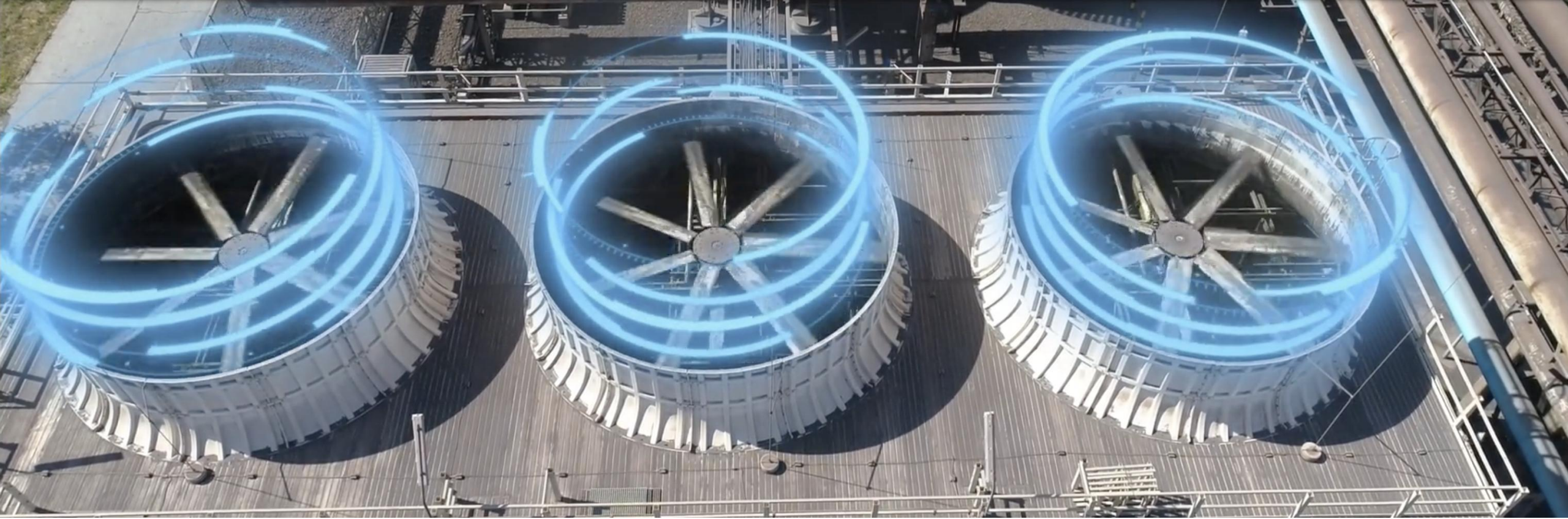




InfiniteCooling

Enabling efficient and sustainable cooling

InfiniteCooling

Company Introduction

- Founded in 2019 by cooling tower experts and researchers
- Based in Boston
- Products based on MIT-developed technology
- Winner of major awards: US Department of Energy, Edison Awards, PowerGen, Prix Galien, MIT Clean Energy Prize
- Experience list includes major industrial players



The Problem



Bottling plant having to reduce production every summer due to heat rejection limitations



Common Problem:
Cooling Tower



Chiller plant using 10% more energy than chiller spec despite regular chiller maintenance



Power plant producing 2MW less than it used to in warm weather

**Every Cooling Tower We've Seen is
Underperforming.**

Efficient Tower = Lower Heat Rate

Every 2°C colder water means 3% more electricity — free

Baseline

Cold water temperature

26.7°C

Condenser backpressure 9.6 kPa

Turbine efficiency 30%

Power output 200 MW

-2°C



Colder
water

With TowerPulse

Cold water temperature

24.7°C

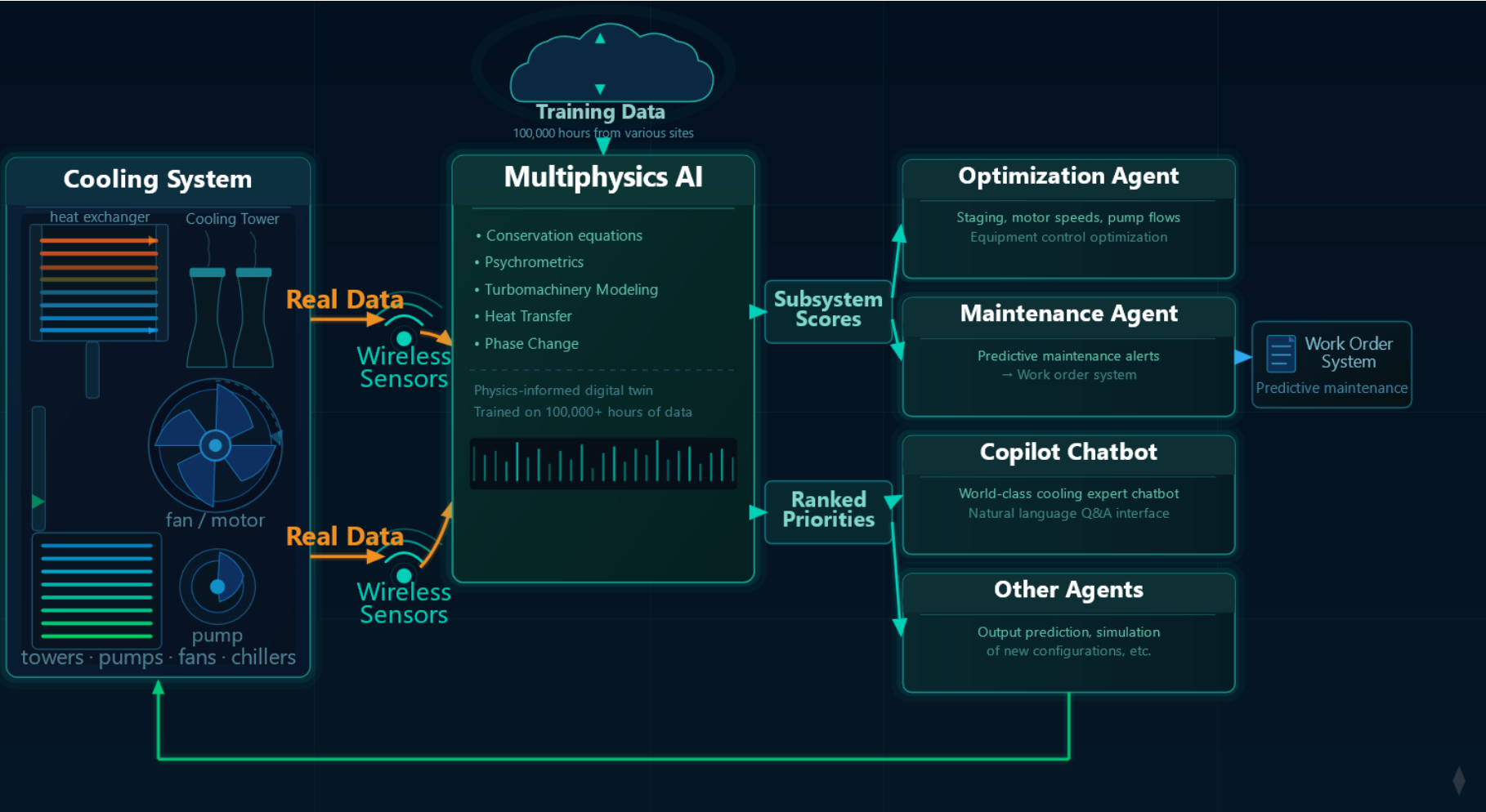
Condenser backpressure 8.2 kPa

Turbine efficiency 31%

Power output 206 MW

+6 MW at zero fuel cost · no capital investment · pure software optimization

We provide the first and only **real-time monitoring, optimization,** and **predictive maintenance** solution for cooling towers



Up to 3%
More Power
Production

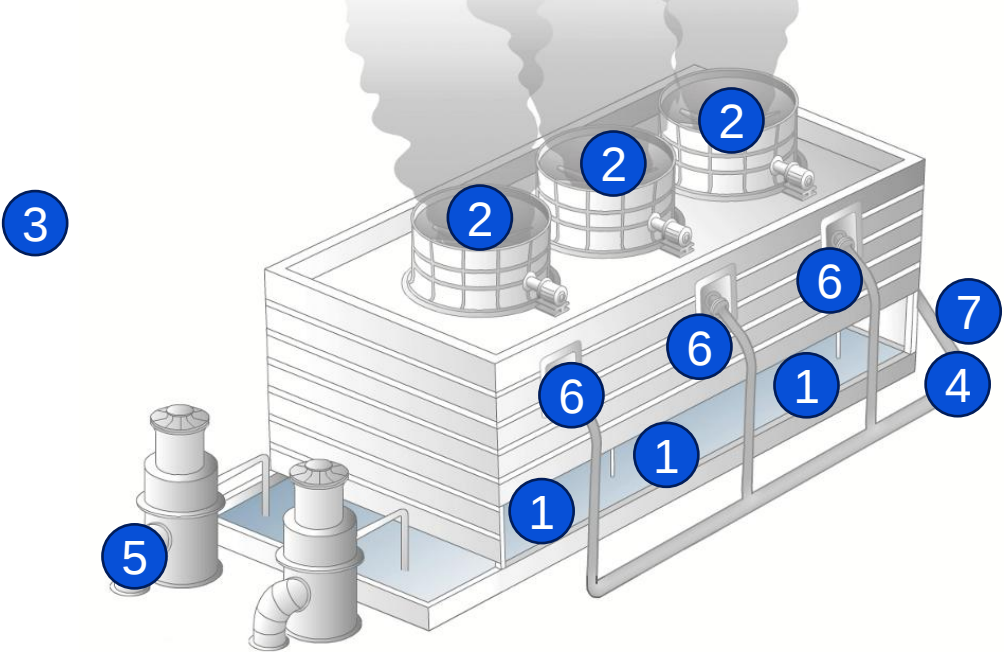


20-50%
Less Energy for
cooling



Up to 20%
Less Water

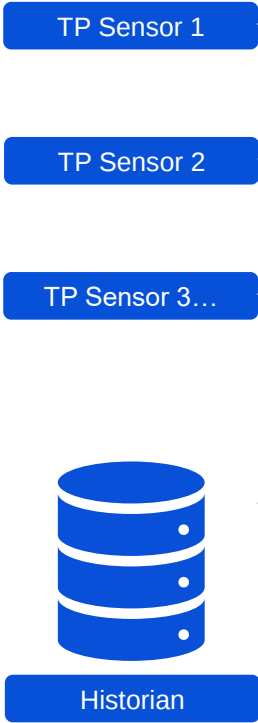
Required measurements



#	Measurement	Location	Number	Already in place? (Y/N)
1	Air temperature and humidity	Inlet of each cell	2 per cell	
2	Air temperature	Outlet (plume) of each cell	3 per cell	
3	Air temperature and humidity + ambient pressure for site (weather station)	On site, away from tower	1 per site	
4	Hot water temperature	Return water pipe	1 per tower	
5	Cold water temperature	Supply water pipe	1 per tower	
6	Riser water pressure	Riser of each cell	1 per cell	
7	Recirculation water flowrate	Recirculation pipe	1 per tower	
8	Make-up water flowrate	Makeup pipe	1 per tower	

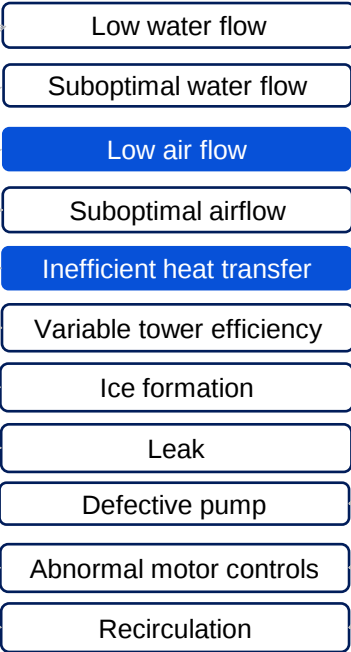
Knowledge Database

Data Collection



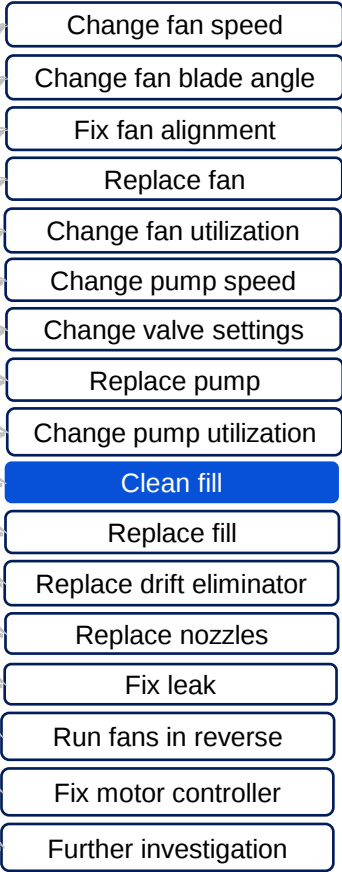
Physics Modeling

Issue Detection



Machine Learning

Solution Identification



Algorithms



Operational Scores

 Fan Operation Optimization

89



Estimated Score Improvement Energy Impact

1%

393 kWh

% Savings

Potential Savings
(Prev. 30 Days)

 Waterflow Score

73



Score Improvement Impact

Improves water distribution in heat exchangers & improves thermal performance

 Fault Detection

0 total faults (12h)

Score Improvement Impact

Reduces excess energy and water usage & protects equipment

 Water Usage

99



Estimated Score Improvement Water Impact

0 L/Month

Potential Savings

 Motor Cycling

68



Score Improvement Impact

Increases average motor and gearbox lifespan

 Fan Runtime Accumulation

92

Score Improvement Impact

Increases average fan, motor, and gearbox lifespan

 Icing Risk

None

Score Improvement Impact

Derisks icing damage to structural and fill components & improves thermal performance

 PID Mistuning

32



Score Improvement Impact

Reduces fan energy usage & increases average motor and gearbox lifespan

 Pump Runtime Accumulation

100

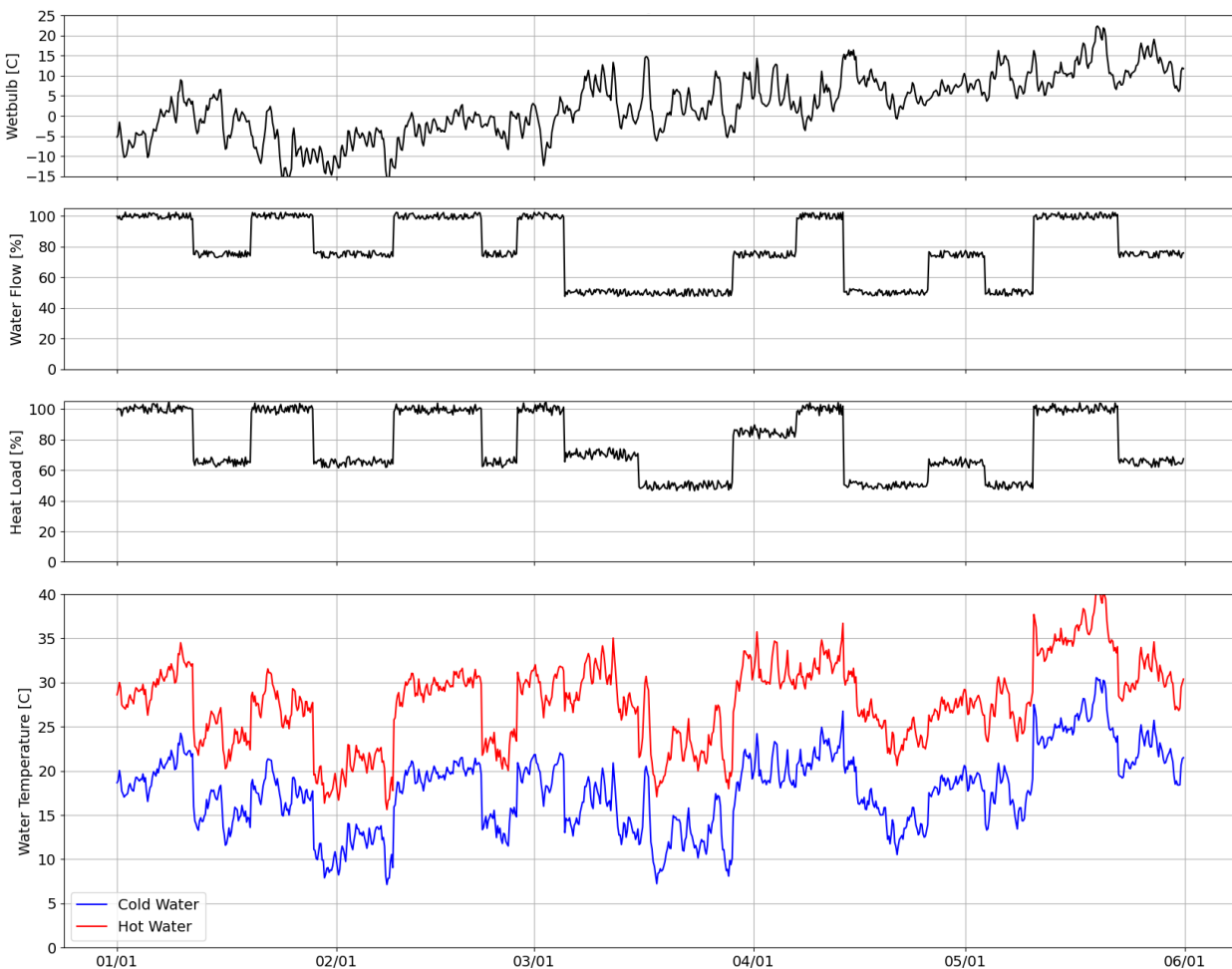
Score Improvement Impact

Increases average pump, motor, and gearbox lifespan

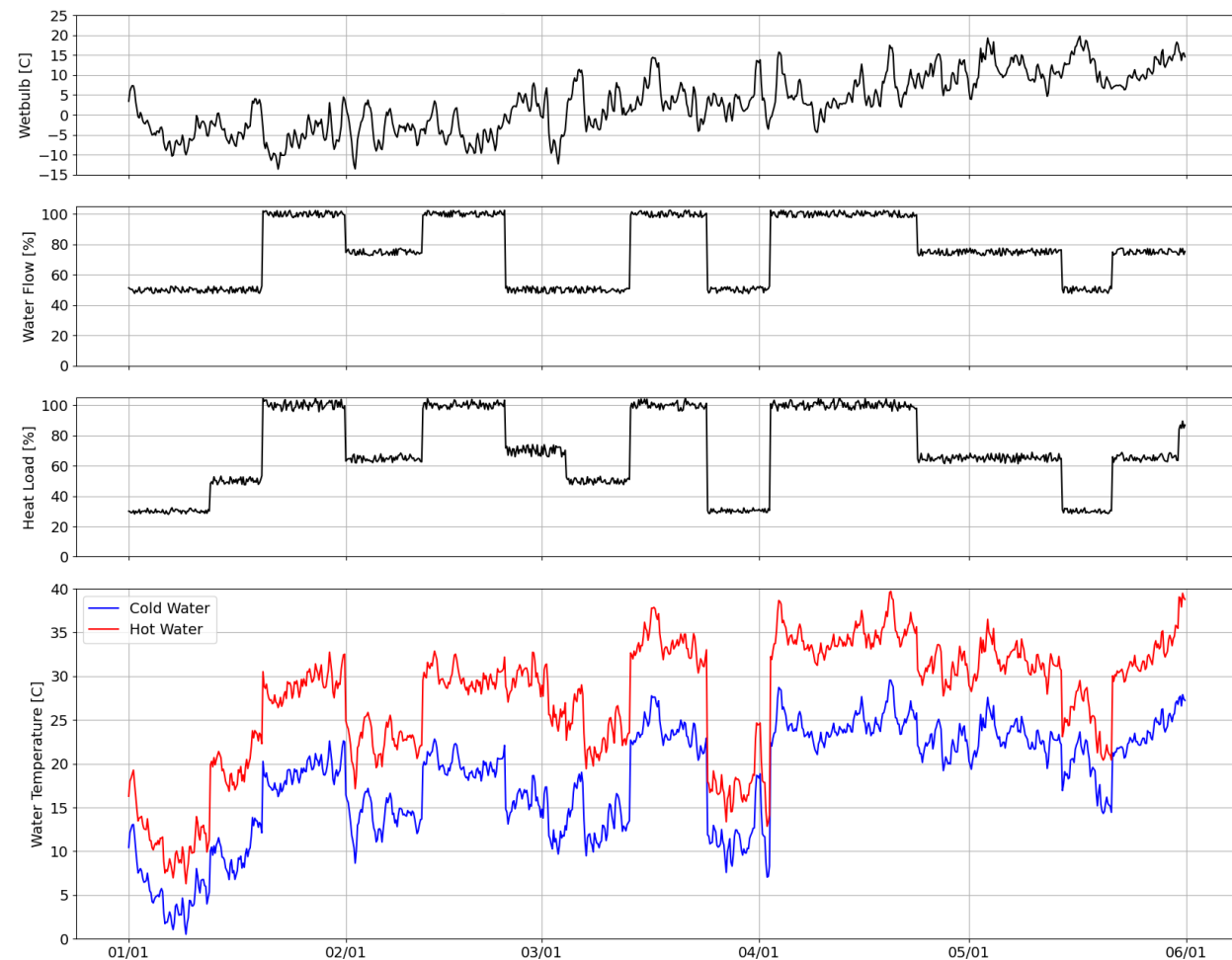


Motivation: CWT Monitoring Alone Insufficient

Which tower is degrading?

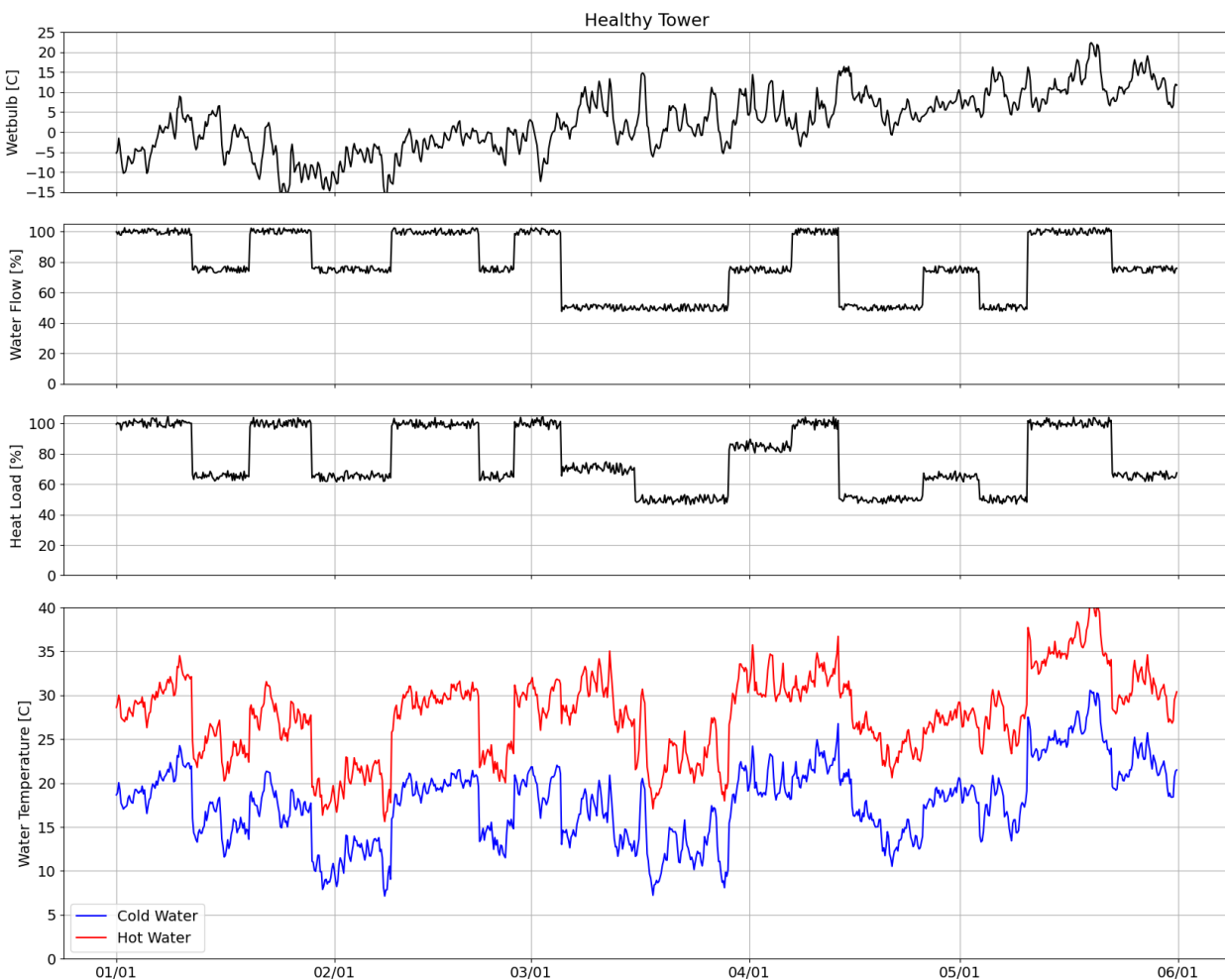


Tower A

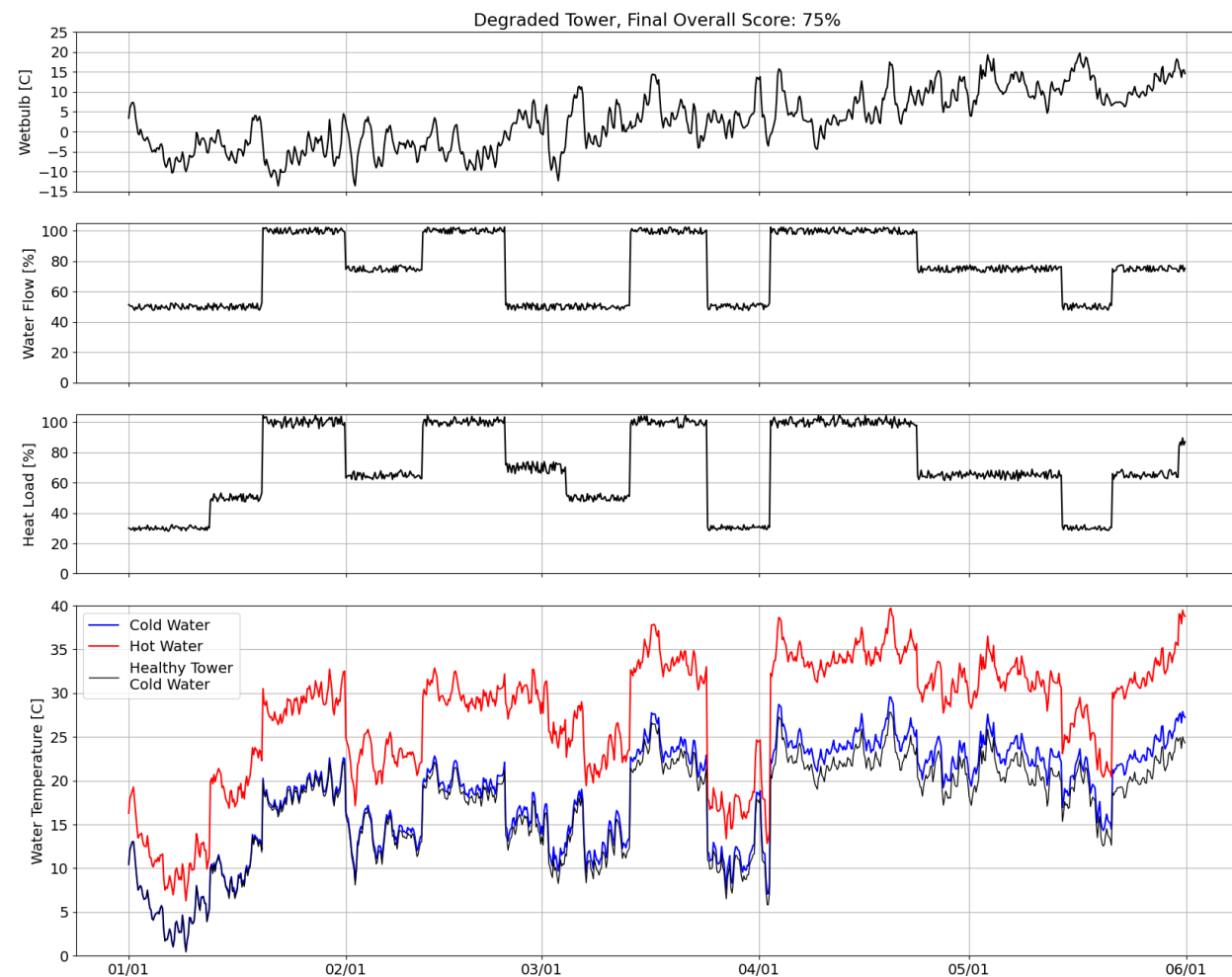


Tower B

Motivation: CWT Monitoring Alone Insufficient

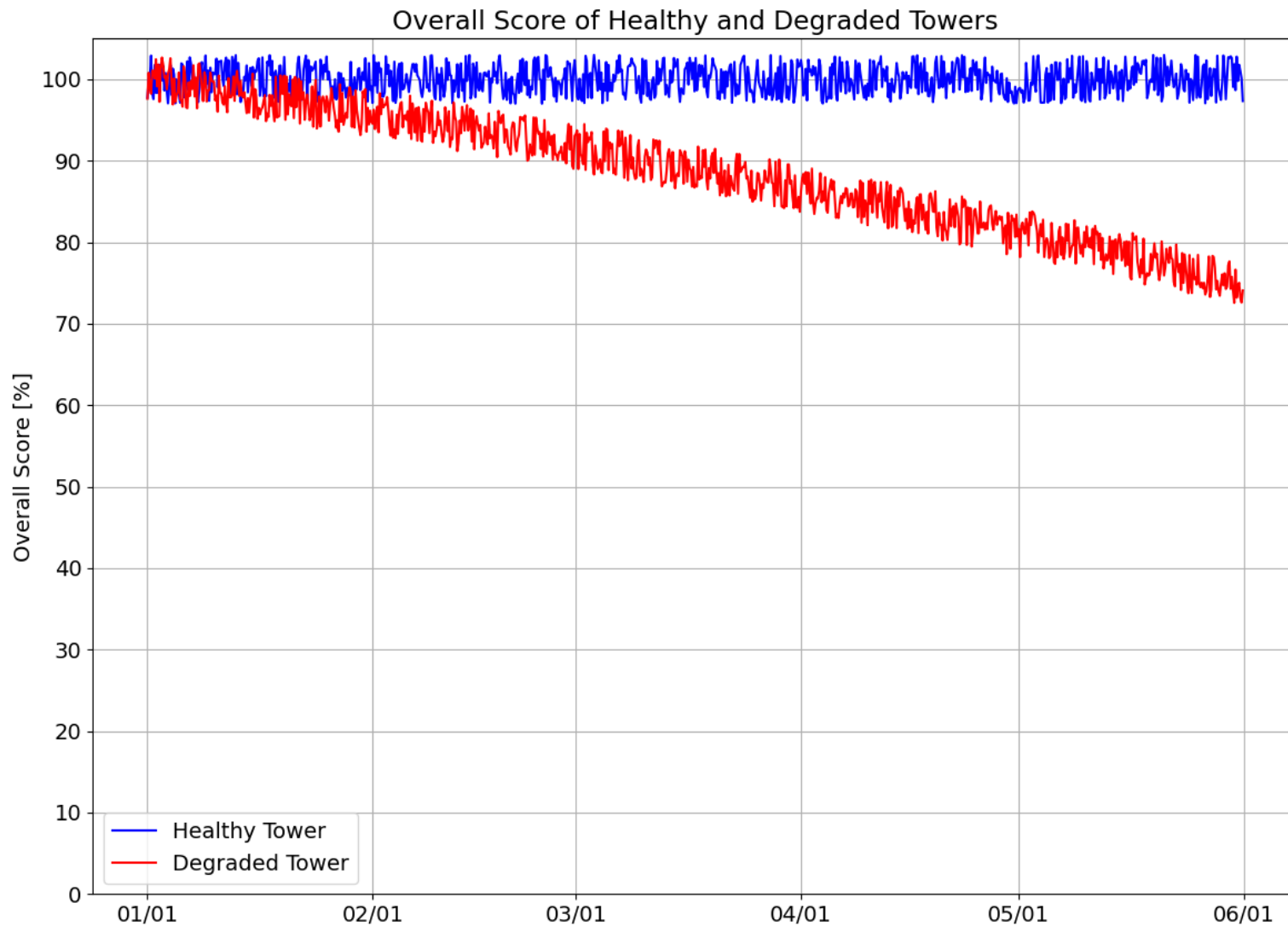


Tower A - Healthy



Tower B - Degrading

Health Scores Reveal What CWT Alone Cannot



TowerPulse Chat

↓ ↺ 🗨 ✕

hows my tower doing

Here's a snapshot of **Cooling Tower 1** at Powerplant: Europa as of April 2, 2026:

📊 Performance Scores

Score	Value	Status
Overall	0.48	⚠ Needs Attention
Fill Health	0.56	⚠ Degraded
Airflow	0.81	🟡 Moderate
Recirculation	0.99	✅ Excellent

The overall score has been **flat at ~0.50 for over a year**, which signals persistent underlying issues that haven't been resolved yet. Getting that score up is worth prioritizing — bringing the tower to full health could unlock **4.8°F colder supply water, 63.9 kW in power savings, and 23 MBTU/hr of additional cooling capacity.**

🔧 Action Items (6 Total)

- **3 Pending:** Open cell riser valves, check for leaks/basin overflow, increase fan speed during high winds
- **2 In Progress:** VFD re-programming (Cells 3 & 4), fill media cleaning/replacement
- **1 Completed:** Fan blade re-pitching ✅

Type a message...

➤

Our AI assistant is a beta feature. Responses may not always be accurate.

Estimated Score Improvement Impact

14.6 MBTU/hr

0.1 °F

1 kW

92.8 kBTU/hr

✕

Example Recommendations

Operational

No cost – immediate – done by plant staff

- Adjust cooling tower staging ⚡
- Increase or decrease fan speed based on conditions ⚙️⚡
- Rebalance airflow across tower cells ⚡
- Optimize water temperature setpoint ⚙️⚡
- Re-pitch fan blades ⚙️⚡
- Reprogram VFDs for increased equipment life 🔧
- Adjust pump staging ⚙️⚡
- Increase or decrease water flow rate ⚙️⚡💧
- Rebalance flow between parallel towers/chillers ⚙️⚡
- Shift load to most efficient tower/chiller ⚙️⚡
- Coordinate tower and chiller as one system ⚙️⚡
- Modify blowdown control setpoint 💧
- Detect and respond to recirculation events ⚙️⚡
- Optimize pump and fan schedules ⚡
- Detect and address leaks 💧
- Adjust operations to prevent ice formation ⚙️🔧

Maintenance

High impact – may require parts/labor

- Clean or replace clogged spray nozzles ⚙️⚡
- Clean fouled fill media ⚙️⚡
- Replace damaged or degraded fill packs ⚙️⚡
- Replace broken drift eliminators 💧🔧
- Repair or replace fan motors ⚡🔧
- Fix fan blade alignment ⚡🔧
- Increase shroud height ⚙️⚡
- Repair damaged louvers or air inlet ⚙️⚡🔧
- Clean chiller condenser bundles ⚙️⚡
- Repair or replace fouled heat exchanger ⚙️⚡
- Correct poor water distribution ⚙️💧
- Repair leaking valves, piping, or basin 💧🔧
- Fix underperforming pumps ⚙️⚡
- Fix tower casing to eliminate air leaks ⚙️⚡
- Eliminate leaks in adjacent process equipment 💧

⚙️ Production ⚡ Energy 💧 Water 🔧 Maintenance

Impact of TowerPulse™ on Water Consumption

Detect excess water use

- Identify leaks, basin overflows, and abnormal blowdown
- Trigger alerts to enable rapid response

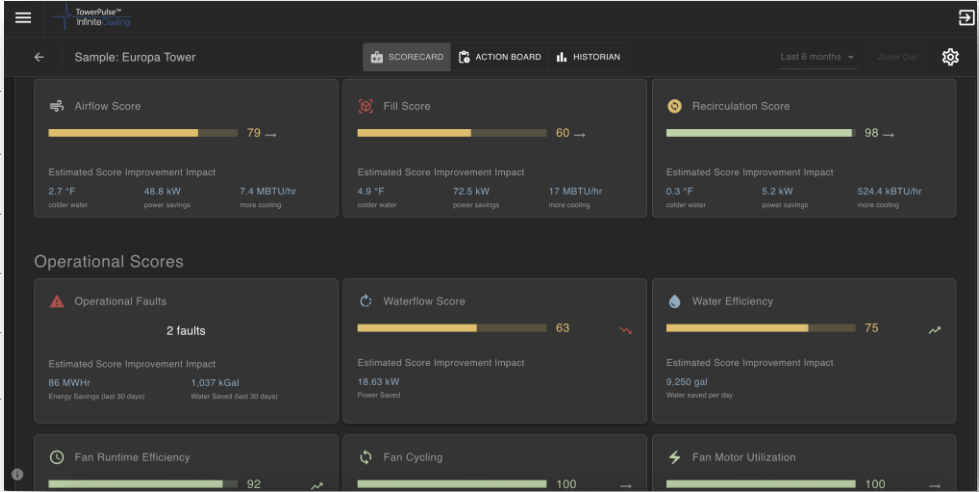
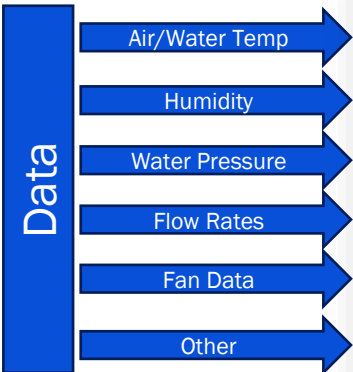
Increase cycles of concentration

- Direct feedback on thermal impact of blowdown rates and water chemistry
- Maximize blowdown while maintaining performance
- **17% reduction in annual water consumption** by going from 3 to 5 cycles of concentration

Eliminate need to increase blowdown to reduce water temperature

- 10X more water: what operators use when they need to flush the system with extra cold makeup water to lower CWT by 2°C
- TP fixes the root issues and eliminates need for this wasteful measure
- **~10% reduction in annual water consumption**

How Customers Use TowerPulse



Data analysis
Cooling system scoring
Detailed recommendations
Impact metrics

Impact Metrics &
Site-level view

Detailed optimization
recommendations with
step-by-step procedures

Detailed maintenance
recommendations with step-
by-step procedures



Corporate Director

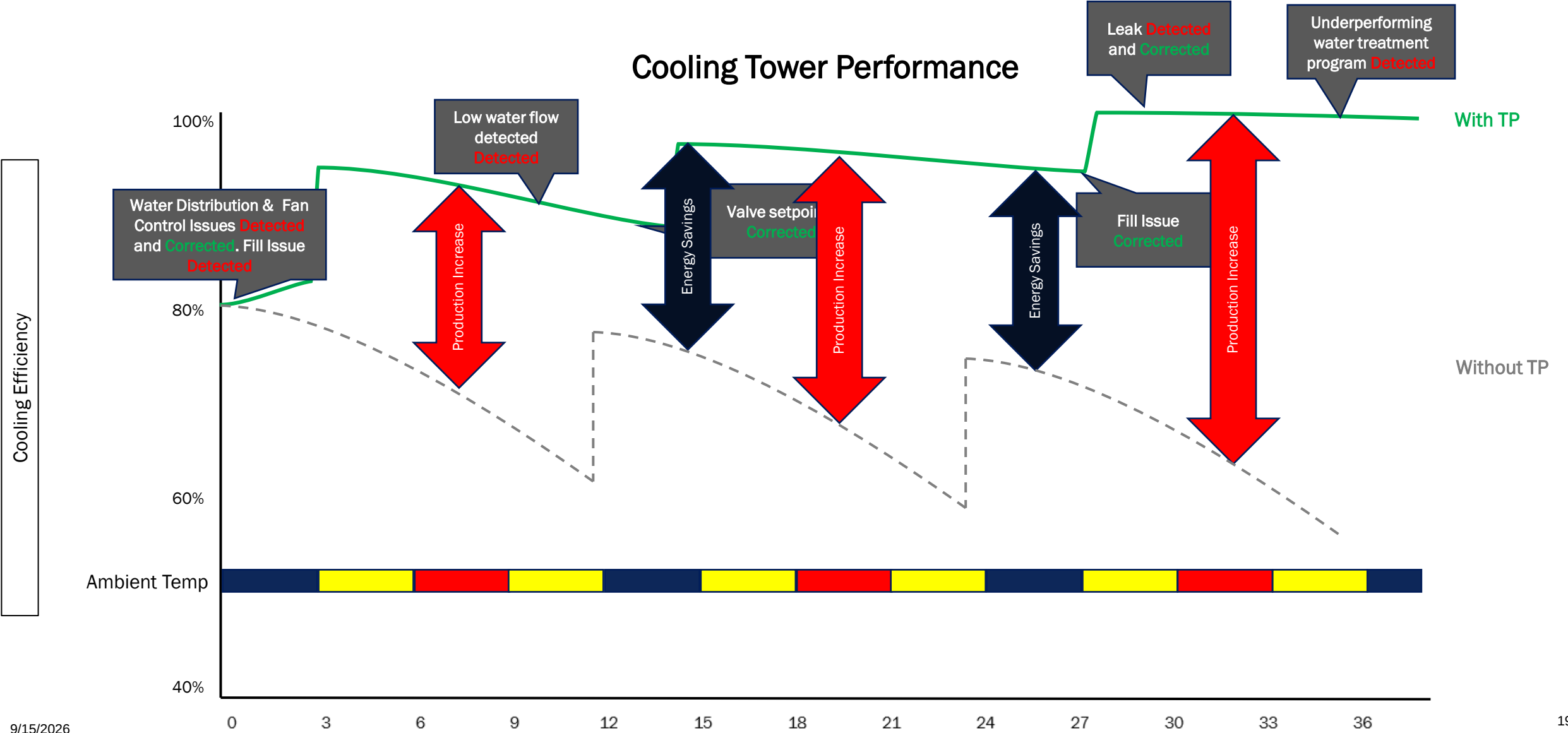


Site Operations Manager



Site Maintenance Manager

Savings are realized over time



Case Studies

Case Study: Power plant in Midwest

TowerPulse™



Challenge

- Site: 620MW combined-cycle gas power plant in the Midwest
- Using treated wastewater as makeup due to water scarcity
- Cooling tower efficiency impacts production

Solution: TowerPulse

- TowerPulse deployed at site within one week
- Measured cooling tower capability (efficiency score) at 80%
- **Month 1:** Identified fan maintenance needs to restore capability and reduce cold water temperature by 2°C -> Increase in generation by 0.8MW
- **Month 4:** Identified cyclic fouling in condenser leading to decreased NTU and a 1MW loss in production. Identified water treatment change to fix the issue
- **Month 5:** Detected anomaly in fan motor controls leading to excessive cycling -> motor and gearbox replacement cost avoidance

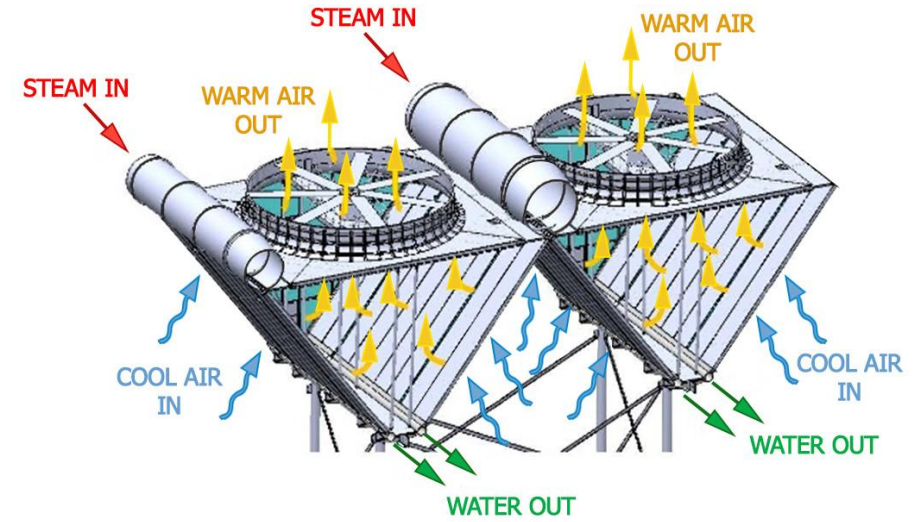
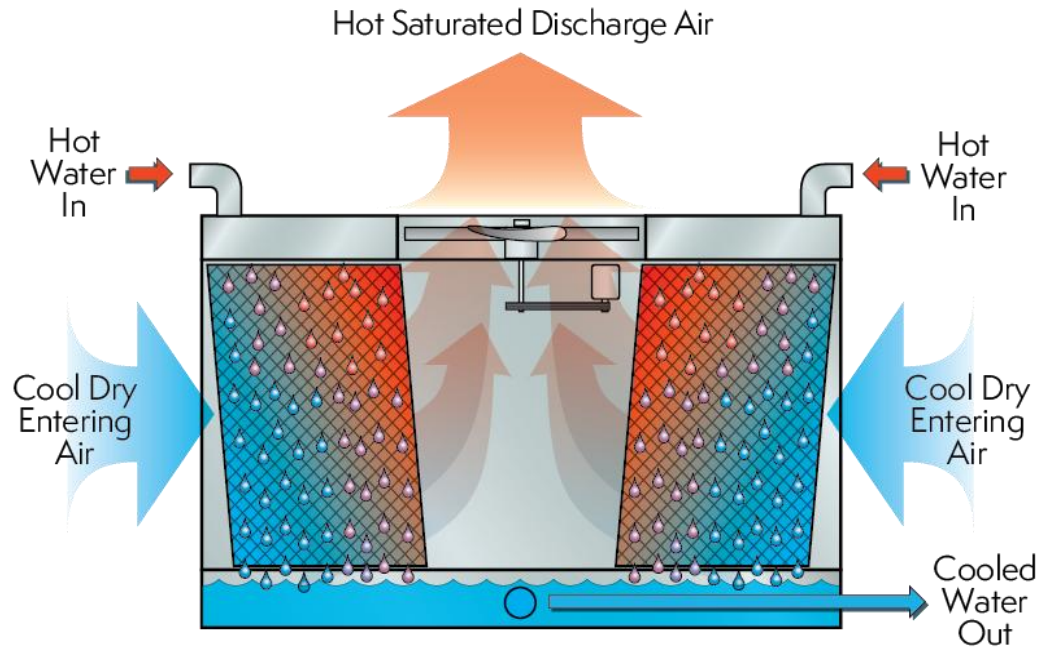
Impact

- **\$500K of annual savings** from increased power production and equipment life increase
- **4M+ gallons per year** of expected water savings
- **7,000 tons per year of avoided CO2** opportunity

Calculate Your Savings

<https://calculator.infinite-cooling.com>

What's Next?



1. **ACCs**
2. Hybrid Systems
3. Surface Condensers
4. Chillers