



SERVICES AND SOLUTIONS

## *Capabilities Overview*

Asset Management and Optimization • Engineering and Technical Services  
Education and Training • Aftermarket Parts and Services



*Experience In Motion*

# SERVICES AND SOLUTIONS

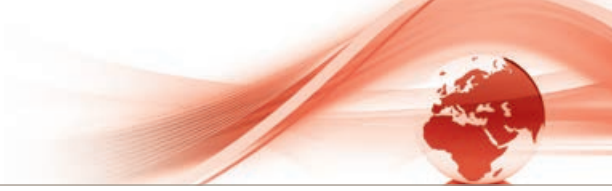
## For the Global Infrastructure Markets

The business and operational challenges within a process plant are numerous. Plant operators face the pressures of increased productivity and profits which are seemingly at odds with the everyday realities of decreased operating budgets, rising energy costs and increasing operational costs. But Flowserve Services and Solutions can help relieve the stresses and reduce the life cycle costs associated with the most important aspects of plant operation. Dedicated to delivering the highest quality support, Flowserve Services and Solutions integrates hydraulic, mechanical and materials engineering knowledge with 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

### Services and Solutions for Customers' Most Challenging Problems



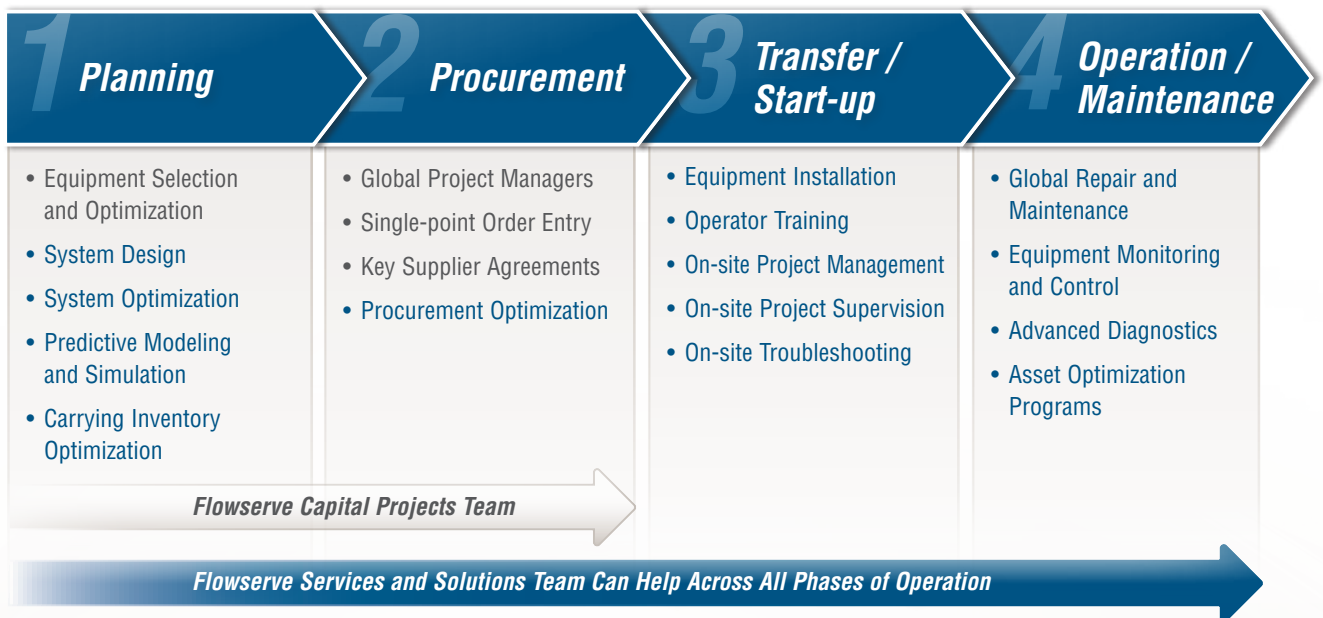


## INTEGRATED SOLUTIONS THAT SUPPORT THE COMPLETE LIFE CYCLE

The traditional OEM/end user relationship has generally centered on equipment selection, key supplier agreements and replacement parts, an approach that can result in short-sighted, reactive solutions focused on lowest available pricing. Moreover, it provides little value during the more costly operational phases of the equipment life cycle.

By identifying opportunities to reduce costs at each stage of the equipment and system life cycle, the integrated capabilities offered by Flowserve Services and Solutions cast a whole new light on the OEM/end user relationship. The planning and procurement stages have been augmented with numerous consultative services to maximize asset utilization while the start-up and operations stages are supported by an extensive menu of value-added aftermarket, engineering and technical services ranging from installation and troubleshooting through equipment monitoring and educational programs.

These integrated solutions bring an intuitive approach to every engagement, accounting for all aspects of the equipment, system or plant life cycle. Every solution offered by Services and Solutions is based on delivering measurable value in the form of improved operational performance.

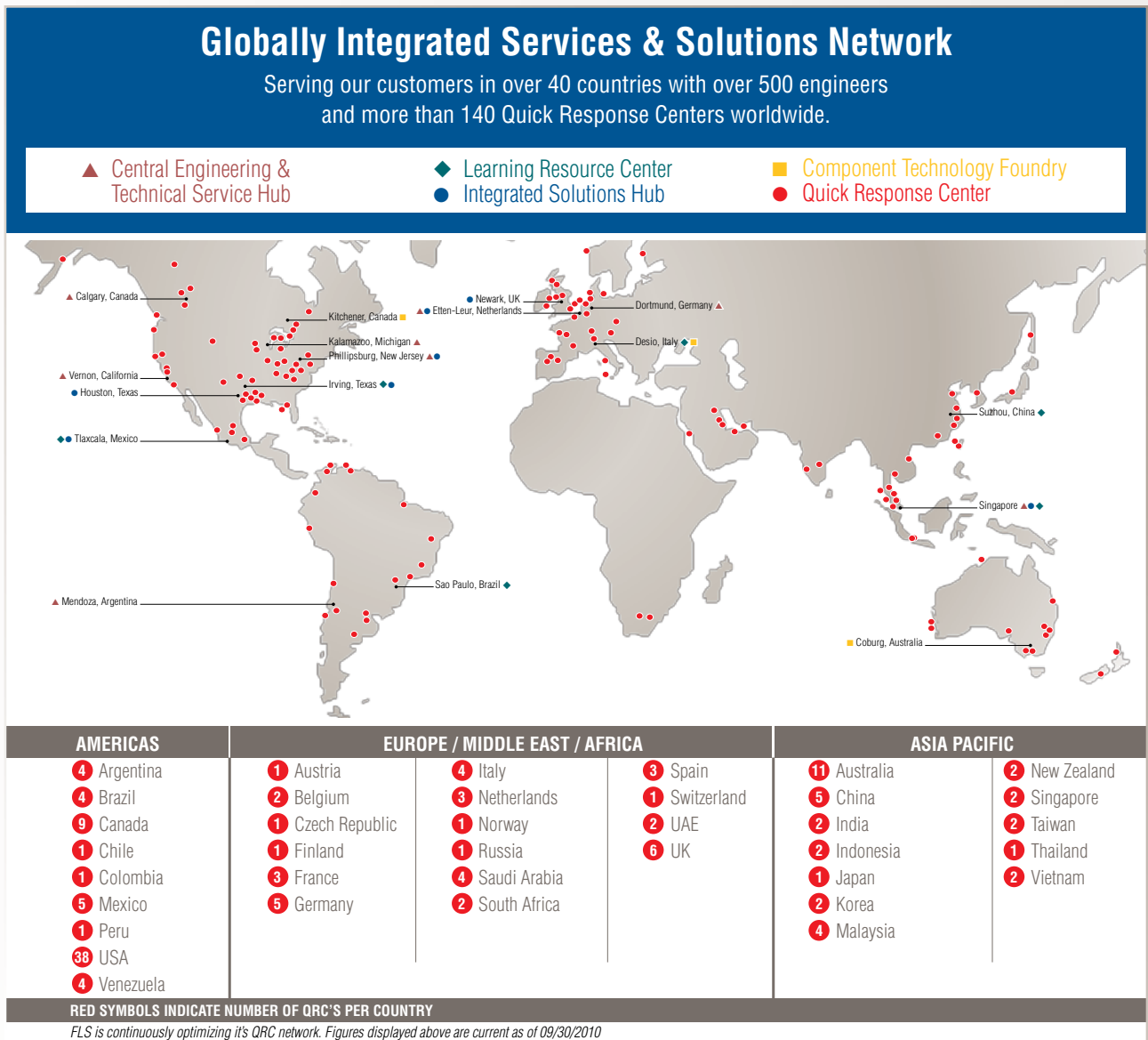


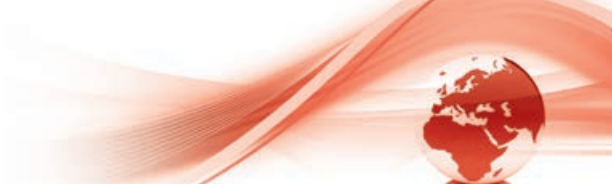


# A GLOBAL FOOTPRINT

## Focused on Local Support

Flowserve Services and Solutions focuses on providing customers with uncompromising support, wherever and whenever needed. A worldwide network of quick response centers staffed by highly skilled engineers and technicians is available around the clock, seven days a week to respond to customer queries, to evaluate and troubleshoot problems and to provide reliable, long-term solutions.





## THE SERVICES and Solutions Approach

Flowserve experts are trained to rigorously evaluate the total life cycle implications of every customer issue. First and foremost, each situation is assessed to quantify the current economic impact of the customer's issue. From there, measurements are taken and data is analyzed to provide the foundation for improvement recommendations. And with a flexible, customizable commercial approach, Flowserve contracts with customers to execute programs to successful conclusions with compensation often based on achievement of mutually agreed upon metrics over time.

<b>Quantify</b> ↓	<ul style="list-style-type: none"> <li>• Business assessments</li> <li>• Technical assessments</li> </ul>
<b>Measure</b> ↓	<ul style="list-style-type: none"> <li>• Data acquisition</li> <li>• Field measurements</li> <li>• Remote monitoring</li> </ul>
<b>Analyze</b> ↓	<ul style="list-style-type: none"> <li>• Intelligent device utilization</li> <li>• Solutions engineers</li> <li>• Engineering and technical services resources</li> </ul>
<b>Improve</b> ↓	<ul style="list-style-type: none"> <li>• Re-rates, upgrades and retrofits</li> <li>• Asset optimization solutions</li> </ul>
<b>Control</b>	<ul style="list-style-type: none"> <li>• Key performance indicators</li> <li>• Performance-based partnerships</li> </ul>

### LIFECYCLE ADVANTAGE™



All Flowserve Services and Solutions engagements are tailored to meet customer priorities and business strategies. The result is a formal program called LifeCycle Advantage™, a partnership that incorporates performance indicators to measure success and a commercial structure that aligns with customer goals. From traditional transactional arrangements to performance-based, risk-reward contracts, Flowserve has experience designing and administering agreements that help achieve customer business goals.

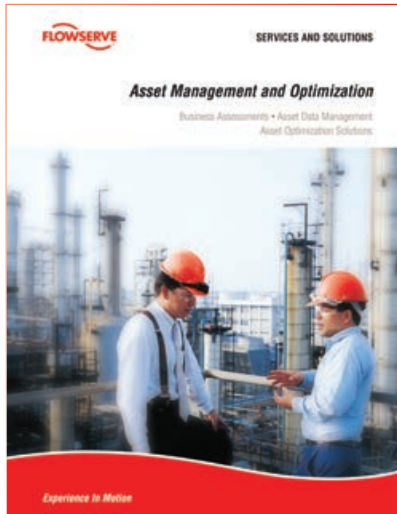
### DELIVERING REAL RESULTS

Flowserve Services and Solutions engagements have consistently delivered:

- Attractive economic returns on investment that exceed customer requirements
- Mean time between repair (MTBR) improvements of more than 200%
- Inventory reductions of 20% and greater
- 15% to 20% reductions in maintenance and equipment operation-related expenses
- Energy reductions in refineries and process plants greater than 20%



## ASSET MANAGEMENT AND OPTIMIZATION



FSG-104

### *Resources and Technologies That Drive Performance*

An unparalleled stable of technical resources and industry experts comprises the core of Flowserve asset management and optimization solutions. This combination of resources and expertise, along with a technology infrastructure uniquely developed to the requirements of process equipment and systems operation, allows Flowserve to develop and lead initiatives aimed at improved asset performance. Asset management and optimization solutions from Flowserve help customers on a variety of levels uncover opportunities for asset improvement. Flowserve assists in three different areas:

- Business Assessments – Benchmarking operational performance against comparable operations and industry peers based upon well substantiated resources such as industry reports and standards
- Asset Data Management – Collecting, examining and understanding data through the use of sophisticated tools and technologies to reveal hidden opportunities for asset improvement
- Asset Optimization Solutions – Developing programs focused on identified asset improvement opportunities such as reliability, energy or availability, generally as part of a formal partnership called LifeCycle Advantage

## ENGINEERING AND TECHNICAL SERVICES



FSG-102

### *Focused on Technology and Problem Solving*

The collective global resources of Flowserve offer customers a 360-degree view of the process system, from consulting during initial system design to ensuring safe, reliable and efficient operation of equipment over time. The Flowserve focus on the complete system starts with an unparalleled commitment to building the industry's best engineering and technology organization. Flowserve boasts more than 1500 engineers trained and organized to address the unique challenges that often arise at the customer operation. These experts can be quickly and efficiently deployed to the customer site to immediately assess issues and collaborate with customers on possible solutions. As needed these teams can remotely synchronize with other global technology resources within Flowserve.

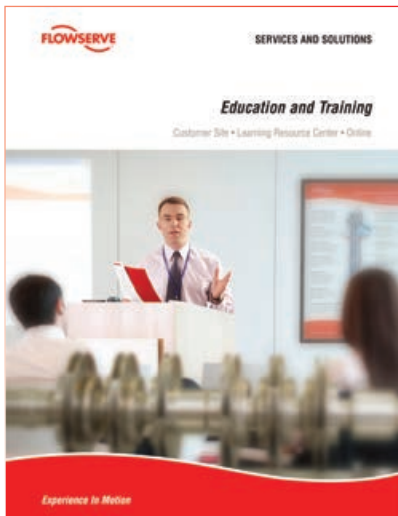
Once a comprehensive technical assessment has been performed, numerous equipment performance improvements can be delivered from the Flowserve global network of manufacturing facilities, design centers and Quick Response Centers. Flowserve routinely delivers tailored solutions with significant economic paybacks, such as:

- Component or assembly exchange programs
- Mechanical and metallurgical upgrades
- Hydraulic re-rates and upgrades
- Dry gas seal retrofits





## EDUCATION AND TRAINING



FSG-103

### ***Enhancing Workforce Competency***

Flowserve provides companies around the world with a wide range of innovative programs focused on helping plant operators, reliability specialists, engineers and maintenance personnel deepen their understanding of process systems. Training programs from Flowserve are ideal for organizations seeking:

- Maximized plant asset availability and equipment reliability
- Increased mean time between repair (MTBR)
- Workforce development for increasing proficiency in the installation, operation, maintenance and repair of pumping equipment and systems

Whether customers require basic training or customized programs, Flowserve offers an unparalleled global network of training experts and facilities to accommodate any request. Customers can choose the location, course content and program formats that optimize the use of human and financial resources and deliver the most effective results. Training from Flowserve can be delivered at the customer location, online or at any of several state-of-the-art Flowserve Learning Resource Centers located around the world.

## AFTERMARKET PARTS AND SERVICES



FSG-101

### ***A Commitment to World-Class Services and Capabilities***

As one of the world's leading manufacturers of flow management equipment, Flowserve is keenly aware that the key to customer satisfaction and loyalty is unmatched aftermarket service. To this end, Flowserve has dedicated considerable resources to addressing its customers' aftermarket needs.

Investments in well-equipped Quick Response Centers, mobile service fleets and advanced manufacturing technologies along with the unrivaled expertise of its engineers, technicians and craftsmen enable Flowserve to address virtually every service requirement for process equipment, on- or off-site, regardless of OEM. Services include:

- Repair and maintenance solutions ranging from machining and repair welding to mechanical upgrades to on-site management of maintenance activities
- Replacement part and component capabilities from basic OEM component supply to rapid prototyping and quick response programs



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