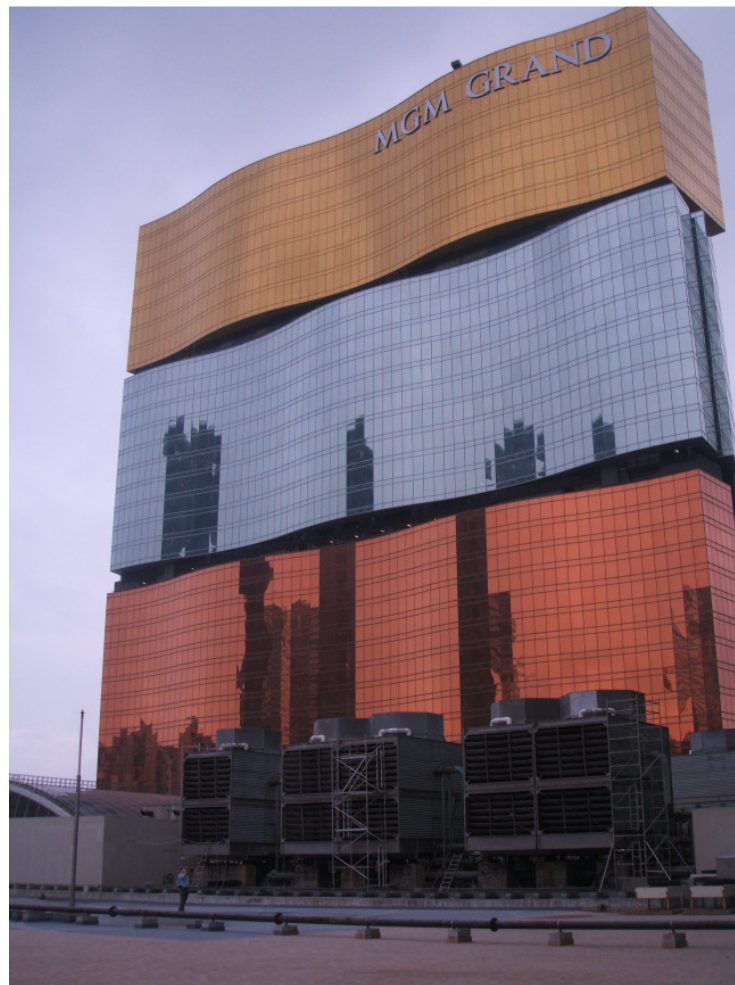




CASE STUDY



Cooling Tower Project



MGM GRAND HOTEL Macao



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HEADWORKS | BIOLOGICAL | SEPARATIONS | MEMBRANES | OXIDATION-DISINFECTION | BIOSOLIDS | INDUSTRIAL SYSTEMS

MGM GRAND HOTEL, Macao

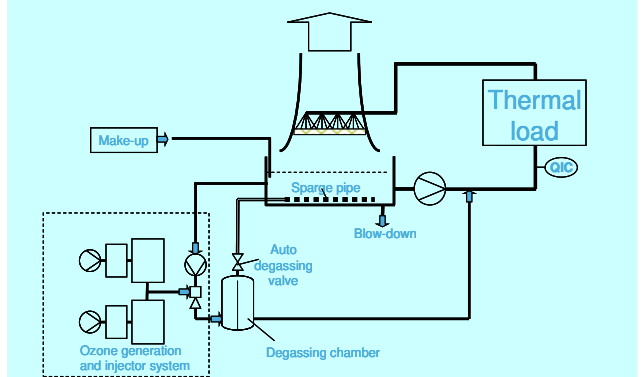
Environmentally friendly cooling tower treatment with ozone produced with Advanced Technology™ Ozonia generators



Degrémont Technologies-Ozonia installed and commissioned two separate ozone lines for the disinfection of cooling water. The first smaller line produces 37gO₃/h with an OZAT® CFS-01 2G generator being fed with oxygen feed gas produced by a small PSA type oxygen concentrator. This smaller system treats the cooling water required by the kitchen facilities.

The second larger line produces 1.5 kgO₃/h with a skid mounted OZAT® CFV-04 generator using dry air as the feed gas. The ozone from the second system is used to treat ten towers supplying cooling water to the central plant for the casino and hotel.

Cooling Water System with Ozone



One of the major problems effecting cooling towers is biological fouling which requires continual treatment with chemicals in order to maintain plant efficiency. Ozone can be used successfully to replace all types of conventional biocides and, in the MGM Grand Hotel project, the required ozone dose to treat the system was calculated at less than 0.2 mg/l.

Comparison

	Ozone	Chemicals
Equipment costs	--	++
Running costs	++	-
Chemical stock	++	-
Transport	++	-
Service	Same	Same
Performance	+	-
Environmental	+++	-
Legionella	++	+
Scale / corrosion	Same	Same

One of the most important features for the MGM Grand Hotel was the fact that the biocide system could be automated and there would not be a necessity to purchase quantities of biocide on a regular basis – ozone is produced on site when and where it is required. The advantages of ozone over conventional chemicals were over whelming.

Ozone is a very effective biocide capable of being used in all types of cooling tower and for all applications.



KEY OBJECTIVES

- High disinfection rate
- Legionella control
- Low corrosion
- Eco friendly
- Low cost



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