INNOVAS TECHNOLOGIES

UW-Madison
Case Study Update

$1.05M Annual Savings

A fast project payback and exceptional reliability led WW-Madison toward a university-wide implementation of the Helios TCS®.

Operating Costs
$ 255 / hour savings

Reliability
99.97% reliability

Project Payback
Less than 2 years

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UW–Madison Project Update

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Preface

In 2019 Innovas Technologies published its first case study reporting results from the initial system installed at the University of Wisconsin. The results of the trial were exemplary, and since then the Helios system has become a primary contributor to the successful gains in energy efficiency at UW-Madison.

The 2019 case study reported the results of a carefully managed trial where a side-by-side comparison of two identical chillers, one fitted with the Helios system and one without, was completed to measure performance for an entire cooling season. That trial led to a transformational change at UW-Madison related to chiller fouling management and chiller operations as a whole.

Chiller fouling is no longer a measurable problem in Madison. The benefits from the Helios installation include the elimination of manual cleaning, significant savings on energy costs, and up to a 10% increase in capacity from all chillers. UW-Madison employs large, complex central plants and the added awareness in managing chiller efficiency has made a significant contribution to a focus on operational excellence.

CASE STUDY

UW-Madison

Fast project payback leads to university-wide adoption.

Since 2018 and the conclusion of the first Helios trial, UW-Madison acted quickly and has incrementally converted all its central plant chillers to operate with the support of the Helios Tube Cleaning System.

The first install in 2018 was on both the condenser and evaporator side of a 4,000-ton York chiller. Since then, UW-Madison now employs the Helios TCS on 9 chillers that total 54,000 tons of district cooling supporting a majority of facilities on the Madison campus.

< 02 years

Project Payback

UW-Madison's entire investment in the Helios system will be fully recouped in under two years.

The results have been transformational related to the energy consumption, chiller maintenance labor hours and the reliability of the central plants.

More specifically, the Helios has played a disruptive role in modifying the operations of the UW-Madison's central plant in a positive way thus freeing the organization from chiller fouling related churn associated with years past.

With all technology investments there is always some level of risk. In this case, UW - Madison leadership and Innovas Technologies managed the risk for optimal benefit and ultimate success.

Piloting an initial chiller fitted with the Helios TCS showed significant cost savings with zero process interruptions. This allowed the technology to prove itself and paved the way for further expansion.

The savings are significant; before the end of the 2021 cooling season the entire UW-Madison investment in the Helios will be fully recouped - an excellent definition of *successful program management*.

UW-Madison

The lifecycle cost of the Helios implementation.

One of the key attributes of any performing asset is how much it costs to operate. Calculating the asset value needs to account for initial operating costs as well as future costs and asset reliability. In these regards, the Helios TCS reduces operating costs and offers longevity on a level with few equals.

Lifecycle Cost

Cost of operations.

$4.54 / hour

For UW-Madison, with 18 Helios systems in operation during the chilled water season, the total hourly cost of operations for all 18 systems is $4.54 per hour which equals about $.25 (25 Cents) per hour per system.

Hourly *savings*.

$260 / hour

Total hourly savings from the 18 systems exceeded $260.00 per hour equating to a net 255.00 per hour reduction in energy and labor.

Annual *cost savings*.

$1.05 M ($255 / hour)

This saved UW-Madison approximately $1.05M annually led to a total project cost recapture in well under two years.

Variables included in the cost of operations are as follows: (1) Pump Skid Energy, (2) Cleaning Balls, (3) Labor to change cleaning balls (1000 hour change cycles), (4) Reserve for spare parts.

UW-Madison

Case study results & data set.

Project ROI

2-year project payback.

Annual Savings – $1.05M

UW-Madison saved approximately $1.05M annually leading to a total project cost recapture in well under two years.

76k GHG tons
Reduced Emissions

93m kW-hrs
Energy Savings

$9,046,805
Total Cost Savings

In the final analysis, the Helios TCS has proven itself as a rare technology investment with both a fast project payback, and perpetual returns for many years into the future.

Equivalent acres of forest saved. **38 k**

Equivalent cars removed from the road. **7.1 k**

The Helios® Cleaning Cycle

The Helios cycle is fully automatic and controlled by a programmable controller.

1. Between cycles, the sponge balls are stored in the Collector and all valves are closed.
2. At programmed intervals, the Controller commands the injection valves to open and pump to start, and the balls are injected into the heat exchanger inlet line.
3. Normal cooling water flow transports the balls through the heat exchanger tubes and into the Ball Trap.
4. The Controller then prompts the collection valves to open and pump to start, and the balls are returned to the Collector, where they are held until the next injection/collection cycle starts.

View the Helios TCS Operation in action at innovastechnologies.com

Prevents scale.

Prevents scale, fouling, biological life and corrosion in heat exchanger tubes.

Reduces maintenance costs.

Reduces maintenance cost and downtime by eliminating manual or chemical tube cleaning.

Extends service life.

Extends the service life of heat transfer equipment.

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