

# BASTION Fuel Treatment Services

Fireside additives to fit your needs



# The BASTION Fuel Treatment Services Program

## The BASTION services program provides operational benefits to

- Minimize high-temperature corrosion of furnaces, superheaters, and reheaters
- Reduce slag and ash fouling of furnaces, superheaters, reheaters, boilers, economizers, and air heaters
- Control sulfuric acid induced corrosion of air heaters and other lower temperature equipment
- Lower acid dew point temperatures that allow adjustments to reduce exit gas temperatures and improve unit efficiency
- Reduce burner tip fouling
- Improve combustion characteristics by reducing unburned hydrocarbon in exit gas, which represents wasted fuel and adds to particulate emissions



## Reduce fouling and corrosion in fuel handling systems

For more than 35 years, Baker Hughes has provided fuel additive services for boiler, furnace, and fireside power generation applications. This world-class expertise has now been combined with an unrivalled fuel treatment portfolio to create the Baker Petrolite BASTION™ fuel treatment services program.

The BASTION services program uses innovative Baker Hughes technology and accumulated years of expert knowledge to provide operators with the most comprehensive and cost-effective combustion performance program available. The proven benefits to utility, industrial, and refinery applications are improved efficiency, reliability, availability, and reduced maintenance. The BASTION services program is available to new and existing customers of Baker Hughes fireside combustion performance services.

## Improve efficiency and reduce maintenance

Ease of use and cost-effective performance combined with extended useful life and reduced maintenance costs make Baker Hughes technology the fuel treatment service of choice for original equipment manufacturers (OEMs) and facility operators alike.

Our magnesium carboxylate-based fuel additives have long been regarded as the market leaders in the treatment of crude and heavy fuel oils (HFO) for combustion in power generation applications. Addressing the issues of slagging, ash fouling, and hot- and cold-end corrosion, the Baker Hughes additive technology helps boilers and furnaces continue to run at optimum efficiency, despite using the severest of fuels.

## Optimize combustion performance

Delivering improved efficiency, reliability, availability, and reduced maintenance, the BASTION services program provides the industry technology and support to operate in the most efficient and economic manner.

When customers adopt the new BASTION fuel treatment services program, Baker Hughes becomes more than just an additives service supplier. We become an operational partner with our customers. We work hard to understand their individual needs and ensure that the correct fuel treatment guarantees optimum combustion performance and cost-effective power generation solutions when using crude and HFOs.

## Use a comprehensive program

### On-site assessment

Baker Hughes consultants perform a comprehensive, on-site assessment of our customer's needs to fully understand all the operational, maintenance, fuel management, and emissions requirements.

### Fuel analysis

An in-house fuel analysis by Baker Hughes technology experts evaluates and assesses the existing fuel supply. The analysis identifies the fuel contaminants and prescribes the correct treatment to achieve and maintain optimum unit performance and minimize maintenance issues.



As part of the BASTION services program, regular performance monitoring by Baker Hughes combustion experts enable clients to anticipate and prevent unexpected maintenance shutdowns, maintaining unit reliability while operating in the most cost-efficient manner.

**Customer proposal**

A detailed proposal, presented to the customer, recommends an optimized fuel treatment program supported by Baker Hughes system design experts.

**Fuel treatment**

A fuel treatment solution, including tank farm management, asphaltene stability, ash modifiers, corrosion inhibitors, and combustion catalysts, is selected to specifically address the treatment requirements of the customer’s particular needs.

**Fuel optimization**

Optimization of the fuel additive treatment rate results in maximum unit performance and efficiency at minimal treatment cost. Regular fuel analysis and consultation with the customer ensures that the most effective fuel treatment and correct dosage rates are maintained.

**Combustion performance health check**

Measuring the acid dew point (ADP) and analyzing the exhaust gas maintains optimum combustion conditions and unit efficiency. Baker Hughes provides expert, on-site inspection services during unit shutdown. Ash analysis in Baker Hughes laboratories ensure that the BASTION services program continues to provide optimum system performance.

**Troubleshooting**

Readily available expert advice quickly helps the customer identify and solve any operational problems, maintain unit performance, and minimize unnecessary downtime. ADP measurement and exhaust gas analysis assist in the investigation process.

**Ongoing training**

Maintaining a regular dialogue with the customer helps us to understand their operation. Sharing the latest information about fuel treatment technology and industry best practices can assist in maximizing performance in fuel management, treatment, and combustion. Continuously assessing the latest developments in emissions legislation helps to provide cost-effective solutions to environmental or regulatory issues.

**Monitor performance**

When any sulfur-bearing fuel is combusted, sulfur trioxide (SO<sub>3</sub>) is present in the exhaust gas. A small amount is formed during the combustion process, but the vast majority is formed when sulfur dioxide (SO<sub>2</sub>) reacts with oxygen in the presence of a vanadium pentoxide catalyst.

Sulfuric acid forms when the SO<sub>3</sub> dissolves with any water present. The exhaust gases cool as they travel through the exhaust system, and at the ADP temperature, the sulfuric acid vapor condenses to a liquid. When the sulfuric acid condenses on relatively cool surfaces, such as the air heater or emissions stack, cold-end corrosion can occur. The sticky acid also traps ash as it passes through the system, promoting fouling.

While Baker Hughes magnesium carboxylate additives can prevent cold-end corrosion, careful monitoring of the ADP and exhaust gas parameters using ADP and gas analysis meters can also provide useful information on unit performance and potential problems. For instance, the ADP is dependent on several factors, including the amount of excess oxygen present in the exhaust gas. A sudden increase in the ADP may indicate a failure of air preheater seals, allowing excess oxygen into the exhaust.

**Experience the savings**

Sometimes it can be difficult to quantify the cost benefit that results after adopting a performance program. At Baker Hughes, we believe it is important that we demonstrate the benefit that the BASTION services program can bring to your operation.

Using our proprietary C3V economic value tool, we work with you to analyze the key performance indicators that are relevant to your situation.

We are confident that the economic benefits clearly demonstrate that you will view the BASTION services program as a vital component of your facility’s day-to-day operation.

Contact Baker Hughes today or visit us at [www.bakerhughes.com/bastion](http://www.bakerhughes.com/bastion) and let BASTION fuel treatment services raise your expectation in power plant performance.



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