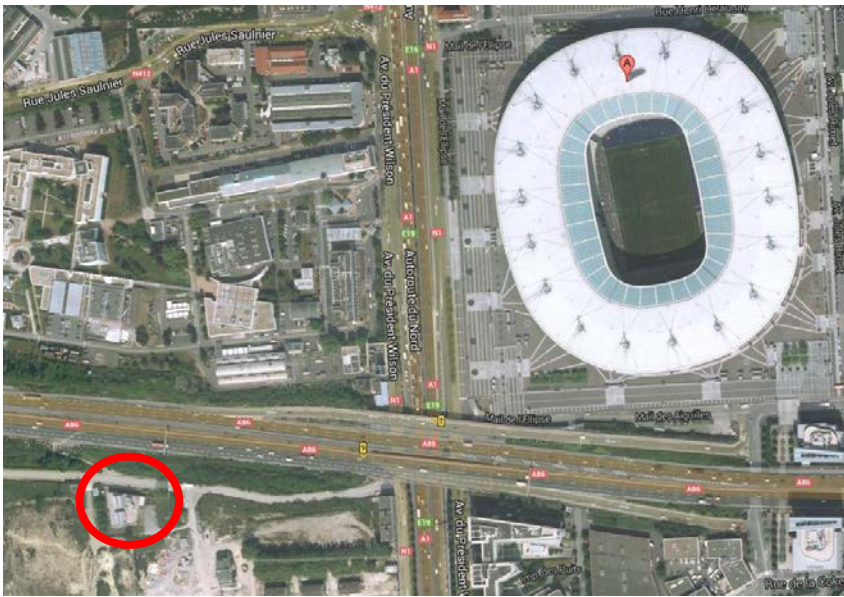


# *Evapco on the go!*

## *Europe*

### **A Unit Extension Success Story: SESAS 3 District Cooling Extension in Paris**

The SESAS site was originally designed to supply cooling for the famous football stadium during the world cup of 1998, north of Paris. The central cooling plant requested an extension of 20 MW of cooling for the new buildings erected for SFR headquarters with 130 000 m<sup>2</sup> of new offices.



View of the Stadium with Sesas Phase 1  
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The first phase was designed with VXT Towers from BAC with sound attenuators and some plume abatement coils. The site was facing a poor energy efficiency ratio, difficult maintenance (bad access to pan, sump paint failure, and sound attenuation material deterioration at the discharge) and hectic efficiency of the plume abatement coil on the open cooling towers.

The consulting engineer was ready to copy-paste the original design for the extension. Evapco's local Representative, Nicolas Junon, managed to gain confidence from the engineers who own and operate the site.

Evapco was able to convince them that for energy efficiency reasons, the AT range, with axial Super Low Sound Fans and the CTI-Eurovent certification were best suited for their job.

The customer selected JCI centrifugal chillers with variable speed on the compressors and the condenser and evaporator pumps. The Evapco units are equipped with Super Low Sound Fans (SLSF) and water silencers to meet the noise requirement within the city vicinity, and without sound absorption material at the discharge. The (4) UAT 224-318 double cell cooling towers were selected for 23 MW of heat rejection.

The control system operates on a floating HP (Floating High Pressure) principle. The towers are running full speed to produce as cold as possible condensing water temperature year round (down to the bottom limit of 12°C acceptable by the centrifugal compressors). This allows the compressors to reach and exceed energy efficiency ratios of 10 at partial load. The energy saving on the compressors offset by far the energy usage of the tower fans.

Moreover, the water loops run at variable speed, down to the limit of 50%, at partial load. This improves further the global system efficiency on a yearly base. The AT range with the patented EvapJet™ nozzles can cope with such variable flow, while our competitor with gravity feed box water distribution cannot guaranty proper operation under such conditions.



View of the (4) UAT 224-318 double cell cooling towers after rigging

The CTI-Eurovent certification became a major aspect of the specification. It allows the customer to predict correctly his energy usage, as it is the guarantee that the units will perform at the predicted water temperatures year round. In case of non-certified units, usually undersized by 15%, this would mean a 2°C higher condensing temperature year round and a 5% higher compressor kW consumption on the whole year. (approximately 1 000 000 kWh more/year).

The floating HP control combined with the variable speed on all pumps and motors allow cumulating high credit of Energy Conservation Certificates. This is part of the French CEE regulation which is allocating cash against certificates. On this job the value of the CEE certificates exceeded 100 000, - €.



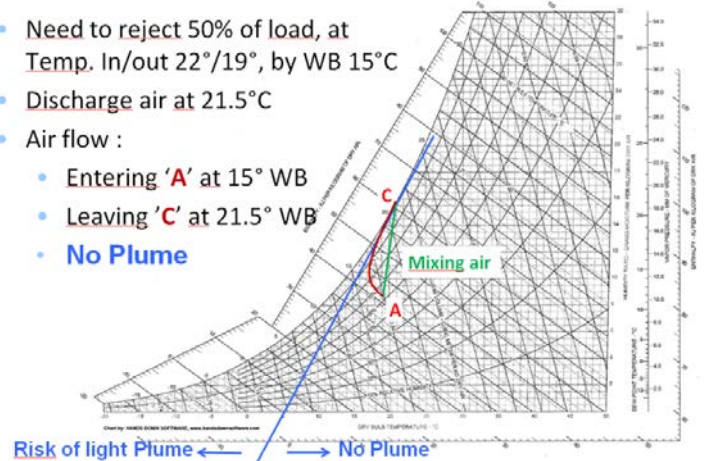
In addition, the floating HP control is inducing another benefit; plume reduction.

By keeping full air flow as long as possible, this reduces the enthalpy pick-up per kilogram of air at the discharge of the towers. The less warm the discharge air is, the lower the moisture content when mixing with the surrounding air, hence a much lower risk of plume. The full speed is also acting into the right direction by accelerating the dilution of moist discharge air into the atmosphere. The combination of these two effects results in almost no risk of plume at an ambient temperature down to 10°C.



### Floating HP : Plume abatement

- Need to reject 50% of load, at Temp. In/out 22°/19°, by WB 15°C
- Discharge air at 21.5°C
- Air flow :
  - Entering 'A' at 15° WB
  - Leaving 'C' at 21.5° WB
  - No Plume



A standard combination of an open cooling tower plus plume abatement coils is absolutely not efficient with regards to this aspect and cannot guarantee any real plume abatement.

In order to guarantee complete absence of plume during the winter period, the customer added 4 dry coolers designed for partial load at 10°C outside temperature. These dry coolers were supplied by Evapco's wholly owned subsidiary, Flex Coil, located in Denmark.



Three engineers from the customer visited the factory in Tongeren to validate the design of the project and the accessibility of the units. Towers were ordered with SST 316 pan and SST 304 casing. The customer was willing to go for such high grade in order to cope with the sanitary legislation in France and the location in the middle of the city. He did not want any coated galvanized steel and chose for stainless steel.

The two factories in Belgium and Denmark coordinated their deliveries on the same week. Our newly settled MR. GoodTower Service Center in Paris managed to successfully rig and install all the equipment in three days' time.

The units are now running since summer 2013 at customer full satisfaction.

Good selling!

Luc Deblon



View of the District Cooling Building, after completion of the cladding



View of the Stadium with the newly built Business district that is cooled by **Sesas 3**