



## Energy Advantage Program

Achieve sustainability goals and lower total cost of ownership with a holistic flow control approach

*Optimize your pumps, valves and processes by leveraging expert engineering analysis, project management and aftermarket upgrades to enhance operational efficiency and accomplish decarbonization goals. Partner with Flowserve to define and implement the data-supported improvements that best fit your unique challenges.*

## Prioritize critical flow loop processes for savings



Across industries — including pumping-intensive desalination, petrochemical, power and refining facilities — as much as 50% of electricity is consumed by pumping systems.<sup>i</sup> Since this energy consumption is scattered across hundreds to thousands of assets, it can be difficult to pinpoint the problems within each flow loop and optimize the equipment and processes. An estimated 30 to 50% of the energy consumed by pumping systems could be saved through equipment or control system changes.<sup>ii</sup>

What is needed is a programmatic approach that covers all aspects of energy efficiency, including process needs and control schemes.

### The right partner to improve overall efficiency and reliability

Leverage the innovative methodology and toolset Flowserve created for the Energy Advantage Program to optimize the efficiency of flow loop operations.

The Energy Advantage Program incorporates the global engineering expertise of Flowserve with our innovative, data-driven analysis of pumping systems. The Energy Advantage Program enables companies to quickly:

- Identify wasted power consumption opportunities in pumping systems
- Increase energy efficiency through the optimization of pump and valve interaction
- Reduce carbon and other emissions by minimizing energy demand in pumping systems
- Improve overall plant productivity and reliability
- Deliver significant asset total cost of ownership and operational savings

We also look for adjacent carbon and energy improvement opportunities through the use of seals, recovery systems, power recovery turbines and other technology.

### Address costs of energy and emissions

If you are an industrial plant operator interested in sustainability and/or lowering operating expenses, Flowserve is your ideal partner.

The Energy Advantage Program provides an overall flow control approach that benefits companies constrained by rising energy costs and increased greenhouse gas (GHG) scrutiny and costs.



*“Flowserve improved the energy efficiency of five large pumps in our cooling water system. They evaluated various operating scenarios and recommended retrofitting the pumps with custom hydraulics. Flowserve tested and validated their design, which gave us the confidence to upgrade the system. As a result, we’ve lowered our energy costs by \$230,000 a year. The Energy Advantage Program also enabled us to improve system redundancy and increase reliability.”*

**Plant manager**  
Petrochemical company

## How the Energy Advantage Program can work for you




We use our industry-leading capabilities to study your plant’s performance requirements and compare it to the design basis of flow control equipment. Our pumping system specialists provide insights into optimizing the operation of pumps and their associated control elements that result in attractive and self-funding upgrades.

Here is the process and timeline we will follow together:



## Significantly reducing energy costs and fugitive emissions across industries

Flowserve’s Energy Advantage Program has been successfully applied across multiple industries, equipment types and processes to help companies significantly reduce energy costs and fugitive emissions. Examples from our customers include the following:

	Annual Savings			Additional benefits
	Energy costs	Power consumption	CO <sub>2</sub> e	
 <b>Petroleum refinery</b>	\$353,200	2,229 MWh	1,338 Mt	Process control improved by upgrading to automated control valves
<b>Naptha cracking</b>	\$230,000	3,810 MWh	2,285 Mt	Increased reliability through 3% higher NPSH margin
 <b>Power plant (nuclear)</b>	\$280,042	4,249 MWh		Equipment upgrades installed in a single day Increased reliability through operation near design point and latest mechanical back-end design
<b>Power plant (coal-fired)</b>	\$896,135	10,200 MWh	6,120 Mt	Increased reliability through greater separation margin between operating speeds and rotor critical speeds
 <b>Pipeline</b>	\$878,564	11,000 MWh	6,000 Mt	Increased reliability of pumps and mechanical seals Increased reliability of control valves by reduced pressure drop
<b>Steelworks</b>	\$620,000	7,200 MWh	4,230 Mt	\$292,000 fewer operating costs by extending mean time between repair (MTBR) and reducing unplanned downtime and usage of chemicals and water

<sup>1</sup> Pump Systems Matter, Hydraulic Institute and the U.S. Department of Energy, <https://www.energy.gov/gc/articles/overview-pump-systems-matter> (accessed May 10, 2023).

<sup>2</sup> Pump Lifecycle Costs: A Guide to LCC Analysis for Pumping Systems, U.S. Department of Energy, [www.energy.gov/eere/amo/articles/pump-life-cycle-costs-guide-lcc-analysis-pumping-systems-executive-summary](https://www.energy.gov/eere/amo/articles/pump-life-cycle-costs-guide-lcc-analysis-pumping-systems-executive-summary) (accessed May 10, 2023).

Explore some of our case studies.





## What's available to you in the Energy Advantage Program?



### Greater efficiency

- Optimize energy consumption in pumping systems to achieve energy transition goals.
- Utilize power recovery turbines to convert waste energy for productive uses.



### Reduced carbon

- Minimize hydrocarbon fugitive emissions.
- Reduce environmental impact with seal and seal system upgrades, drivetrain electrification and flare gas recovery.



### Lower total cost of ownership

- Increase asset reliability and lower operational expenses.
- Take advantage of greenhouse gas incentives and minimize rising costs of emissions.
- Improve equipment dependability and reduce maintenance spend with digital solutions that add predictive maintenance capabilities.

*Learn more about how you can accelerate your energy transition plans to achieve your net-zero goals and business objectives.*

Contact us today at [EnergyAdvantage@Flowserve.com](mailto:EnergyAdvantage@Flowserve.com)

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