Refining, Petrochemical, and Fertilizer

Maximize productivity and safety with proven technologies and advanced solutions
Maximizing the profitability of your plant is the motivation behind everything we design for the downstream sector. Baker Hughes, a GE company (BHGE), provides technologies with the flexibility to match your application requirements, and the compact designs it takes to simplify installation so you can get up and running faster. Robust materials and proven chemical solutions improve equipment reliability and availability, while manufacturing and service excellence help you meet regulations and minimize risk.

With BHGE, you can:
• Increase profitability with improved feedstock flexibility
• Extend equipment life with proactive maintenance
• Boost productivity and reduce your operational costs
• Protect people and the environment with process safety, reliability, and maintenance
• Count on reliability with digital insights
Increase profitability with improved feedstock flexibility

BHGE is committed to helping you maximize throughput, and to help you increase your profit across a wide range of feedstock qualities.

Our chemical solutions are proven in every type of processing plant worldwide, from corrosion and fouling control, to fuel additives that improve your final product. Regardless of what you started with, we help you get where you want to be.

Realize the “opportunity” in opportunity crudes

Problems such as poor desalting efficiency and uncontrollable emulsions are common when processing lower-priced, opportunity crude oils. BHGE helps refiners proactively gain insight into these processing challenges with our Crude Oil Management™ approach, leveraging a suite of technologies that provide the best feedstock preparation and desalting performance possible — for greater profitability and lower risk.

Reduce the impact of solids on opportunity crude processing and equipment

Solids in crude oils can cause desalter upsets, downstream equipment fouling, increased energy use, catalyst deactivation, and downgraded product value. JETTISON™ solids release agents transport oil-free solids from the desalter to the brine effluent. This allows refiners to process higher rates of opportunity crudes, while reducing the impact of solids and contaminants on refining processing equipment — helping to improve operational flexibility, product throughput, and profit margins.
Extend equipment life with proactive maintenance

Unnecessary downtime adds up over time and can have a significant impact on your ability to compete. BHGE provides chemical, monitoring, and maintenance services to protect your equipment, monitor its condition, predict behavior, and prioritize maintenance to help you stay on top.

When you need on-site services, we mobilize efficiently. And our field service engineers are highly trained and fully certified to work in your region and application.

Control overhead corrosion, and improve long-term reliability

To improve profit margins, refiners are increasingly replacing conventional crudes with heavy, acidic crudes. But, these opportunity crudes can dramatically increase the risk of overhead corrosion. TOPGUARD™ overhead corrosion control programs help predict and control the corrosive impact of these challenging crude blends by defining the root cause of corrosion, establishing workable mitigation strategies, and providing ongoing monitoring and optimization. This comprehensive approach helps extend equipment run time and prevent unplanned shutdowns — resulting in improved long-term reliability.

Reduce risk and downtime with integrated turnaround services

Typical industry turnaround services involve multiple suppliers to perform the required activities, leading to inefficiencies and excess downtime. BHGE offers integrated turnaround services that synergize activities under a single project team to efficiently and seamlessly transition from maintenance to production. This one-stop solution means that systems will be clean, dry, inert, and leak-free in accordance with industry design codes and specifications — while helping to reduce costs, downtime, and HSE risks.

Avoid unnecessary downtime with System1® precision

As part of a routine site audit for a large fertilizer plant, the BHGE team identified a sudden vibration increase in a compressor. Through System1® data analysis, possible bearing failure was ruled out and the rotor position was confirmed. The vibrations were stable and below trip limits, so we recommended close monitoring and analysis — enabling the customer to safely maintain operation for three months until a planned maintenance shutdown. This avoided a minimum five-day repair outage, and saved the customer at least $200,000 USD.
Boost productivity and reduce operational costs

We continually push boundaries to help you increase efficiency. A combination of proven designs with new technologies and advanced materials help your machines run smoothly, require less maintenance, draw less power, and fit into smaller spaces. Advanced sensors, precision-controlled systems, and powerful GE Predix™-based analytics help optimize performance and drive condition-based maintenance. When your equipment needs servicing, our skilled teams and rigorous procedures deliver the efficiency and speed you expect.

Create value with proven rotating equipment technology

We design equipment that delivers high reliability and uptime in a variety of downstream applications — ranging from steam turbines and API618 reciprocating compressors to centrifugal pumps. Our portfolio covers a wide range of frame sizes, including large-capacity machines that are easily customized. We start with pre-engineered, field-proven components and tailor them to your plant’s requirements so you get high efficiency across the entire operating range.

With our digital twin approach and advanced sensors designed for continuous on-line monitoring, you can also use our digital advantage to reduce commissioning time, increase working hours, and optimize maintenance intervals.

Refurbish equipment and get new technologies without new CAPEX

The Coatzacoalcos urea plant had been dormant and exposed to the elements for over 15 years when Pemex bought it in 2014. Core equipment included our heritage MCL and BCL centrifugal compressors, as well as HP and LP steam turbines. These were 40 years old and heavily corroded, but we knew we could refurbish them and save our customer from having to buy new units. The complex job also included machines from other OEMs, plus all auxiliaries and process items.

With archived specs, reverse engineering, retrofitting, 3D drawing, and laser scanning, we sped the project along. Old parts were improved with new materials and designs, making them lighter, stronger, and more durable. We finished the project 13 months ahead of schedule, giving Pemex an estimated $10 million USD in early production value.
Protect people and the environment with process safety, reliability, and maintenance

**Reduce H₂S exposure with a scavenger treatment program**
A refiner was experiencing problems with toxic hydrogen sulfide (H₂S) being released during the production, storage, and loading of asphalt — resulting in life-threatening concentrations exceeding 100 ppm. A chemical treatment that met the high temperatures associated with asphalt production and storage was required. The treatment also had to effectively treat large quantities of H₂S without impacting the final asphalt product quality. Implementation of a SULFIX™ scavenger program reduced H₂S exposure by over 80%, enabling the refiner to continue asphalt production while providing a safe working environment for personnel.

**Take control of safety and efficiency**
BHGE offers a full range of linear and rotary control valves, safety relief valves, pneumatic actuators, positioners, and related instruments. Our designs combine 130 years of process control experience with the latest digital technologies to create new valve designs that reduce CAPEX and OPEX. They improve efficiency, safety, regulatory compliance, and sustainability — while delivering high precision, reliability, and durability in the harshest environments. We also provide a range of associated digital resources — including Predix-powered ValvAware diagnostics — that reduce OPEX and increase plant efficiency. These digital capabilities help you eliminate unnecessary maintenance and downtime while delivering precise control over your instrumentation for all process control applications.

**Achieve compliance with heightened flare-stack regulations**
The United States Environmental Protection Agency requires refineries to meet stringent new flare stack monitoring regulations by January, 2019 (source: www.epa.gov). By combining gas and flare monitors with advanced control systems, BHGE was able to partner with several major refineries to demonstrate compliance with the new regulations. Our flare.iQ monitoring system gives customers a single, turnkey industrial solution for complying with MACT RSR 63.670.
Count on reliability with digital insights

BHGE combines ultra-reliable, non-intrusive sensor technologies with sophisticated cloud-based analytics systems to monitor the condition of your equipment without interrupting production. We can equip your people with an extensive array of powerful apps based on the Predix platform — the operating system GE created specifically to harness the untapped data potential of your equipment. Predix enables the continuous big-data collection and analysis needed to deliver real-time insights about your operation — unleashing new levels of performance for equipment from BHGE or any OEM.

Transform data into longer pipe life

BHGE’s Predictive Corrosion Management (PCM) solution combines the strengths of Righttrax PM installed sensors and remote advisory support software with the most advanced, cloud-based, Predix analytics capabilities. It continuously collects and analyzes thermal and thickness data so you can trend, predict, and avoid corrosion-related piping failures — and extend the run life of pipes throughout your facility. PCM takes you far beyond any conventional concept of inspection — giving you the actionable insights you need to manage corrosion risk, make proactive disposition decisions, and reduce your total cost of operations.

Increase performance and reduce costs with powerful industrial apps

Asset Performance Management (APM), an integrated enterprise solution built on the GE Predix platform, connects disparate data sources and uses advanced analytics to generate actionable insights across your organization. It can identify impending issues, reduce downtime, and help balance your priorities to reduce cost, improve availability and reliability, and manage risk.

Solve problems with real-time remote support

Wherever your facilities are located, your teams can always connect with our engineering experts for operational support, troubleshooting, or maintenance assistance. We use digital technologies to make it quick and easy to share information. For example, our Virtual Express Care service equips your site personnel with a Smart Helmet kit that includes high-definition cameras, two-way audio, and visor projection so the wearer can see all spec documents, videos, and illustrations needed to complete the task at hand.
Refining, Petrochemical, and Fertilizer

Process chemicals
- Corrosion control
- Opportunity crudes processing
- Fouling control
- Antifoamers
- Desalting optimization
- Cleaners and deodorizers
- Utility boilers and fired heaters

Turbomachinery
- Centrifugal compressors
- Reciprocating compressors
- Axial compressors
- Steam turbines
- Gearboxes
- Motors
- Turboexpanders

Flow and process technologies
- Valves and actuators
- Heat exchangers
- Centrifugal pumps
- Meters and instrumentation

Digital asset performance management
- Condition monitoring and protection
- Predictive corrosion management

Process services
- Commissioning
- Maintenance services

Fuel additives and blending
- Hydrogen sulfide scavengers
- Cold flow additives
- Fuel lubricity improvers
- Cetane improvers
- Fuel dehazers
- Fuel biocides
- Conductivity improvers
- Heavy fuel oil combustion additives
- Contaminant extraction services
- Rapid response chemical treatments

Water treatment
- Cooling water treatment
- Wastewater treatment
- Boiler water treatment

For more information:
bhge.com