

# More than 60 MW extra for the grid

Munters Gas Turbine Evaporative Cooling (GTEC) minimizes power shortage by increasing turbine power output by more than 23%.

Wadi al Jizzi is a powerstation in the Sultanate of Oman, run by the state owned company WAJPCO.

As a part of their business plan WAJPCO wanted to increase the power capacity in the plant to meet expected short falls in power. Different scenarios were studied and installation of Munters evaporative air coolers at the inlets of the gas turbines for enhancement of the power output was selected.

The alternative scenario to Evaporative Cooling was a fogging system. With experience from similar GTEC (Gas Turbine Evaporative Cooling) projects Munters was able to prove that their Evaporative Cooling solution was superior due to its reliable operation and its nonsensitivity to the water quality. The Evaporative Cooling system's high efficiency and the benefit that the risk of oversaturation is not an issue with the evaporative cooling technique convinced WAJPCO that the well documented and thoroughly tested Munters GTEC solution was preferred.

Together with a local contractor Munters was awarded the Government Tender and installation and commissioning of the coolers were finalized within a very short period in 2011.

The installation at Wadi al Jizzi consists of 11 evaporative coolers, of which 10 are evaporative coolers for Frame 6 gasturbines (airflow at 114 m<sup>3</sup>/s) plus 10 evaporative coolers for the aircooled generators. Another evaporative cooler was installed at a Frame 5 turbine (airflow at 100 m<sup>3</sup>/s) with an air/water chiller for the generator - driven by the water of the evaporative turbine cooler. The design conditions for the systems are 45°C/35%RH.

The experience from Wadi al Jizzi confirms that by installing Munters GTEC solutions the power station has been able to improve the total output of the grid by more than 60MW allowing a payback time of the investment of less than 3 years.



## GTEC: Wadi al Jizzi, Oman

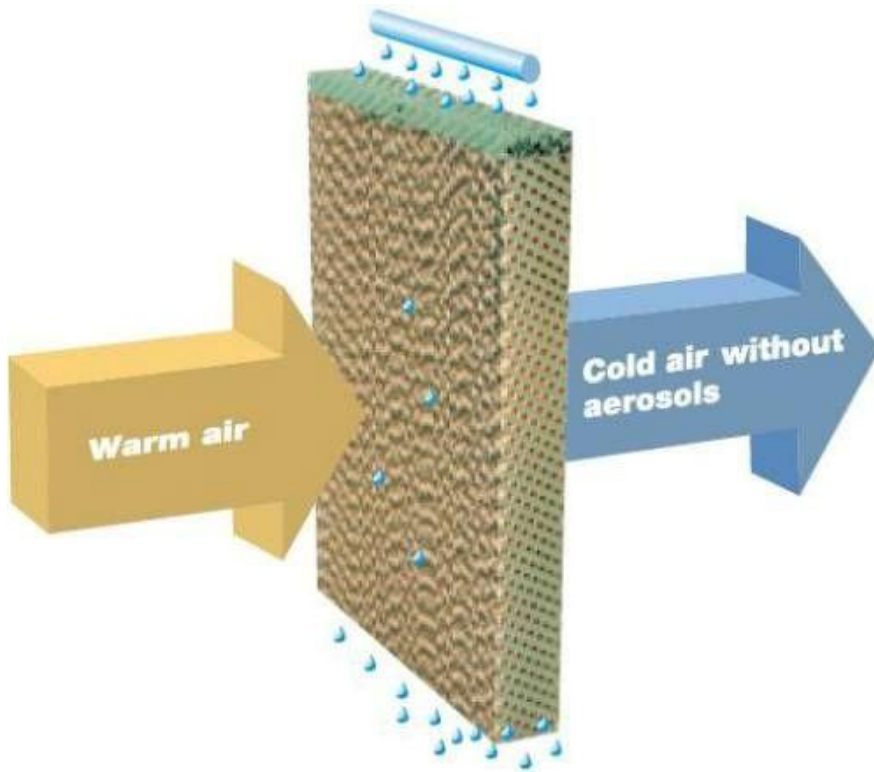


*Installation of Munters evaporative air coolers*

### Benefits:

- Ensure turbines operate efficiently - whatever the climate
- Reduce or eliminate the need for additional turbines
- Predictable power output at all times
- More than 60MW capacity increase
- Easy retrofit and installation
- Power output increased by 23%
- Enhanced fuel efficiency
- Short payback time, less than 3 years





*Munters GTEC is based on nature's own principle*

The installation at Wadi al Jizzi is a typical Munters retro-fit installation that will suit hundreds of similar gas turbines throughout the Middle East and other warm climates around the world. These power stations will be able to take advantage of the improved efficiency by installing the Munters GTEC solution.

## The GTEC background

As the global demand for energy rises, the role that gas turbines play will be more and more important. Gas turbines are convenient, modular and flexible and can address demand for an increased energy baseload capacity. However, rising ambient temperatures have a negative effect on gas turbine power output. With the use of Munters well-established and tested evaporative cooling technologies the effects of ambient temperature on gas turbine output are countered.

These technologies can be applied to newbuilds as well as being retrofitted. Knowing which one will work best for you can be advised by Munters

experienced team to provide cost-effective technology that is flexible and without adverse downstream effects such as pressure loss or corrosion.

## Munters Evaporative Cooling Media Technology

Our structured approach to temperature control is extremely cost-effective and quick and easy to implement.

Water is distributed downwards through a cooling media upstream of the gas turbine inlet at a controlled rate. The inlet air passes through the media (specifically designed to minimise pressure loss) and the water is evaporated to a cold vapour, chilling the air that passes to the turbine and increasing power output as well as the operating efficiency.

## Get it right - first time

Get it right and you can ignore the temperature rise. Get it right and you can increase power output, eliminating

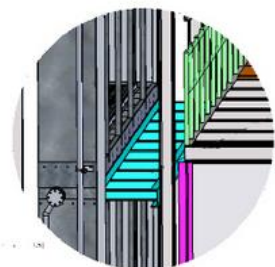
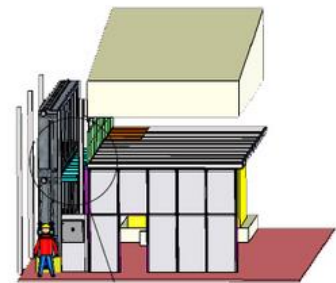
the need to invest in new or additional gas turbine power generation. Get it right and you can ensure your gas turbines are always operating under optimal operating conditions, so they don't have to work so hard, potentially extending their service life and minimising the maintenance requirement. Get it right and you will also save cost on filter replacement and reduced blade erosion.

## Munters - Intelligent Air Treatment

Munters is the company to go to when looking for inlet pre-cooling solutions. Our 60+ years experience is based on ongoing R&D. Details of all existing installations create the database that provides base data for further development.

Munters can design and supply complete turn-key systems and give you the cooling performance to realise your power improvements.

For more information go to [www.munters.com/evapcooling](http://www.munters.com/evapcooling)



*Walkway behind the cooling sections*

