A Leader in Automotive Software Solutions

CASE STUDY

A leader in automotive software solutions collaborated with 75F to deliver advanced HVAC optimization solutions using cutting-edge technologies. 75F with IoT solutions are renowned for their efficiency, reliability, and ease of installation, requiring minimal resources. The partnership ensured that the client benefited from state-of-the-art technology tailored to their needs.

THE BACKGROUND

Founded in 2009, a leader in automotive software solutions established its presence in India to meet the rising demand for advanced automotive technology solutions in the region. It acts as a crucial hub for delivering state-of-the-art tools and services that support the design, development, and testing of electronic systems and software for vehicles.

The Bangalore office is particularly notable as a greenfield project. This initiative highlights the company's forward-thinking approach to integrating modern technological solutions to optimize operations. To achieve this, they required an IoT-based Building Management System (BMS) solution. This system is designed to minimize human intervention, thereby reducing the need for manual labor and enhancing overall operational control and efficiency.

The implementation of the IoT-based BMS solution aims to improve the daily operations of the office by automating various processes and ensuring precise control over environmental conditions. This automation not only enhances the comfort of the occupants but also significantly increases the efficiency of resource utilization. By leveraging advanced IoT technology, the client ensures that their operations are both sustainable and efficient, aligning with their commitment to excellence and innovation.

AT A GLANCE

Location	JP Nagar, Bangalore
Building Type	Commercial building
Area	40,000 Square Feet
75F® Solutions	Dynamic Chilled Water Balancing Dynamic Airflow Balancing Outside Air Optimization Number of Smart Nodes: 63 Number of HyperStats: 2 Number of CCUs: 2 Number of OAOs: 2
Turnaround Days	45 days from start to commissioning.

THE SOLUTION

Installation and Execution

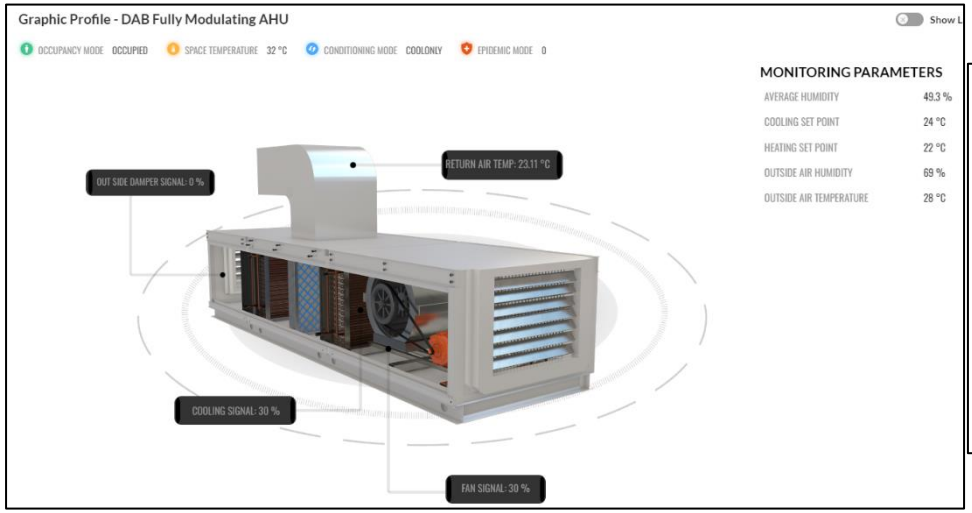
During the installation, the 75F team encountered challenges owing to dependencies on a co-vendor and delays from using a different HVAC supplier. These issues affected the project timeline and coordination. Despite these obstacles, the team demonstrated resilience by executing 30% of the work at night to avoid disrupting the occupied space and completing the remaining 70% during the day with the client's support. This collaboration and adaptability ensured that the project progressed smoothly and achieved the desired outcomes despite setbacks.

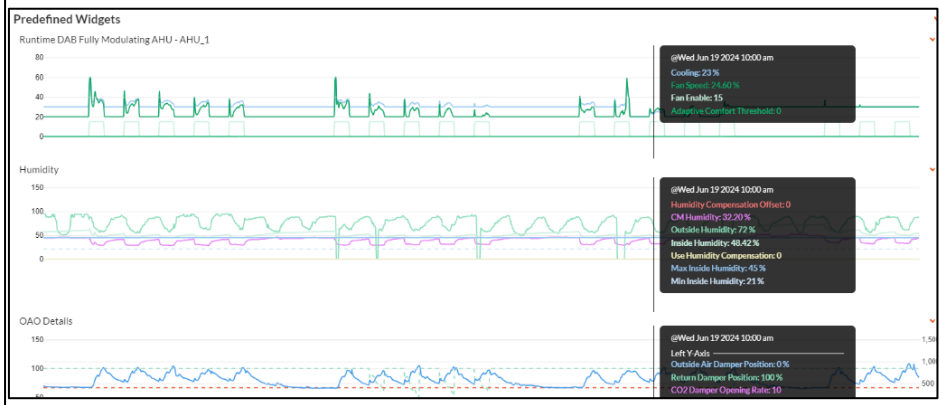
Dynamic Chilled Water Balancing (DCWB)

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.

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.



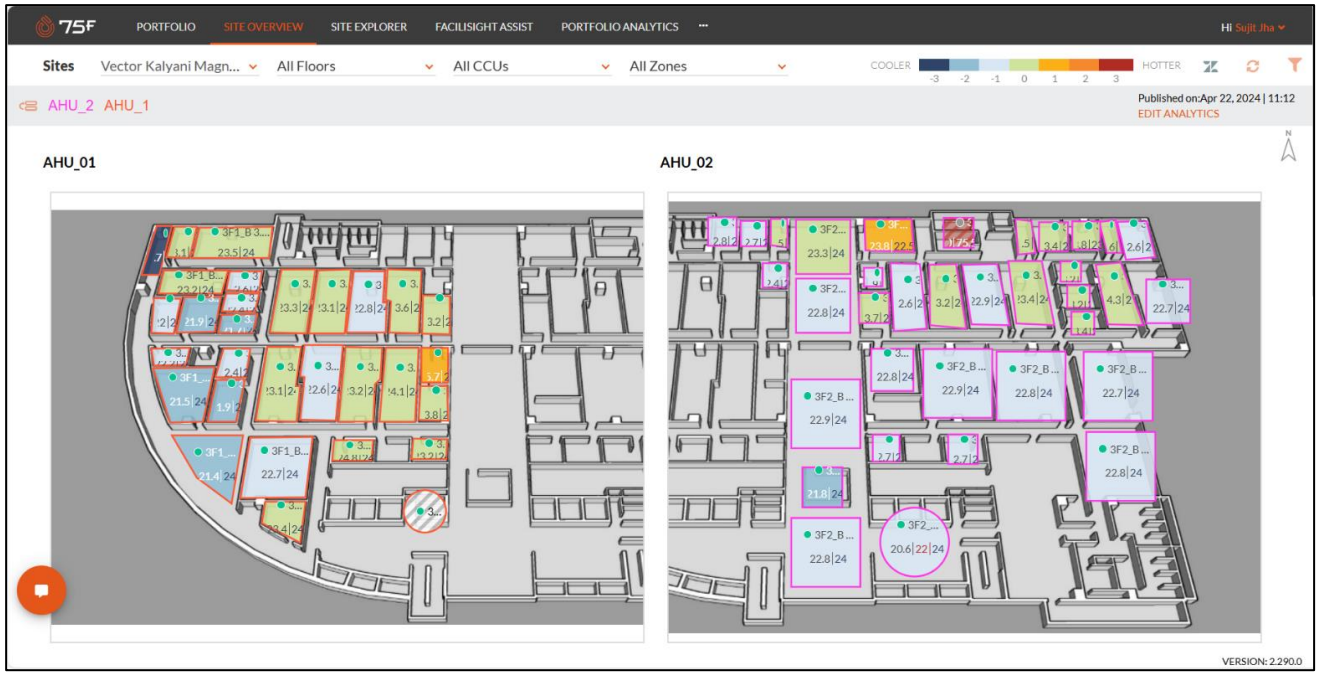


Outside Air Optimization (OAO)

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, CO_2 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.

75F Facilisight

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.



HyperStat

The 75F HyperStat is an advanced thermostat and humidistat with sensors for temperature, humidity, CO_2, occupancy, and light, ensuring optimal indoor air quality and comfort. It integrates with 75F's cloud-based platform for intelligent automation, reducing energy consumption and costs. The touchscreen display allows easy access to settings, and remote monitoring is enabled through the 75F Facilisight platform. The HyperStat helps buildings achieve superior environmental quality, operational efficiency, and significant energy savings.

THE RESULTS

The installation commenced in October 2023 and was efficiently completed by November 2023, in only 45 days. This project enabled the client to meet their key requirements, notably implementing **remote monitoring**. This advancement reduced the need for onsite manpower and **minimized human intervention**, significantly **lowering** the incidence of **human errors**. Furthermore, the project contributes to the client's **operational efficiency** and **sustainability goals**. The client's experience was further enhanced by the **exceptional customer support** provided by 75F, leading to high levels of satisfaction and a strong endorsement of the partnership.