

Sonata Software

CASE STUDY

Sonata Software partnered with 75F to implement advanced HVAC optimization solutions, leveraging cutting-edge IoT technology to elevate employee comfort while significantly improving operational efficiency. This collaboration showcases a commitment to innovation and sustainability, ensuring an enhanced workplace environment through intelligent, energy-efficient solutions.



THE BACKGROUND

Sonata Software is a prominent player in modernization engineering, renowned for its innovative approach powered by the proprietary Platformation™ framework. This framework seamlessly integrates deep industry expertise, cutting-edge platform technology, design-driven innovation, and tailored strategic engagement models. By leveraging these capabilities, Sonata Software delivers long-term, impactful solutions that help businesses transform and thrive in a rapidly evolving digital landscape. The company's commitment to excellence and customer-centric strategies enables it to drive sustained value for its clients across diverse industries.

THE CHALLENGE

The facility team at Sonata was in search of a solution to monitor the energy performance of their HVAC system while ensuring better comfort through precise temperature monitoring, control, and improved ventilation. As a greenfield project, the FM team had high expectations for a solution that not only offered top-tier performance but also provided an easy, out-of-the-box installation. They were looking for a system that could seamlessly integrate with their infrastructure, enabling real-time monitoring and management to enhance overall operational efficiency and occupant comfort.

AT A GLANCE

Location	Mysore Road, Bengaluru, Karnataka
Building Type	Commercial building
Area	Approx. 60,000 Square Feet
75F® Solutions	Dynamic Airflow Balancing
	Dynamic Chilled Water Balancing
	Outside Air Optimization
	Energy Management System
	Third Party Integration
	Number of Smart Nodes: 79
	Number of HyperStats: 1
	Number of CCUs: 12
	Number of OAOs: 3
	Number of Smart Duct Dampers: 71
Turnaround Days	45 days from start to commissioning

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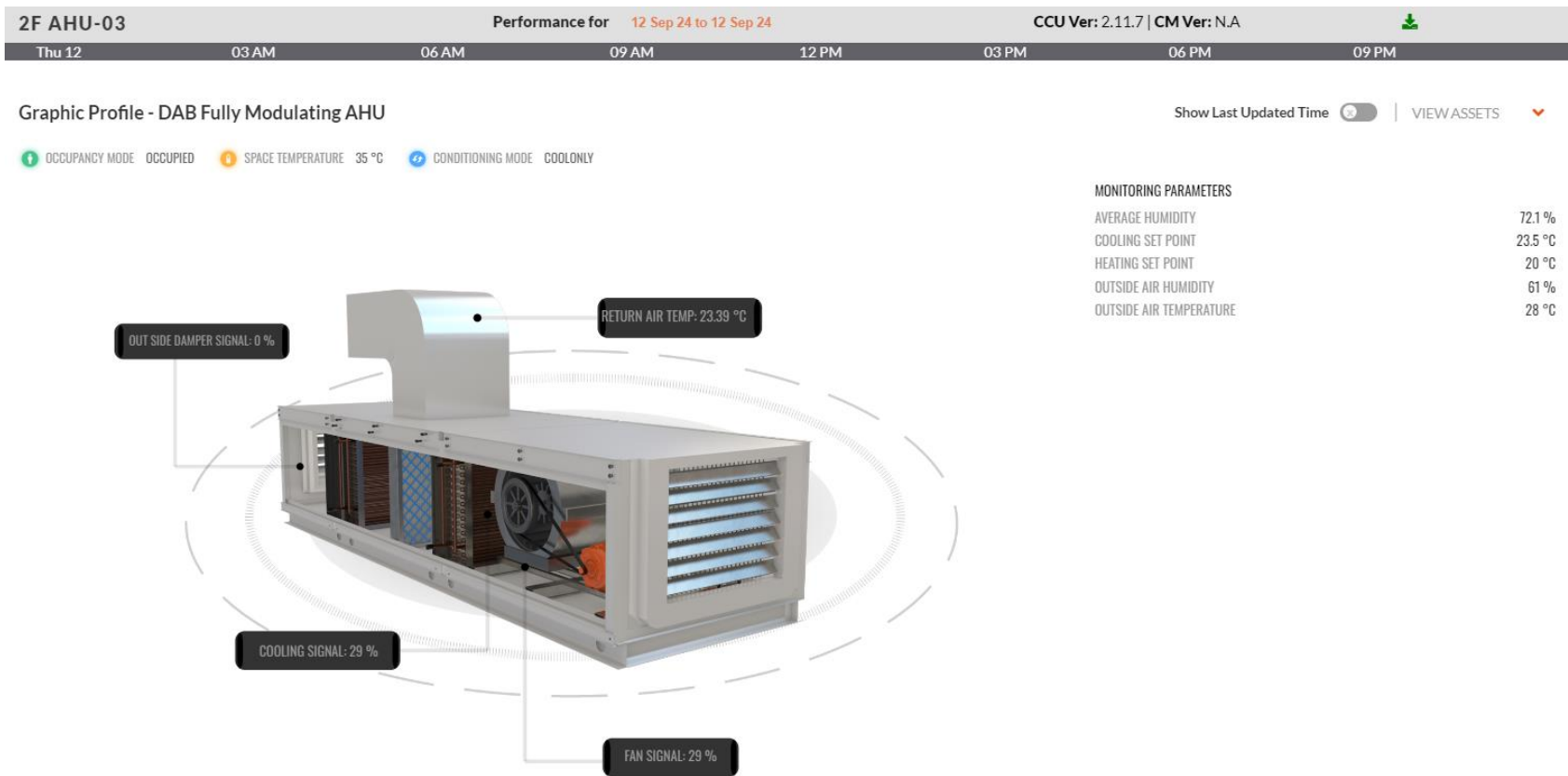
THE SOLUTION

Installation and Execution

The project was successfully completed within the client's stipulated timeline of 45 days, consisting of 30 days for installation and 15 days for commissioning. However, due to discrepancies in the IO summary provided by the co-vendor, we remained engaged in demo and training phases for an extended period. Despite these challenges, the client was highly supportive throughout the process, ensuring seamless collaboration and timely assistance, which allowed us to overcome the hurdles efficiently and deliver the project successfully.

Dynamic Airflow Balancing (DAB)

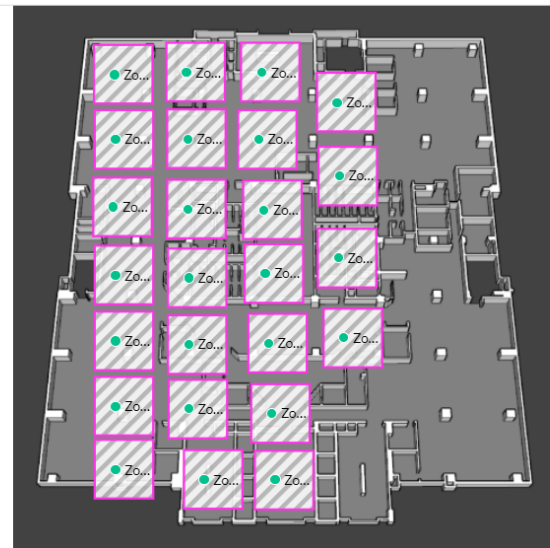
Dynamic Airflow Balancing (DAB) is a proprietary concept of the 75F system, designed to optimize HVAC performance in buildings. Recognizing the varying needs of different spaces throughout the day, 75F developed this feature to address the dynamic nature of temperature requirements within buildings. Unlike traditional approaches that may lead to inefficient zoning or back pressure on HVAC systems, DAB employs an intelligent algorithm to continuously monitor and adjust temperature differentials. By tracking the average current temperature of zones mapped within the system profile, it identifies deviations from the desired temperature settings. When cooling is required, the algorithm instructs modulating equipment to ramp up output, and conversely, when heating is needed, it adjusts the output accordingly. This approach ensures comfort and efficiency by dynamically responding to changing conditions without resorting to fully closing off zones or causing undue strain on HVAC systems.



Dynamic Chilled Water Balancing (DCWB), offers a specialized control solution tailored for the chilled water line of Air Handling Units (AHUs). By leveraging the heat load demand identified by the Dynamic Airflow Balancing (DAB) algorithm, DCWB optimizes chilled water flow by monitoring temperatures at the inlet and outlet and regulating the Chilled Water (CHW) actuator accordingly. This precise control strategy minimizes chilled water consumption while ensuring the desired temperature levels are consistently maintained. Integration with the Central Control Unit (CCU), existing BTU meter, and a new Actuator further enhances efficiency, leading to significant energy cost savings. DCWB extends the benefits of the fully modulating DAB profile for AHUs, providing multiple approaches to reduce overall energy consumption, encompassing both electrical and cooling aspects. Its unique features include addressing low ΔT syndrome, optimizing heat rejection through higher exit temperatures to minimize energy use, and balancing CHWS for improved chiller efficiency and reduced hydronic pump energy consumption. With customizable approaches, DCWB strikes a balance between comfort and energy savings, offering a comprehensive solution for optimizing chiller system performance under various conditions.

Outside Air Optimization (OAO) solution incorporates Demand Control Ventilation (DCV) to ensure that indoor air quality (IAQ) is consistently maintained within the recommended levels set by ASHRAE. By utilizing real-time data on occupancy, CO₂ levels, temperature, and humidity, OAO intelligently adjusts the intake of outside air to optimize ventilation. With 75F's OAO, buildings can achieve optimal IAQ and significant energy savings, contributing to a healthier, more sustainable indoor environment.

Facilisight offers multi-site visibility into HVAC energy consumption, allowing for automated control and monitoring. This AI-powered data analysis tool offers real-time insights for key metrics, including heatmaps and occupancy trends, allowing for minimal intervention of facility controls while enhancing energy efficiency and occupant comfort.



Energy Management System

Systems deployed to modulate the Variable Frequency Drives (VFDs) based on inputs from sensors automatically re-aligned the temperature and cooling demand to maintain optimal temperature levels with higher energy efficiency levels. To measure improved energy efficiency, the 75F team installed energy meters and BTU meters at each AHU level. Energy meters have been installed at floor level and DB level to provide SMDB breaker-level energy management.

Third Party Integration

We successfully integrated third-party systems to enhance monitoring and trigger alerts, ensuring seamless operation and safety. These systems include the energy meter, battery, VFD, fire alarm system, UPS, server, incoming breaker, auto-sequential panel, and hydrogen monitoring. This comprehensive integration allows for real-time alerts and improved oversight of critical components, optimizing performance and reliability.

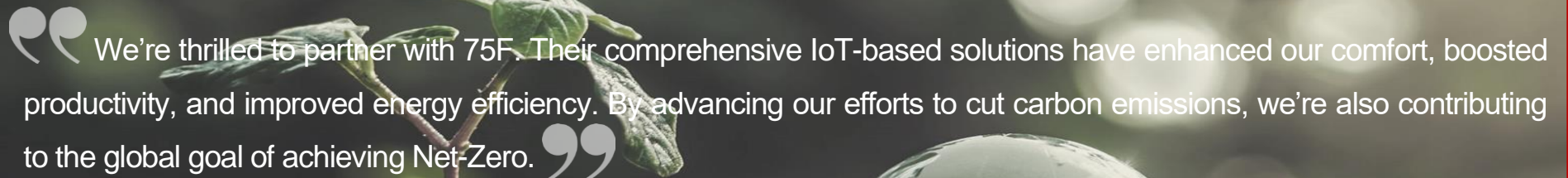
HyperStat for Smaller Capacity CHW AHUs

For smaller-capacity CHW AHUs, 75F's HyperStat provides optimal control and savings in terms of energy use. This advanced thermostat not only manages TFA valves but also measures and displays essential parameters including IAQ, temperature, humidity, CO₂, VOC, PM2.5, Lux level, sound, and occupancy. The HyperStat seamlessly replaces older versions of thermostats and integrates effortlessly with the 75F IoT Platform for efficient remote monitoring.

THE RESULTS

The project delivered substantial advantages to the client, including **enhanced occupant comfort**, **advanced remote monitoring capabilities**, and a **reduction in manpower requirements**. Real-time dashboards played a pivotal role in tracking these improvements, offering the client comprehensive visibility into comfort monitoring and system performance, thereby enabling informed decision-making.

This **successful integration** of **comfort** technology positions the client as a leader in **sustainability** and **operational efficiency**, setting a benchmark for others in the industry.



“We're thrilled to partner with 75F. Their comprehensive IoT-based solutions have enhanced our comfort, boosted productivity, and improved energy efficiency. By advancing our efforts to cut carbon emissions, we're also contributing to the global goal of achieving Net-Zero.”

Ashish Goenkar | Facility Manager, Sonata Software



To learn more about our intelligent building solutions, visit www.75f.io