

With changes in legislation regarding Cooling Towers, owners of buildings with cooling water systems, have completed risk management plans for all their cooling water systems. Whilst improved chemical treatment systems, better drift eliminators, and more diligent maintenance featured heavily in these plans, many recommend the removal of the existing cooling water systems, and their replacement with air cooled condensers (if the plan didn't mention this option, then there is a good chance that that plan was seriously flawed).

Converting to air-cooled does eliminate a significant area of risk:

- 📍 so why don't all buildings have air-cooled chillers or condensers?
- 📍 Is such a conversion always practical?
- 📍 What are the financial implications in converting from air cooled to water-cool? In addition,
- 📍 what should you be wary of when embarking upon such a conversion?

When removing heat from the building and discarding it to the atmosphere, water cooled systems have a number of advantages over their air-cooled counterparts. Not least of these is space. A simple rule of thumb is that a cooling tower occupies between one fifth and one tenth of the space required by the equivalent air cooled condenser, and since space costs money, most building owners and developers would prefer to maximise net lettable area, and minimise the plant and amenities areas.

Another significant difference between air-cooled and water cooled systems is that the latter are generally more efficient than their air-cooled counterparts. For example, a modern energy efficient water cooled centrifugal chiller operating at part load will produce in excess of seven kilowatts of refrigeration for every kilowatt of electrical input, whereas a good air cooled chiller is unlikely to produce more than four kilowatts of refrigeration for every kilowatt of electrical input. Whilst you are reducing the risk of legionella with an air-cooled system, the environmental damage is potentially much greater.

Whilst water-cooled systems generally consume less energy than equivalent air-cooled systems, they can cost more to operate. This is because water-cooled systems must be continually disinfected, as well as cleaned on a regular basis. For small systems, these costs could easily exceed any savings associated with energy reduction. As a rule of thumb, serious consideration should be given to air-cooled equipment in buildings where heat rejection is less than 500 kilowatts refrigeration.

With new buildings, the decision to use air-cooled systems is relatively easy to make and implement. With existing buildings, where there is already a water-cooled system in place, the decision to go air-cooled carries with it a number of problems..

***Call if you have any queries..***