in sales.

Flowserve Manufacturing Facilities Water Usage – 2018		
	Water Usage (Cubic meters)	Water Usage (U.S. gallons)
FPD	365,117	96,453,954
FCD	124,453	32,877,024
Total	489,571	129,330,979

The estimated total water usage for 2018 is approximately 490,000 cubic meters (approximately 130 million U.S. gallons per million USD in sales).

Flowserve Manufacturing Facilities GHG Emissions – 2018			
	Direct Emissions (Tonnes CO2e)	Indirect Emissions (Tonnes CO2e)	Total Emissions (Tonnes CO2e)
FPD	11,586	57,430	69,017
FCD	3,909	31,365	35,274
Total	15,495	88,796	104,291

The estimated normalized emission amount for 2018 is 27 tonnes carbon dioxide equivalent per million USD in sales.



Summary of Safety and Environmental Indicator Data

Indicator	Description	Amount (2018)
Sales	Sales Revenue	\$3.83 billion USD
Employment	Total workforce by employment type, employment contract and region	
	Total number of employees by region as of December 31, 2018	16,253
Safety	Rates of injury, occupational diseases, lost days and absenteeism, and number of work-related fatalities by region	
	Injury rate (total recordable incidence rate)	0.38
	Lost day rate	0.13
	Lost time severity rate	1.8
	Number of fatalities	0
	Reporting system	U.S. OSHA
Training	Average hours of training per year per employee by employee category	24 hours
Direct Energy	Direct energy consumption by primary energy source	
	Total direct energy consumption	276,681 gigajoules
Indirect Energy	Indirect energy consumption by primary source	
	Total indirect energy consumption	631,392 gigajoules
Water	Total water withdrawal by source	
	Total volume of water withdrawn (all from municipal supply)	489,571 cubic meters
Emissions	Direct greenhouse gas (GHG) emissions (Scope 1)	
	– carbon dioxide equivalent	15,495 tonnes
Emissions	Energy indirect greenhouse gas (GHG) emissions (Scope 2)	
	– carbon dioxide equivalent	88,796 tonnes
Waste	Total weight of waste by type and disposal method	
	Total weight of nonhazardous waste	43,870 tonnes
	Total weight of hazardous waste (per U.S. waste definitions)	43.8 tonnes

Flowserve is committed to the health and safety
of our associates and our customers,
fair and ethical business practices,
giving back to our communities,
and environmentally responsible solutions
that help customers become more sustainable
in the marketplace.





Flowserve Corporation
5215 North O'Connor Boulevard
Suite 2300
Irving, Texas 75039
flowserve.com

North America

Latin America

Europe

Middle East

Africa

Asia Pacific