BALTEC IES

TURBINE POWER ENHANCEMENT

Innovative solutions to get more from your assets

WWW.BALTECIES.COM

ABOUT Baltec IES

Starting in 1987, Baltec IES has grown from a small family run businesses to an internationally recognised solutions provider in the Gas Turbine Power industry.

Baltec partners with plant owners and operators all over the world to deliver innovative solutions which improve the power output and efficiency of gas turbine power plants.

BENEFITS OF IN-DEPTH KNOWLEDGE & EXPERTISE

Proven Technologies
We use only the latest proven technologies to ensure plant reliability is never compromised.

Innovative Solutions
Our engineers can work with you to tailor an innovative solution which meets your requirements.

Reliable Execution
Solutions are implemented on time and within scheduled outage windows.

After Sales Support
Following implementation of a solution, we are always available to assist to give you peace of mind.

A GLOBAL COMPANY

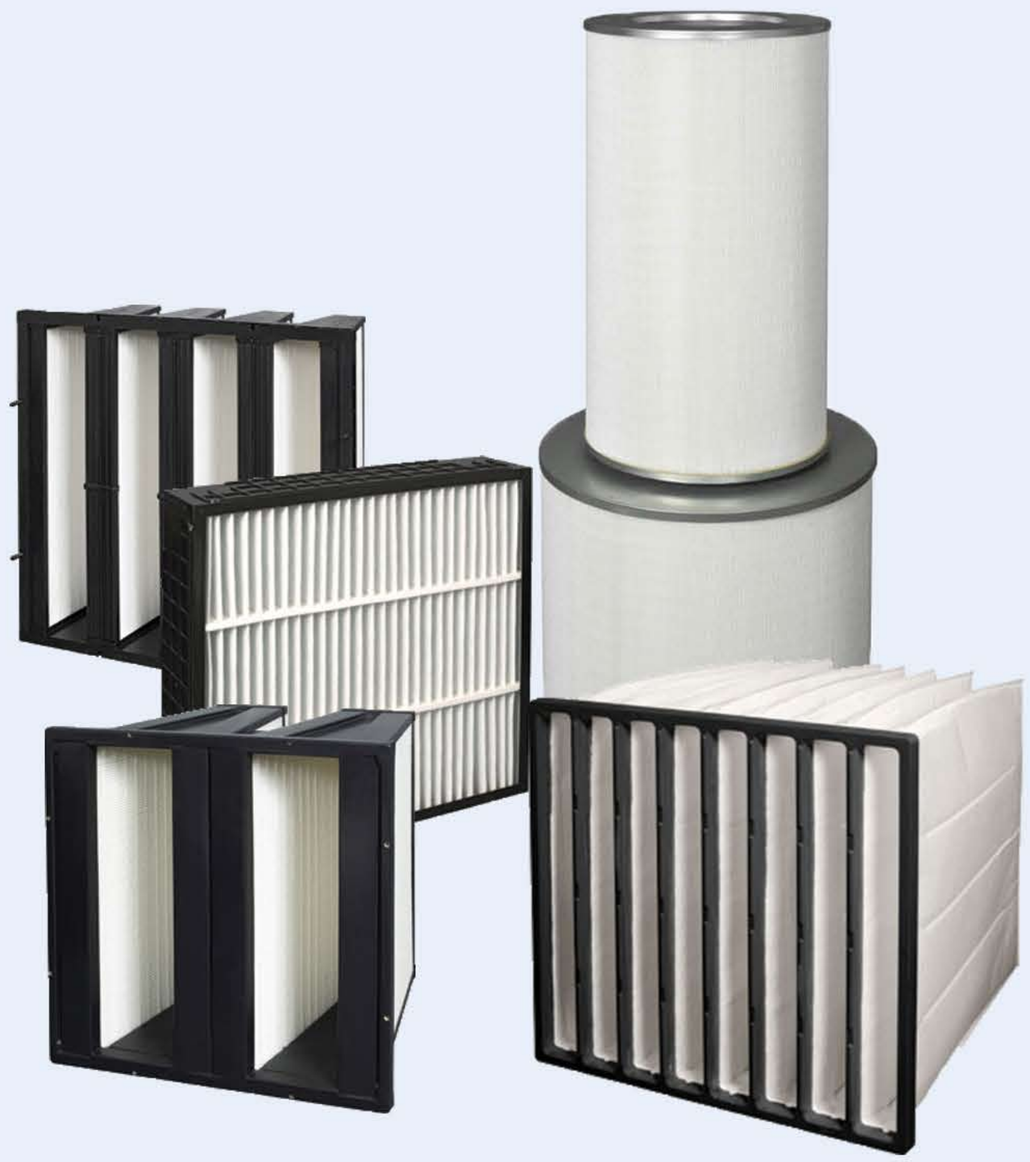
Baltec has successfully executed projects and services all over the world thanks to a strong network of international offices & partners. As a result, no site location is too far or too remote for Baltec to handle.

Filtration upgrades

Keeping gas turbine's compressor clean

EAGLEFILTERS

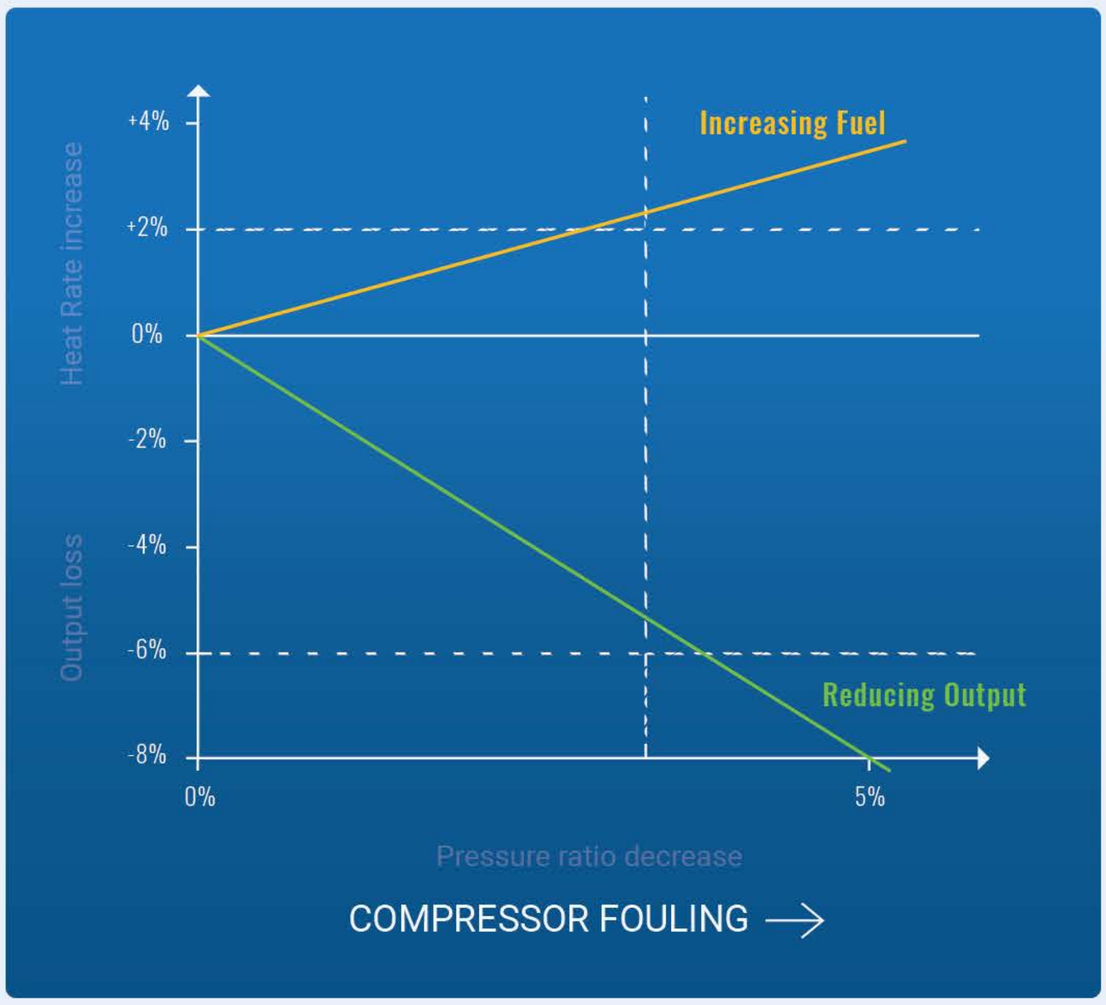
Keeping a gas turbine's compressor clean is one of the most effective methods to recover lost capacity and improve fuel efficiency.



Benefits gained by a correctly designed filtration system:

- 2-5% improvement of power output.
- 1-3% reduction of fuel consumption.
- 1-3% reduction in CO_2 emissions.

Impact of incorrect filtration



BALTEC ASSISTS OWNERS & OPERATORS BY:

- Turbine performance evaluations
- Filter house and compressor condition inspections
- Full turn key filtration system upgrades
- Compressor fouling performance guarantees

MHI701F with OEM filtration—Build up on compressor blades reduces power output and increases fuel use.

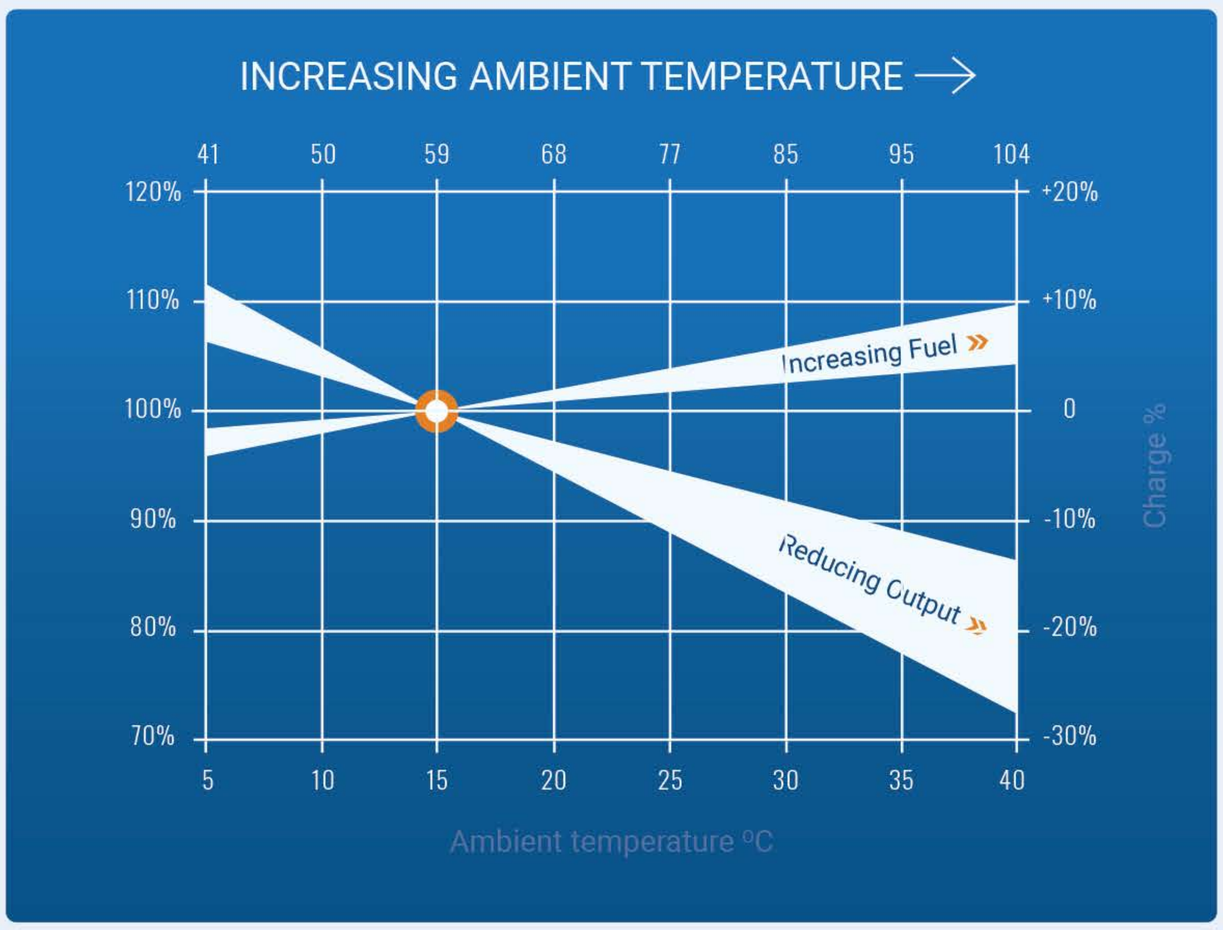
MHI701F with OEM filtration—Contaminated cooling air causes blockages in cooling air passages, damaging turbine blades and increasing maintenance costs.

Boosting Power Output

Gas turbines operating in locations with high ambient temperatures become de-rated due to reduced air density. Baltec provides a range of innovative technologies which can reverse these effects.

Technologies offered by Baltec:

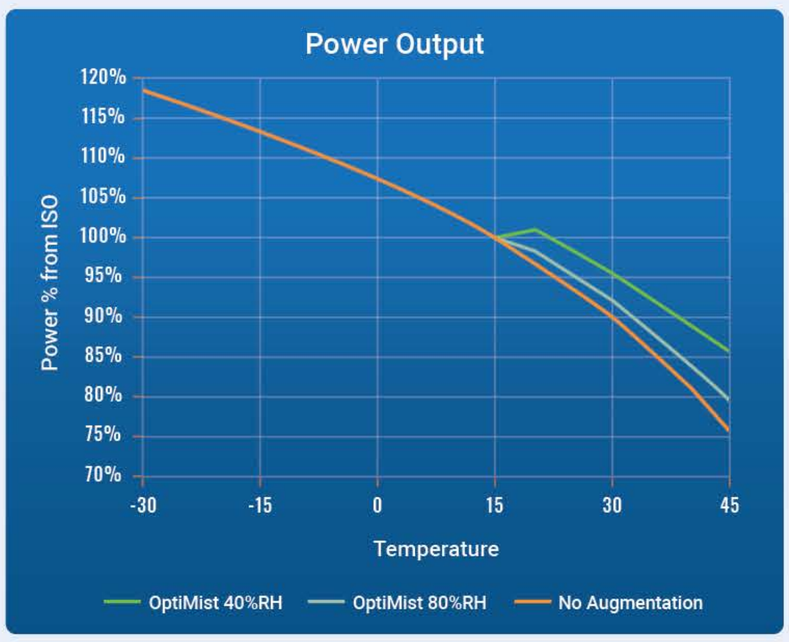
- Inlet OptiMist
- Inlet Echill
- OptiFlash Wet Compression

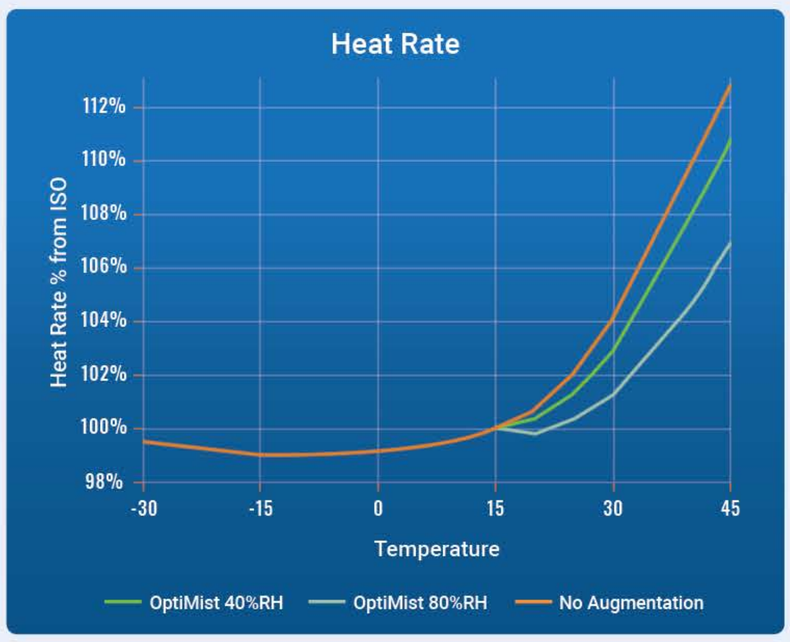


Example Performance Curves

OptiMist

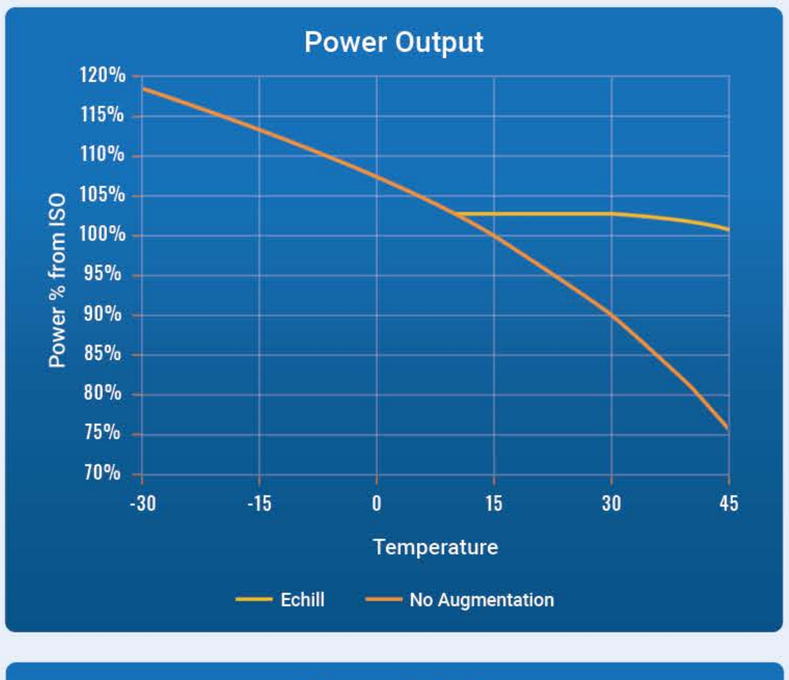
Strongly affected by ambient humidity levels.
In low humidity conditions, produces large boost of power and efficiency gains.

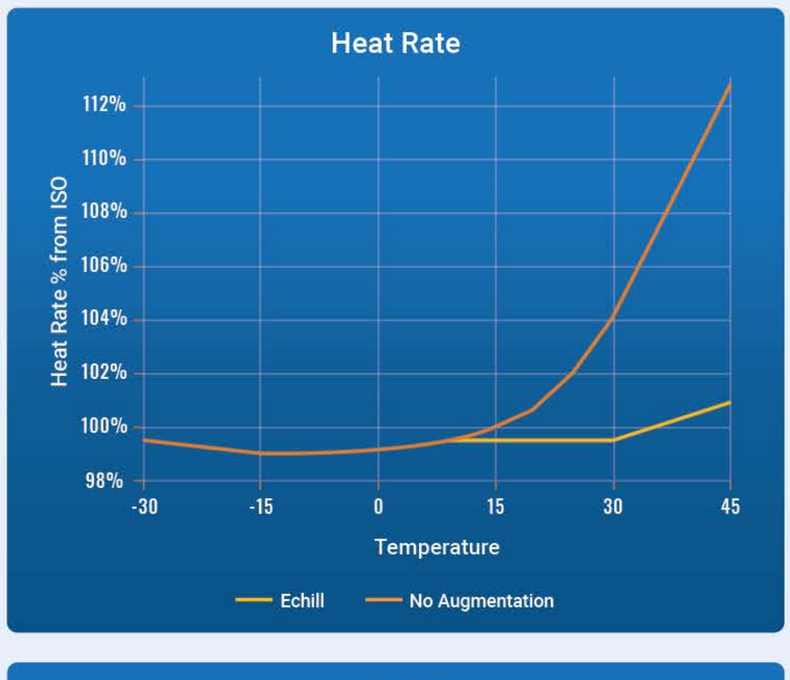




Echill

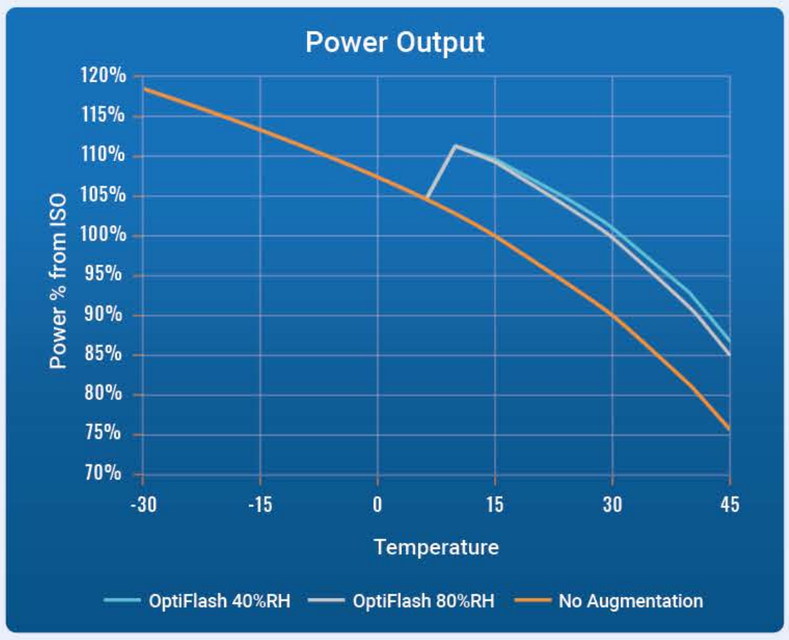
Not affected by ambient humidity levels, chiller capacity is the only limitation. Turbine intake air is cooled to 12°C and maintained for a broad range of ambient temperatures.

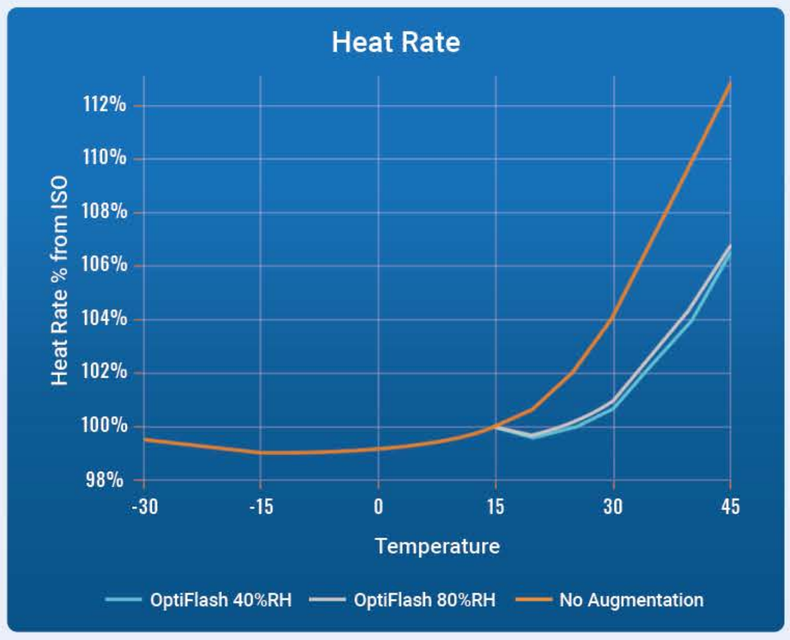




OptiFlash

Significantly better performance over OptiMist and only weakly affected by ambient humidity levels. System sizing can be tailored to achieve desired power gain.





OptiMist Systems

Boosting power in climates with low humidity levels

The lowest capital cost solution for boosting power in climates with low humidity levels.

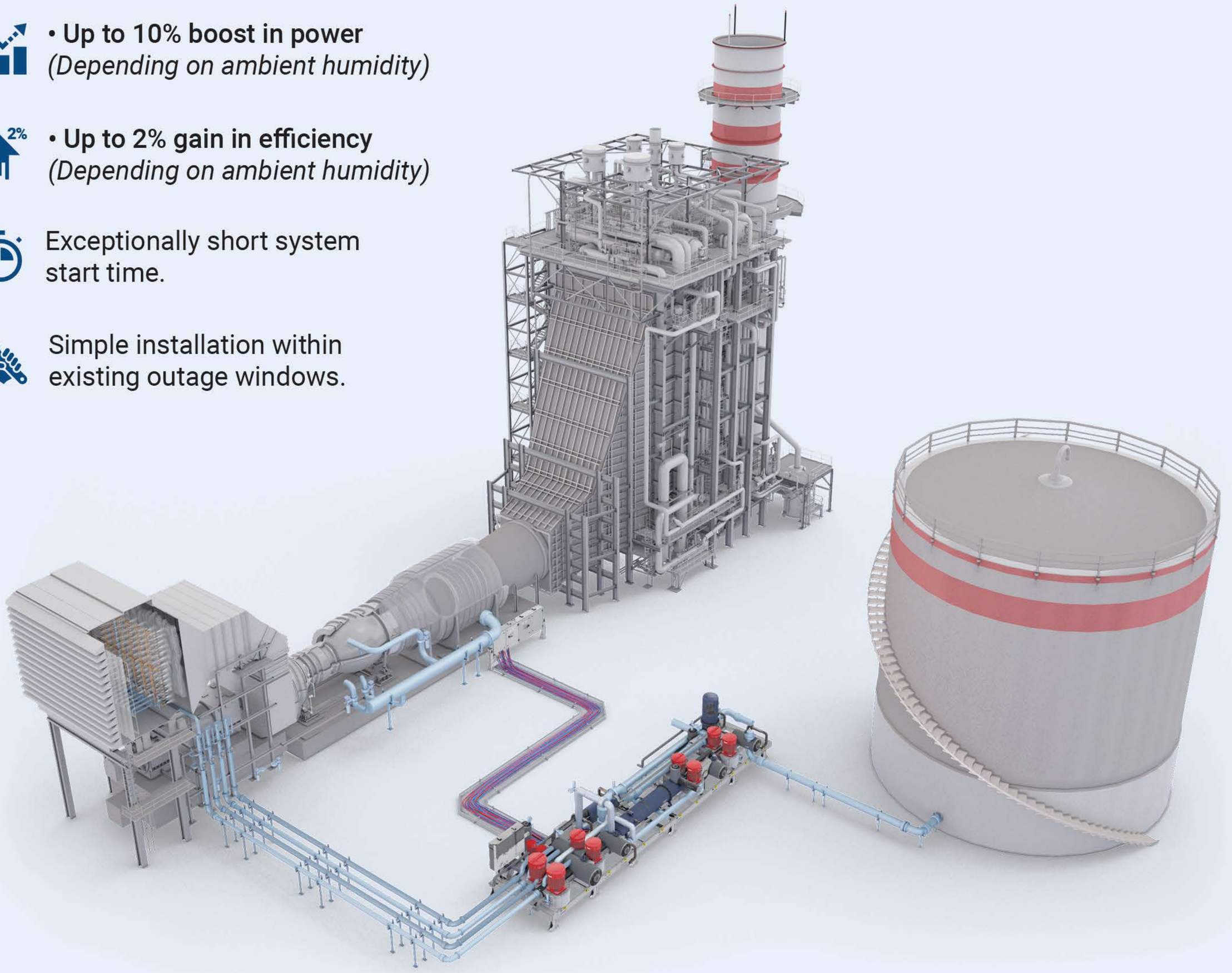
OptiMist systems work on the traditional fogging principle of evaporating water within the air stream causing a reduction of temperature and an increase of mass flow into the turbine.

Benefits that OptiMist technology can deliver:

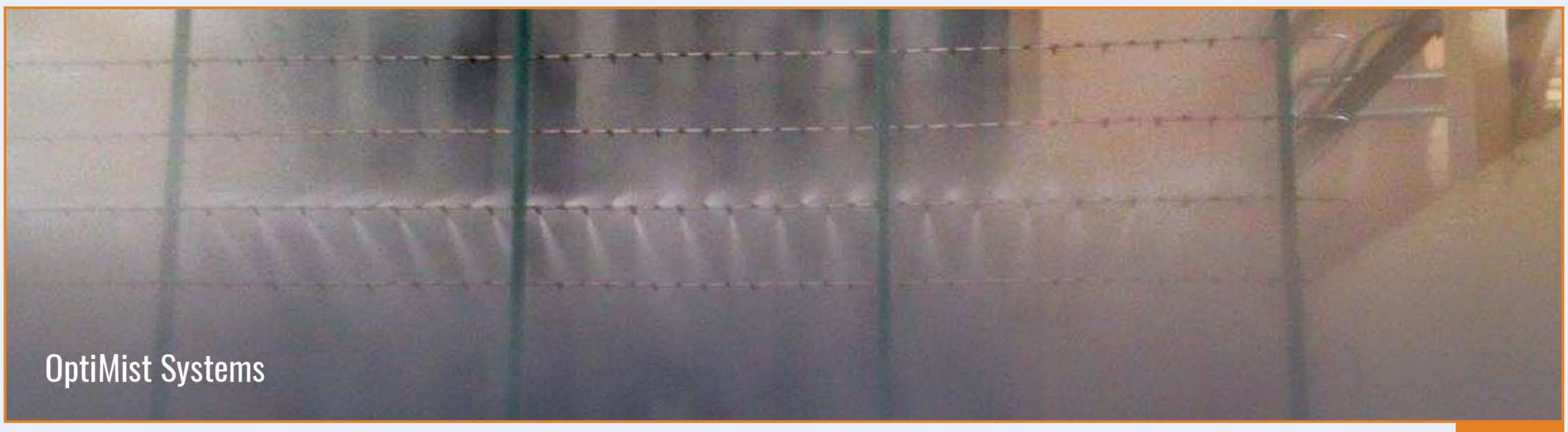
- **Up to 10% boost in power**
  (Depending on ambient humidity)
- **Up to 2% gain in efficiency**
  (Depending on ambient humidity)

Exceptionally short system start time.

Simple installation within existing outage windows.



OptiMist system in operation on a Class E turbine



Echill Systems

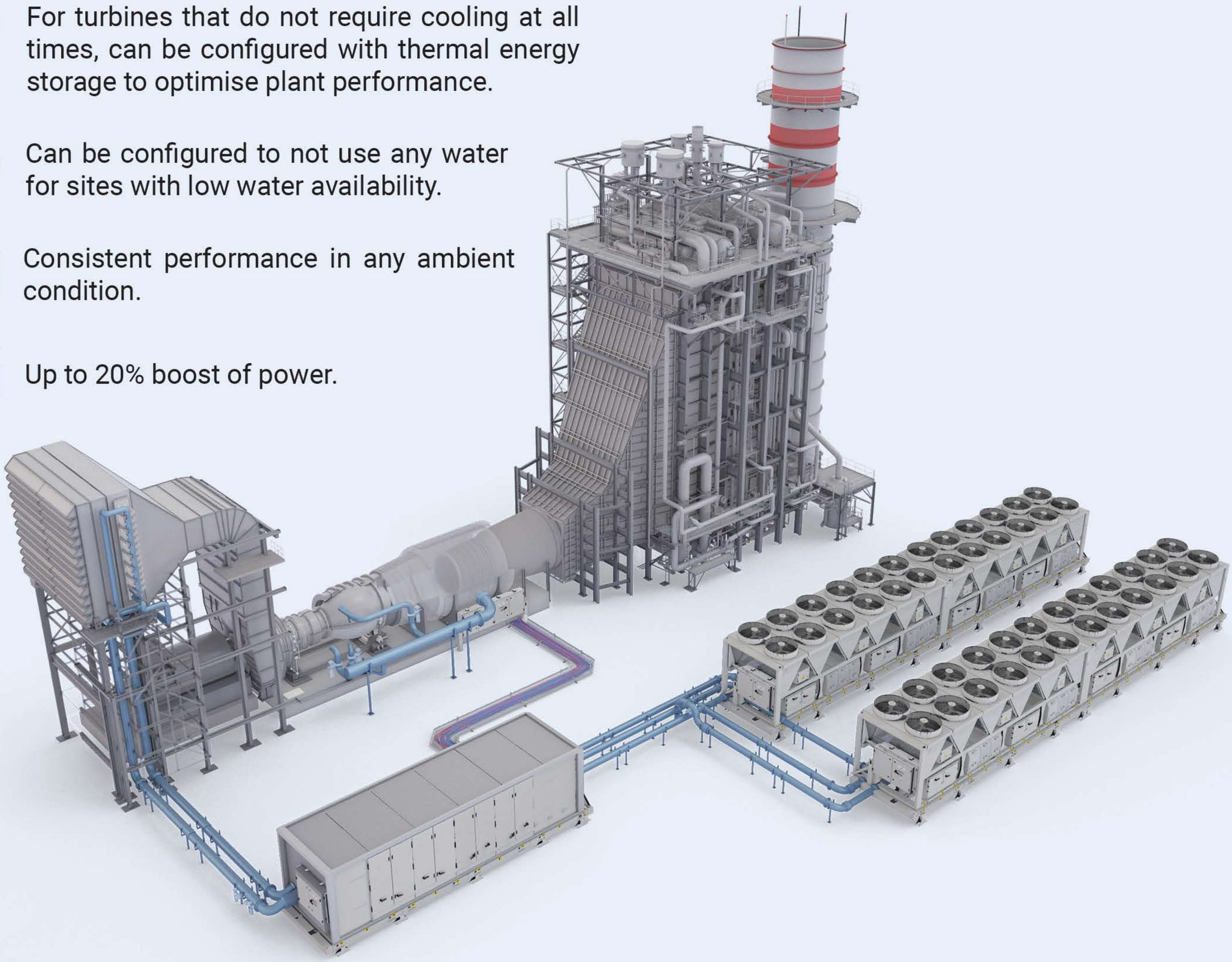
Produce consistent power gains

The solution which will produce consistent power gains in any environment. Can be configured to not use any water.

Echill systems work on the principle of refrigeration and can be driven electrically or with waste heat. By supplying cold water into heat exchanger coils installed within the filter house, the air is cooled to 7—12°C, increasing its density and thereby allowing the turbine to produce more power.

Benefits that Echill Technology can deliver:

- For turbines that do not require cooling at all times, can be configured with thermal energy storage to optimise plant performance.
- Can be configured to not use any water for sites with low water availability.
- Consistent performance in any ambient condition.
- Up to 20% boost of power.



Echill System on a class F turbine

OptiFlash Systems

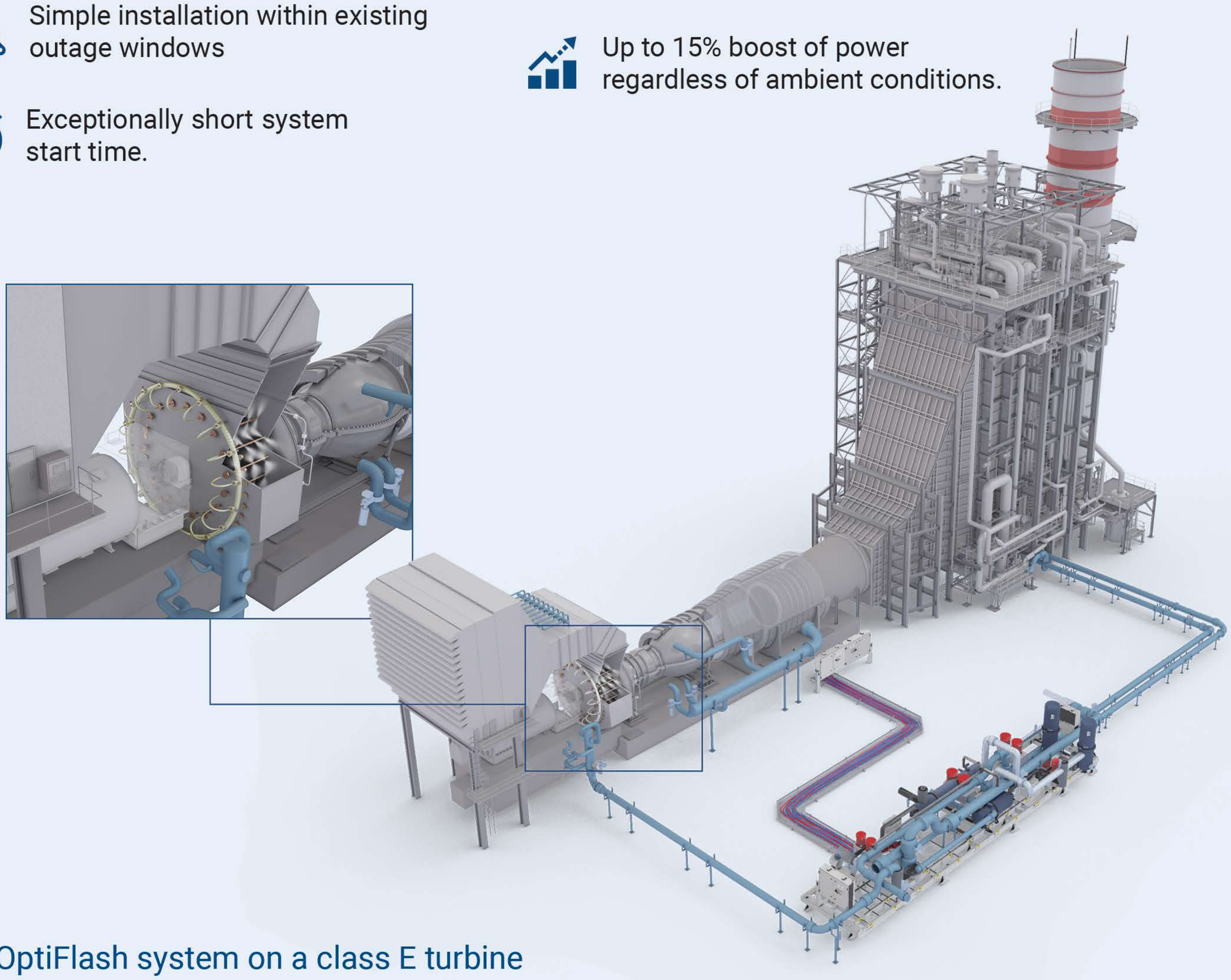
Boosting & Reducing

An innovative and simple approach to boosting power and reducing emissions in any climate.

OptiFlash is a wet compression technology which uses hot pressurised water to produce fine droplets under 5µm through the use of specially designed nozzles. This results in the reduction of the compressor discharge temperature and ultimately delivers impressive power gains while reducing NOx emissions.

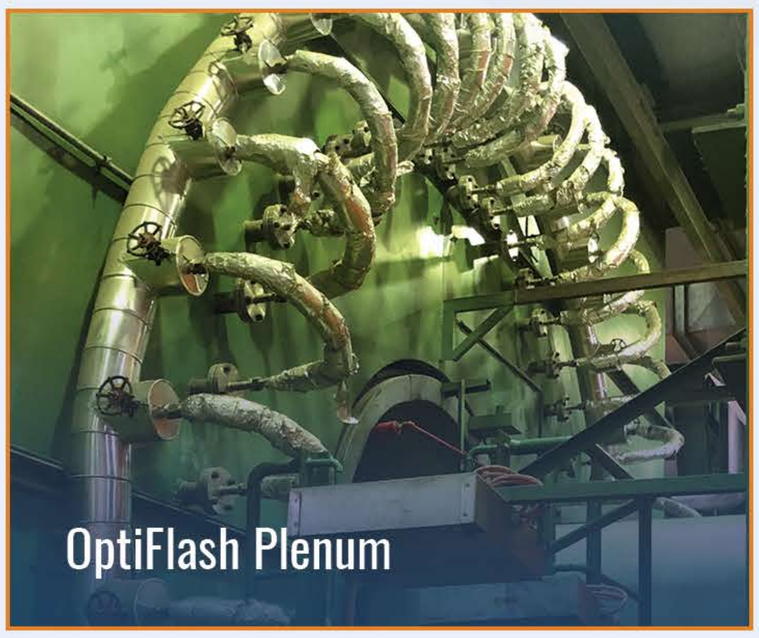
Benefits that OptiFlash technology can deliver:

- 20 to 40% reduction in NOx emissions (depending on combustor design).
- Simple installation within existing outage windows
- Exceptionally short system start time.
- Very low maintenance - for boilers with sufficient pressure, no pump is required.
- Up to 15% boost of power regardless of ambient conditions.



OptiFlash system on a class E turbine

OptiFlash Piping



OptiFlash Plenum

OptiFlash Lances

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