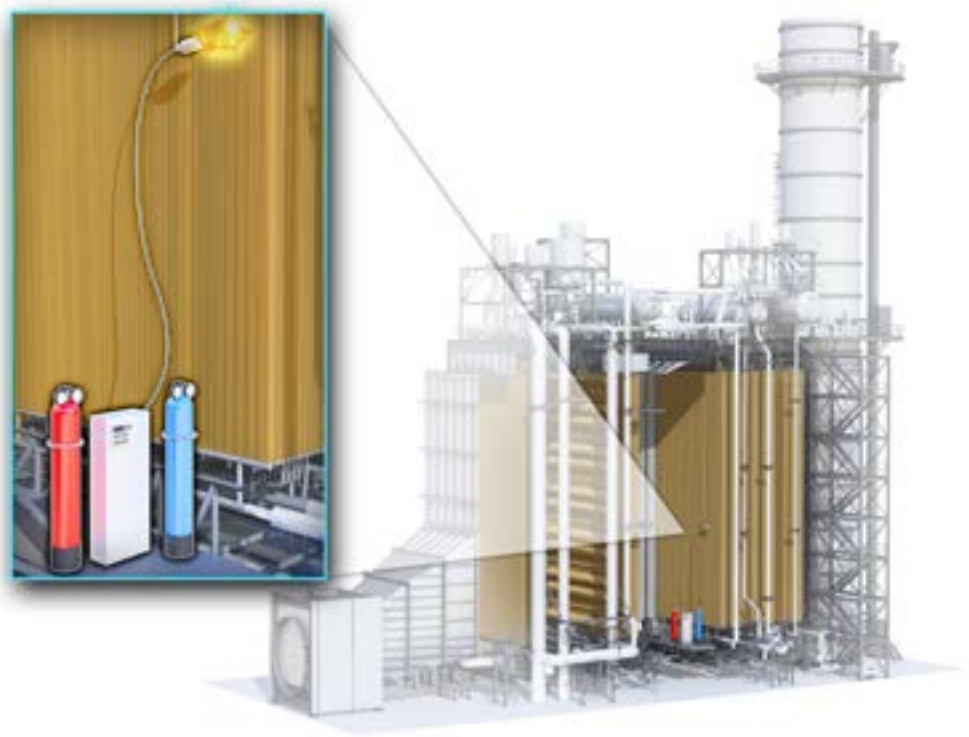
GE VERNOVA

PRESSUREWAVE PLUS*

for coal-fired power plants and HRSG cleaning

As an OEM and leading service provider for coal-fired power plants and HRSGs, GE provides fast and efficient tube cleaning services based on a patented pressure wave cleaning technology.



HRSG Gas-side Tube Fouling

Gas-side fouling of HRSG tubes happens mainly on the cold end modules of the HRSG. The most common sources are ammonia salts deposits downstream of an SCR or corrosion. Corrosion can be caused by:

- Humidity in the ambient air during periods of standstill. This happens particularly for units near the coast or in humid areas.
- Condensation and deposition of water and sulfur compounds when the tube metal temperature drops below the respective dewpoint during the operation of the unit. This will mainly affect the coldest tubes, typically LP economizer inlet tubes.

MAINTAIN EFFICIENCY AND POWER OUTPUT

Gas-side tube fouling of HRSG tubes can considerably reduce the power output and efficiency of a combined cycle power plant. This is caused by reduced heat transfer efficiency and increased backpressure to the gas turbine.

Pressure wave cleaning has proven to be an effective technology for removing this fouling. Pressure waves penetrate deeper within the finned tube bundles than other technologies. It also does not require the installation of scaffolding, which reduces cost and required outage time.

This innovative technology can also be applied to coal-fired power stations where ash accumulation at various locations can significantly affect the performance of a plant.

Why PressureWave Plus is better

- Instant increase of plant performance
- Faster than conventional cleaning methods such as CO_2 blasting
- Reduced corrosion potential
- Deep cleaning effect
- No scaffolding required
- No damage to boiler tubing
- No waste water generated

Pressure Wave Cleaning

Pressure wave cleaning is a patented technology that has been developed in Switzerland by BANG&CLEAN® Technologies AG and was commercially introduced in 2001. Pressure wave cleaning of HRSGs is done off-line. A special lance is introduced into the area between the pressure part modules to be cleaned. A bag at the end of the lance is then inflated with a combustible mixture that is remotely ignited. The resulting pressure wave and tube vibrations dislodge the deposits.

This is then repeated at several locations along the face of the HRSG module to create the desired cleaning effect. The pressure waves have the ability to penetrate deep into the tube bundle and therefore provide a better cleaning effect than other methods.

Safety

Pressure waves generated by the combustion of gas typically propagate at much lower speeds than pressure waves generated by explosives. The method therefore poses no danger for boiler tubes. The method involves no transfer or storage of explosives.

The combustible gas mixture is prepared only moments before ignition and numerous barriers of shut-off valves and non-return valves prevent gas leakage.

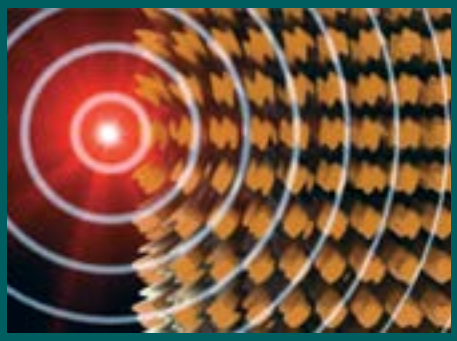
Case Study

Situation: An F class combined cycle power plant located near the sea and in a humid environment experiencing repeated start-ups and shutdowns had increased backpressure.

Outcome: PressureWave Plus cleaned 2.5 modules in just 3 shifts and showed instant improvements.

- PressureWave Plus cleaning resulted in 12,000 lbs of debris removed from the unit using a standard vacuum process
- Immediate overall pressure drop reduction by more than 20 mbar/8” wg

Before Cleaning



Pressure Wave Technology

After Cleaning

Different steps in the cleaning process

Water-cooled lance in Boiler

Bag in position to be inflated

Inflating bag

Bursting bag

Ninety percent repeat customers and over 20,000 cleanings at more than 300 industrial facilities around the world are proof of the safety and effectiveness of this cleaning method.

To learn more about this offering, contact your GE representative or visit **gegaspower.com**