Galebreaker® INDUSTRIAL

DHD COOLING
REFURBISHMENT.MAINTENANCE
DESIGN.INSTALLATION

Optimising Performance of Hybrid Cooling Towers

A Cool Approach

Why do we need Hybrid Cooling Towers?

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- Hybrid Cooling Towers reduce visible plume
- Visible plume is often misconstrued as pollution by the public and the media
- Planning regulations stipulate that certain sites require plume abatement
- When plume affects safety, such as reduced vision near an airport, or where grounding could lead to icing on roads

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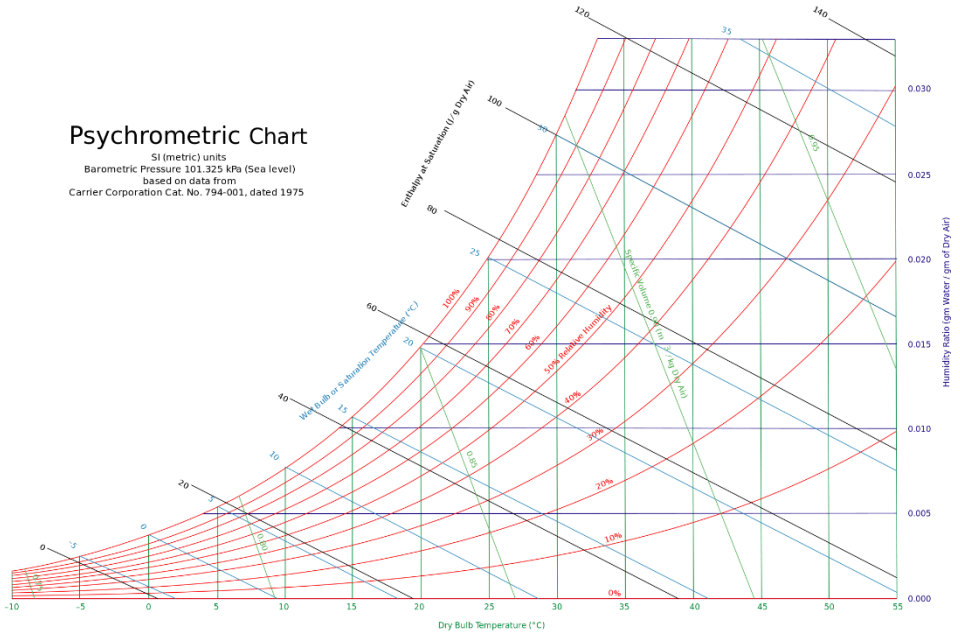
http://www.itv.com/news/2015-12-12/paris-climate-change-deal-the-key-points-you-need-to-know/
http://breakingenergy.com/2014/09/23/environmental-pollution-is-inevitable-in-developing-countries/
http://www.express.co.uk/life-style/health/437473/Air-pollution-now-leading-cause-of-lung-cancer

How Plume is formed

- When air leaving a cooling tower has become super saturated.
- Water droplets are formed and are visible as plume.



http://h2ocooling.com/content/uploads/Palinpinon-Top.jpg
https://upload.wikimedia.org/wikipedia/commons/thumb/9/9d/PsychrometricChart_SeaLevel_SI.svg/2000px-PsychrometricChart_SeaLevel_SI.svg.png

How does a Hybrid Cooling Tower work?

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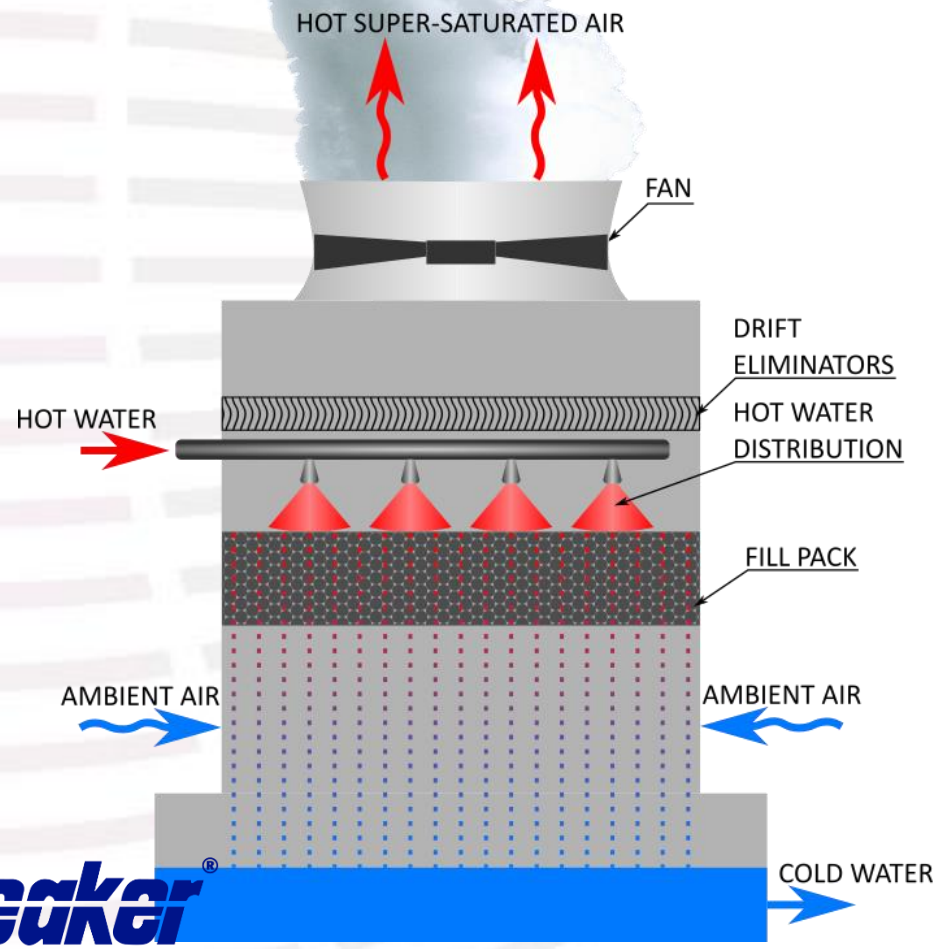
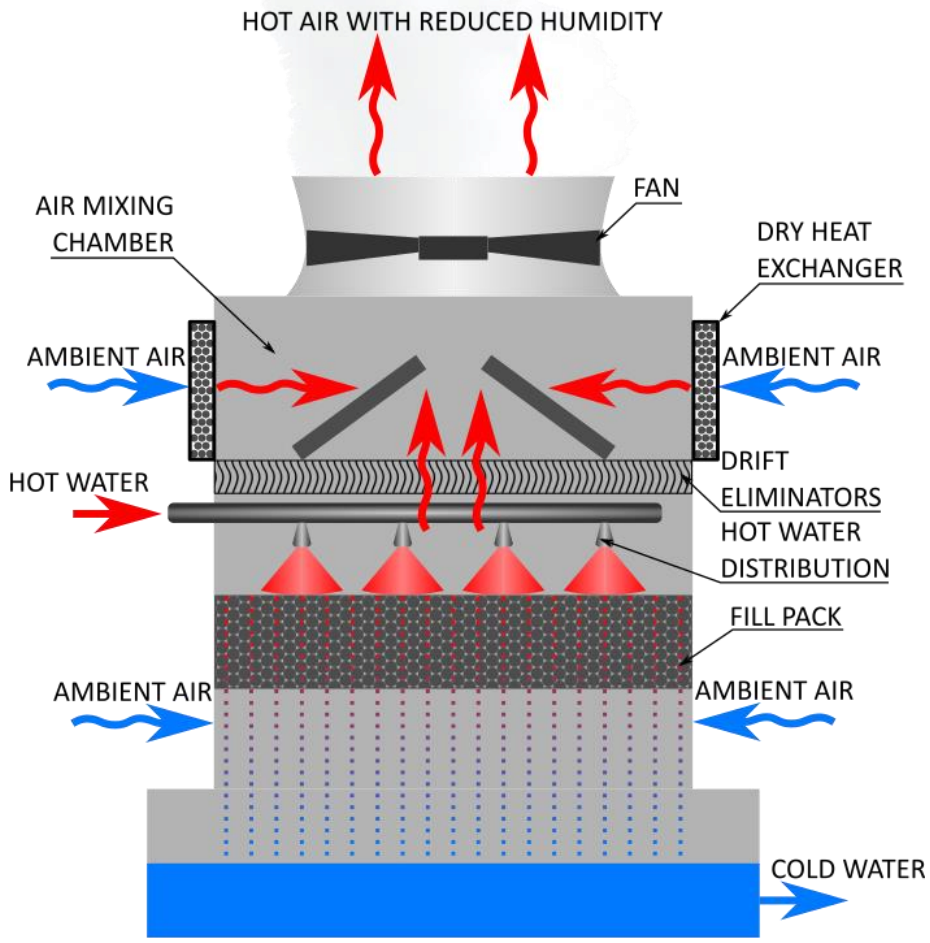
Traditional Evaporative Cooling Tower



Hybrid Evaporative Cooling Tower



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Why is this costing you money?

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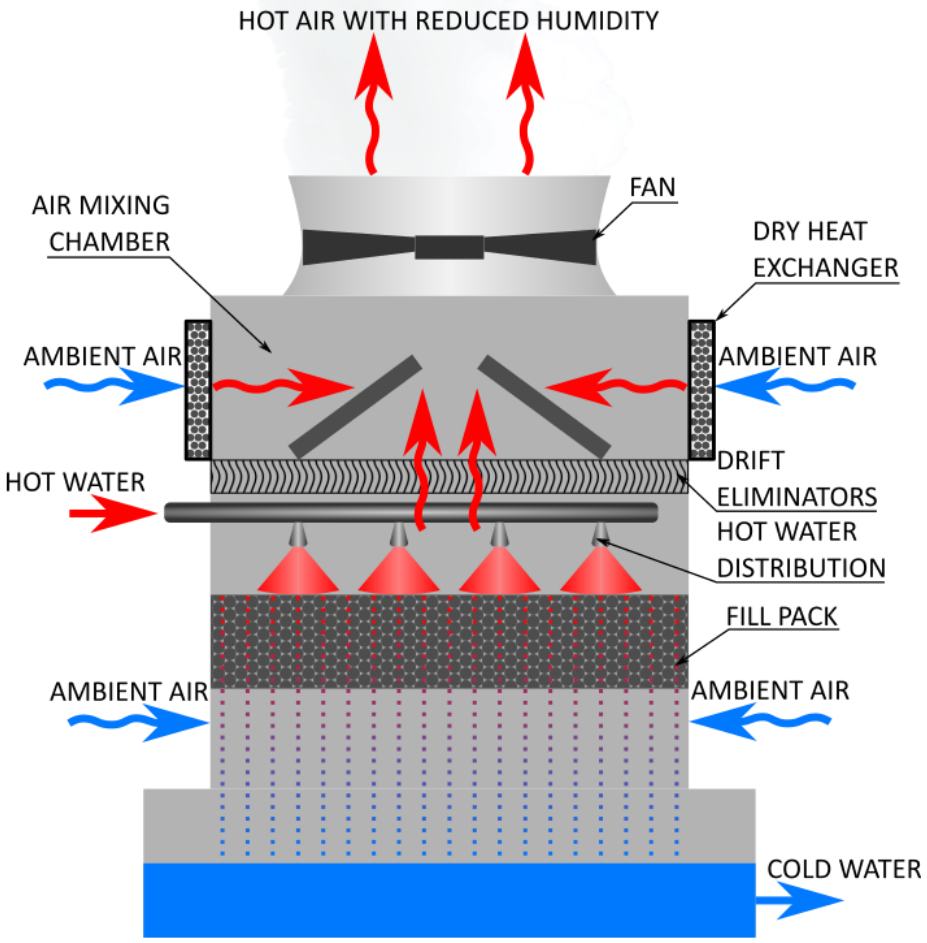
- The fan machinery is sized to achieve the design cooling duty and to pull enough air through the dry section to prevent pluming
- Cooling towers will only plume under certain ambient conditions, especially cold or damp conditions
- When conditions are not suitable for pluming energy is wasted pulling air through the dry section
- Dry heat exchanger fins get blocked with airborne debris and require regular cleaning and maintenance, thus reducing plume performance.
- Closing off the dry section allows all of the air flow to travel through the wet section, maximising cooling performance, and lowering the cold water temperature, which has a direct effect on generating capacity.



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Existing Solutions for Hybrid Towers

- Metal Roller Shutters
  - Have to be manually deployed and retracted usually once per year.
  - Each coil requires an individual shutter
  - Expensive to maintain
  - Due to infrequent use these are prone to seizing.
  - Potentially unsafe to operate, no protection from moving parts

- Louvres
  - Can be actuated, but complicated mechanical linkages are prone to seizing over time
  - Large pressure drop on air flow into dry section when open
  - Expensive to maintain
  - Potentially unsafe to operate, no protection from moving parts.

Introduction to Galebreaker

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- Over 30 years experience
- Markets include industrial, agricultural, power and oil
- World wide market leader in conditioning air flow into cooling equipment
- Specialists in fabric design
- £6m turnover
- 40,000 ft^2 factory

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Galebreaker and SPX

- 1998 - First ACC Wind Shield project with SPX at Kings Lynn Power Station in UK
- 2011 – First automated Rolling ACC Wind Shield at Kings Lynn Power Station
- 2013 – Galebreaker Rolling Systems used to improve performance of a NCWD cooling tower
- 2014 – Galebreaker Air Inlet Filters used on multiple FEP tower applications across Europe
- 2016 – Development of rolling systems and PlumeLogic controller for Hybrid towers

Galebreaker Plume Management Screen

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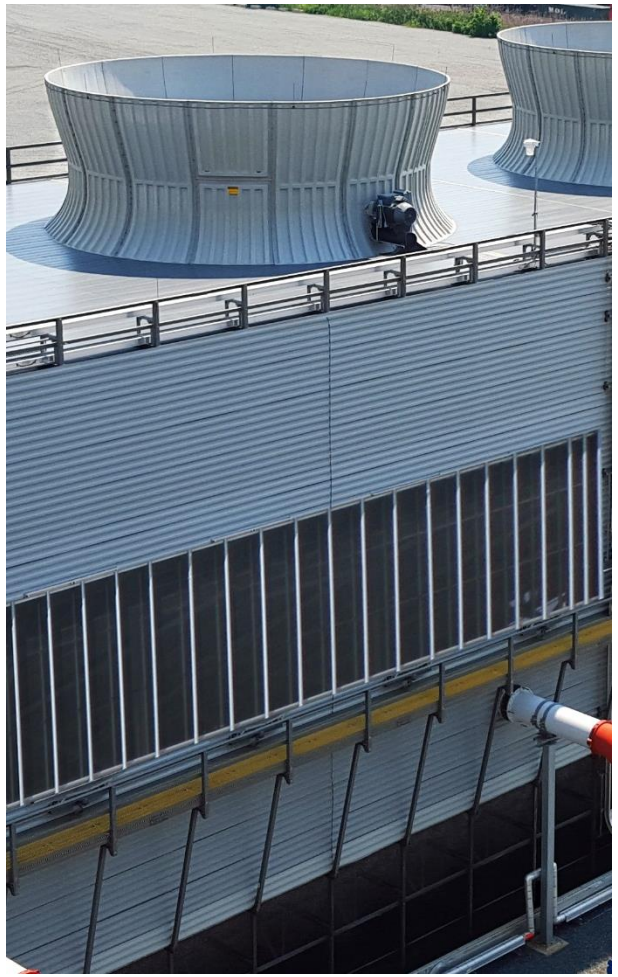
- Screen Material:
  - PVC Coated Polyester
  - Strong and lightweight
  - UV Stabilised
  - Flame retardant
- Easy maintenance
- Airborne debris protection
- Safe operation
- Reduced air inlet height
- Max. system length 45m, Max. system height 3.5m
- Resistant to wind speeds up to 90mph
- Saline and non-saline specifications available



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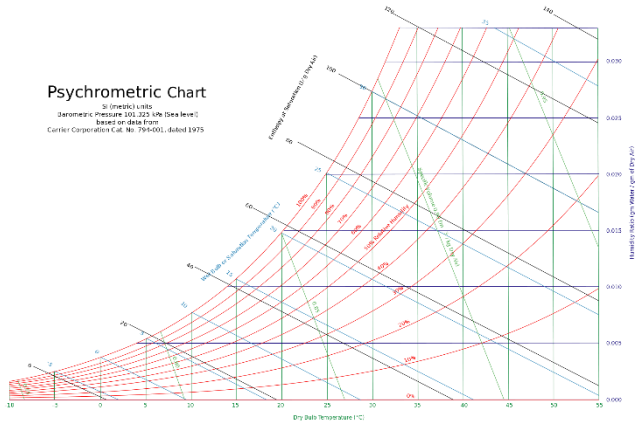
PlumeLogic Controller

- Sensors measure local Relative Humidity and Dry Bulb Temperature
- Galebreaker PlumeLogic calculates optimum screen position
- Proportional deployment to maximise efficiency in changeable conditions
- Optimum airflow through wet section of tower without compromising plume abatement



Why Use PlumeLogic?

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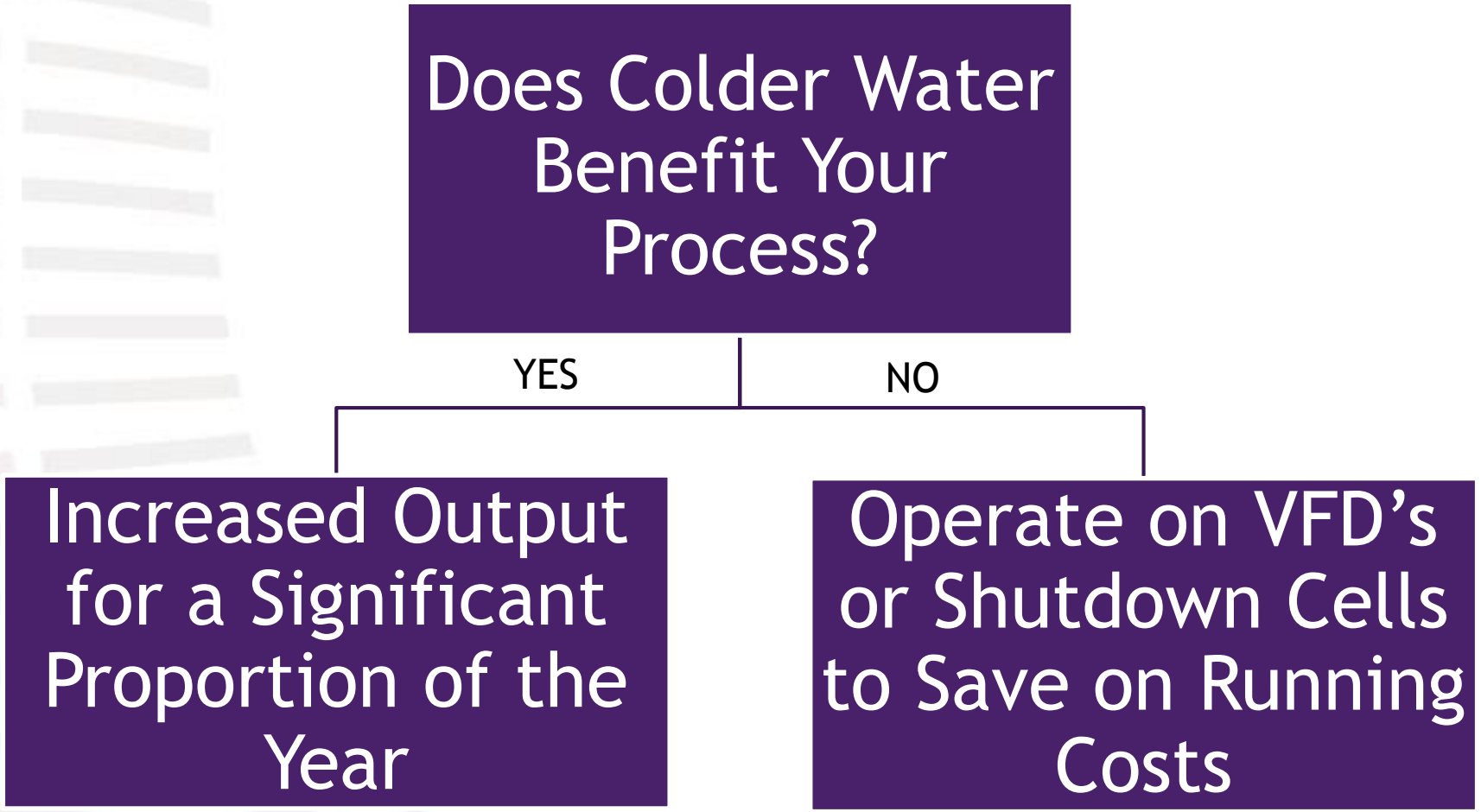

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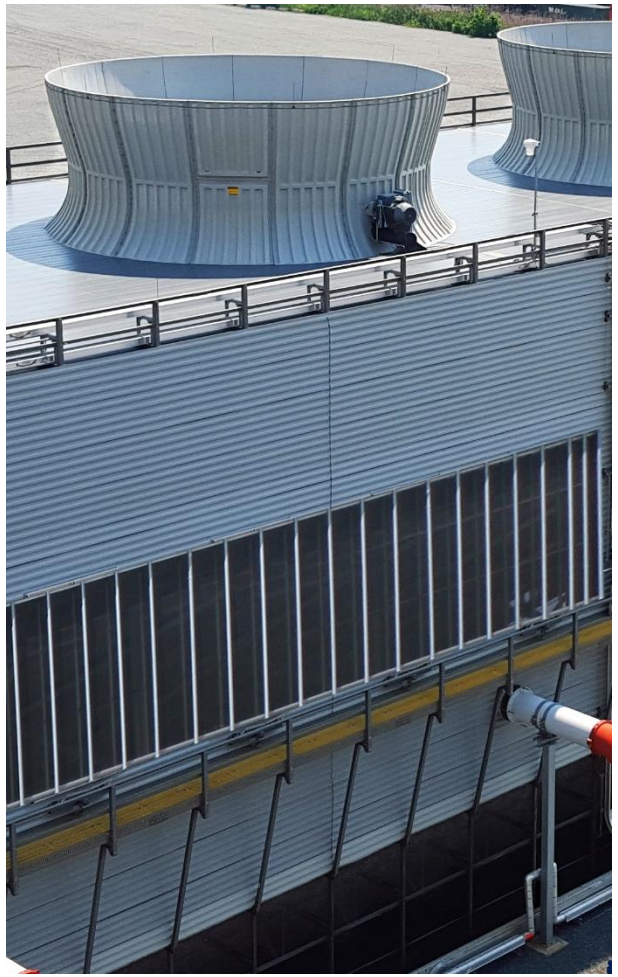
Why Use PlumeLogic?

- Traditionally louvres will be shut for a couple of months of the year
- It is the plant operator's duty to judge when to close them
- PlumeLogic:
  - Removes ambiguity
  - Ensures plants either have the coldest water or the lowest running cost throughout the year
  - Is flexible for sites where a small amount of plume isn't an issue
- Options for further development with wet section air intake screens

Summary

- Completely automated system to maximise cooling tower performance
- Simple user interface to adjust operating frequency to suit all climates
- Easy installation supported directly from the coil frames requiring little or no modifications
- Externally protected to protect operators from moving parts
- External protection also acts as air inlet filter to reduce cleaning interval of coils
- 36 month warranty
- Improved plant efficiency



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Any Questions?

Contact us

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Our partners

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