



# Commercial HVAC Applications - Cooling Towers

Prevent. Protect. Preserve.



# Cooling Towers

## Water Consumption Challenges



### Use Vast Amounts of Water

- Tens of millions of gallons per year
- Impacted by water quality, seasonality, usage



### Frequently Malfunction

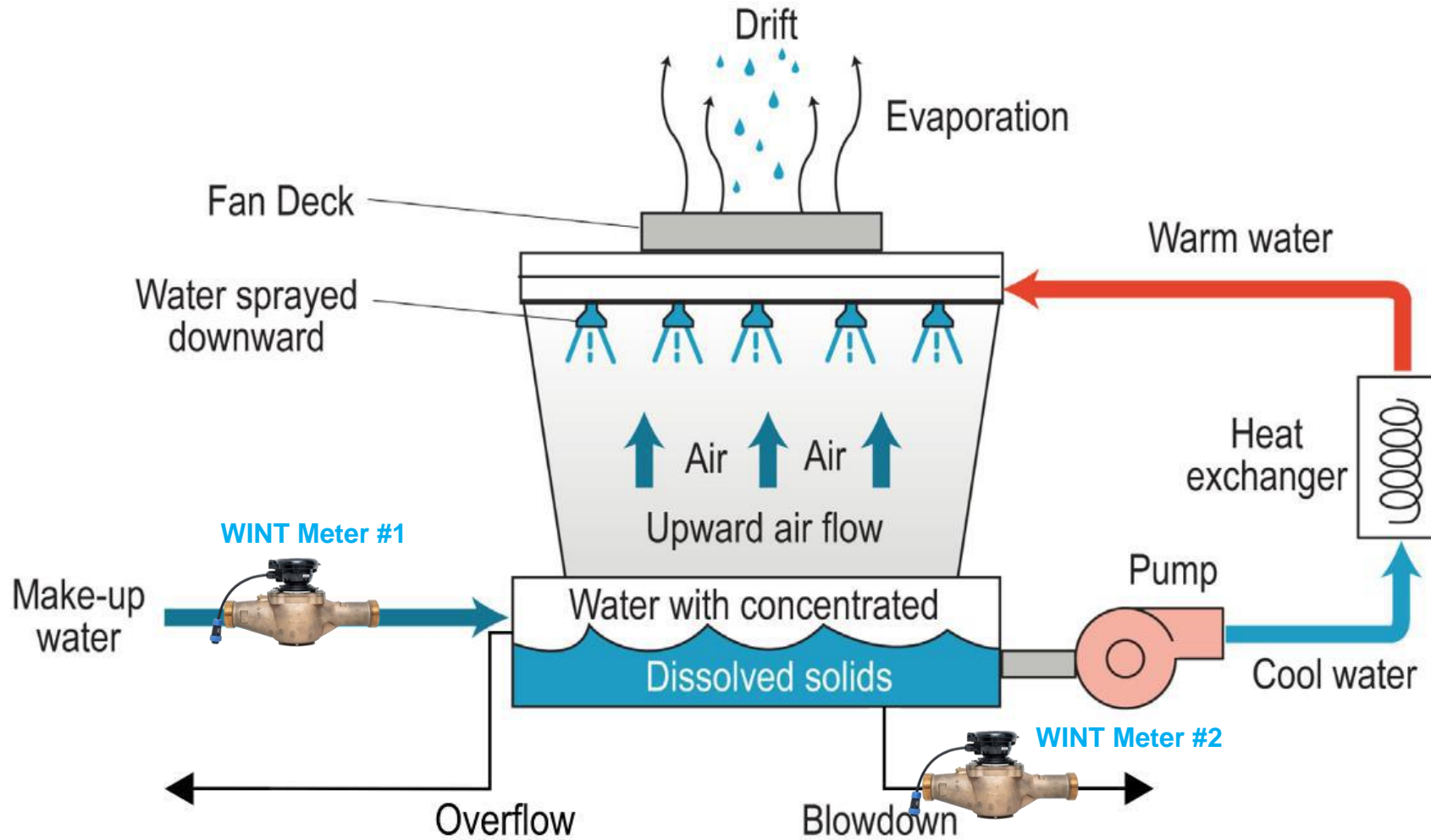
- 1930's technology
- Far from sight even with regular maintenance



### Hard to Diagnose

- Problems hard to detect
- Often go unnoticed for years

# WINT Cooling Tower Solution

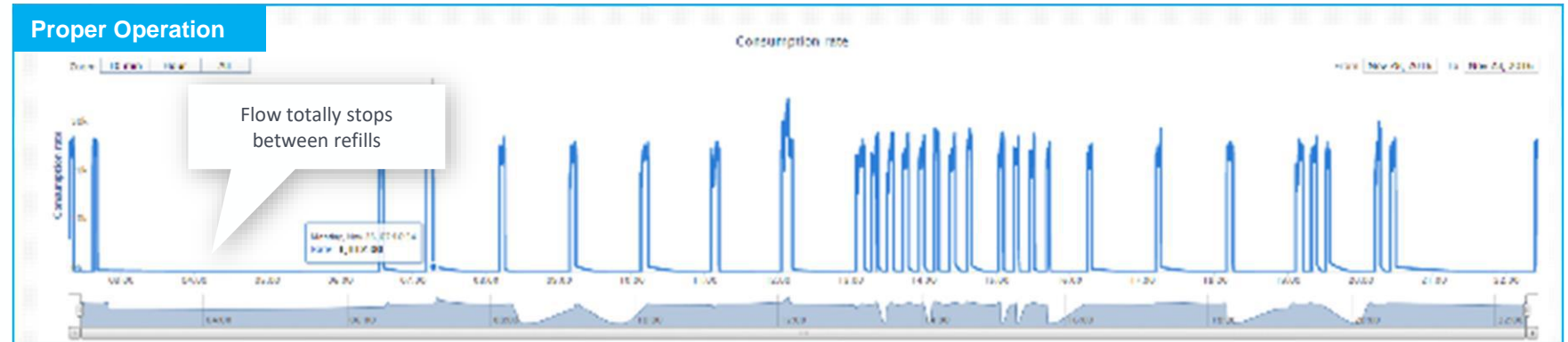


- Locate Meter #1 on the Make-up Water.
- Locate Meter #2 on the Blowdown.
- Overflow meter is optional.
- By monitoring both, the data analytics can provide a Cycles of Concentration (CoC), and a datapoint that can affect cooling tower maintenance.
- Higher CoC means the tower is running efficiently. Lower CoC means the tower is running inefficiently.
  - Reduce water consumption and chemical usage, saving in operational costs when tower is operating at high CoC.

# Real-Life Example: Cooling Tower Waste

## Proper Refill Process

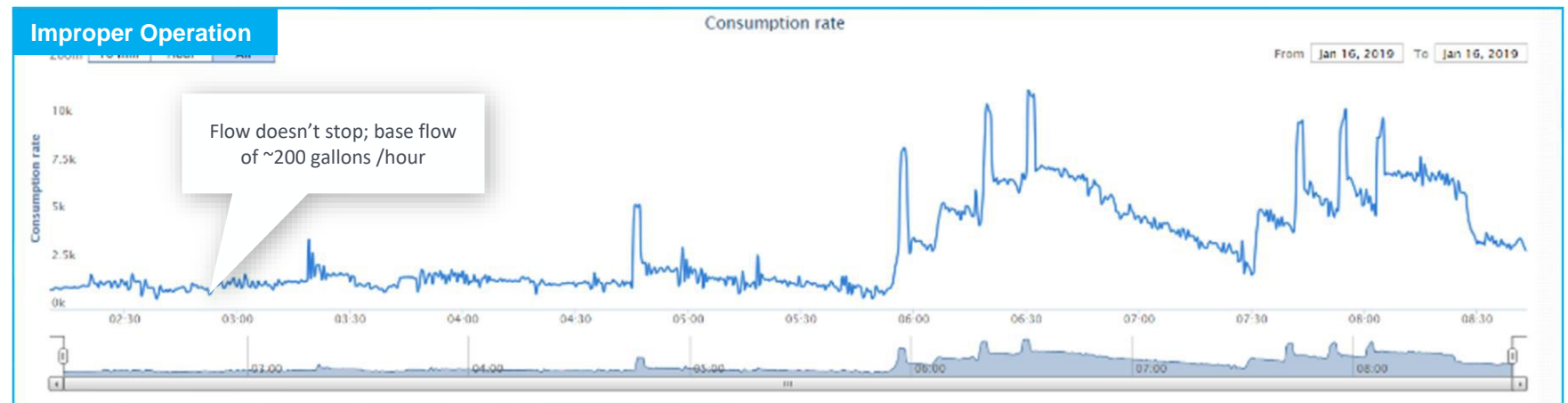
- Refills only as needed
- No excessive overflow



## Malfunctioning Process

- ~200 Gallons per hour
- ~\$65K per year

[▶ Watch malfunction](#)



# Cooling Tower Makeup

## Situation:

April 2021, the WINT support team brought to the facilities team attention to an ongoing event at the Cooling tower makeup2. They checked on site and found no issue.

May 17th, the support team investigated the consumption patterns and detected a steady 24/7 backflow leak of 260 Gallons per hour every 45 minutes.

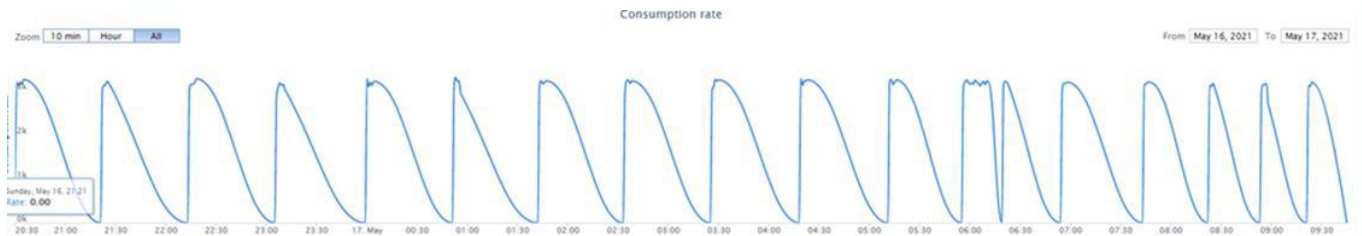
- They shared the information with the site lead technician, which found and repaired a flow switch that caused steady water flow when the pump and chiller were off.

May 19th, the support team detected that even though the leak stopped, it was active again every night starting from 8pm.

- At 21:00, the site lead technician approached Cooling tower makeup and found a **drain gate valve** leaking on the Main condenser header, which was leaking into a sealed drainpipe.



May 16<sup>th</sup>, **Before** the leak was eliminated – shows a steady 24/7 backflow leak of 260 gallons/hr



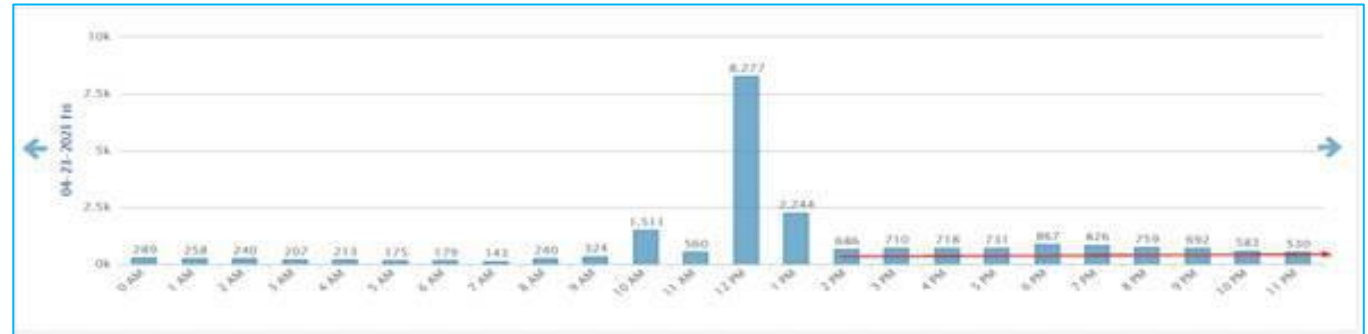
May 17<sup>th</sup>, shows the repeated pattern of water peaks of 260 Gallons every 45 minutes.

Without WINT	Amount of water wasted (Gallons)	Cost
1 year	936,000	\$11,419
2 years	1,872,000	\$22,838
3 years	2,808,000	\$34,257

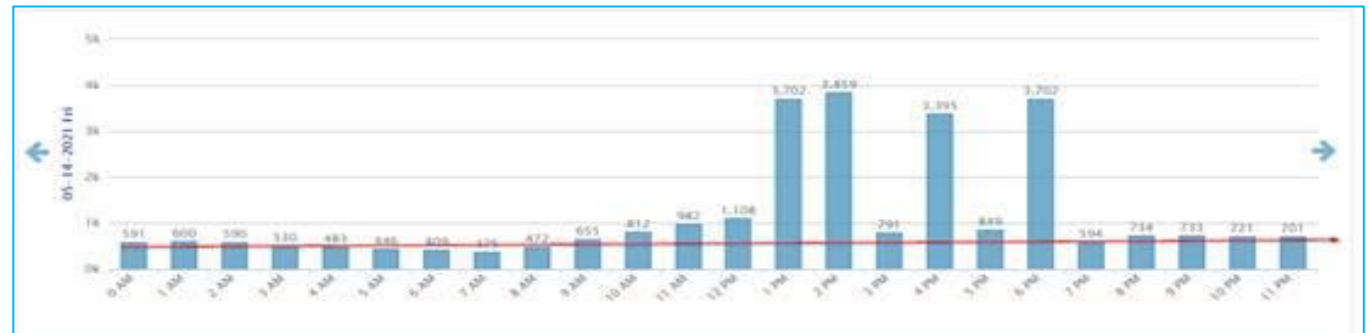
# Cooling Tower Makeup

## Situation:

- April 2021 the WINT system alerted due to a background flow of 550 gal/hr. Through out the month the system alerted periodically.
- This was brought to the attention of the engineering team, and they found an emergency fill float valve that needed the link adjusted.
- At this point the event had been ongoing for a month. Overall, the water wasted was 620 CCF (463,760 gallons/1,755,522 Liters).



April 23<sup>rd</sup> shows a steady background flow starting of 550 gallons per hour.

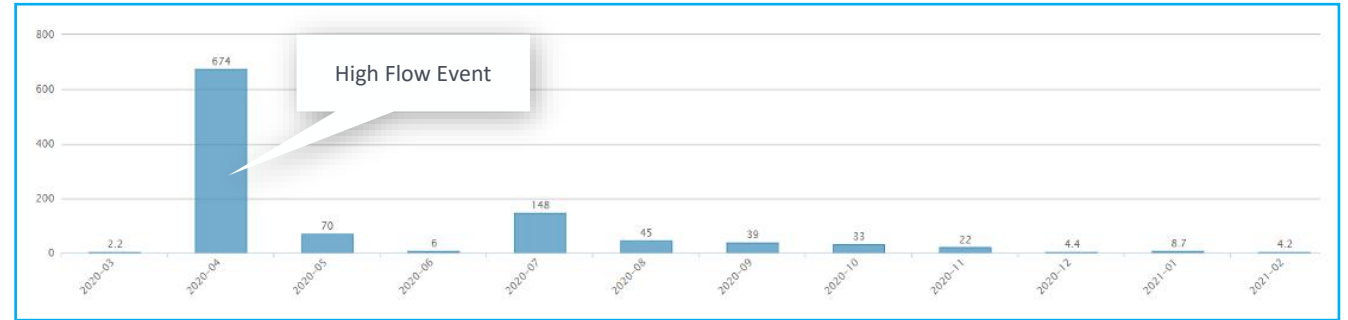


May 14<sup>th</sup> shows the background flow pushing hourly consumption to almost 4,000 gallons - well over the normal thresholds.

The customer saved over **6,353 CCF** for a total cost of **\$65,625 a year.**

# Chilled Water Make-Up

- Normal usage of this chiller system is approx. 40L per month. WINT system detected an abnormal water event which increased the water usage to 674L per month.
- WINT CS team contacted the site manager to inform him on the event. The origin of the leak was a faulty backflow preventer which leaked water on the roof.



With WINT detecting this abnormal water event while the academy was vacant due to Covid-19, **extensive damage was prevented** due to a flow of approx. 115m<sup>3</sup> of water in a course of two months.