

MELUHA THE FERN (AN ECOTEL HOTEL) CASE STUDY

Meluha The Fern, an Ecotel Hotel, selected 75F and its strategic partner Tata Power Trading Company Limited (TPTCL) to implement automated building controls, resulting in enhanced customer comfort and optimized energy efficiency, saving 54,540 kWh of energy – an 8% reduction over its baseline consumption.



THE BACKGROUND

Meluha The Fern, an upscale five-star hotel in Mumbai, proudly stands as the first of its kind in Hiranandani Powai. Setting new benchmarks in hospitality, Meluha The Fern, offers 141 rooms and suites, each adorned with contemporary luxuries, ensuring personalized services for all guests. Conveniently located near the International Airport and key city areas the hotel is steadfast in its commitment to sustainability and has invested in energy efficiency systems, remote monitoring of its HVAC, and optimal temperature controls for both guests and staff.

THE CHALLENGE

In the hospitality industry, managing energy costs is a significant challenge, directly affecting efficiency and profitability. Before implementing our solution, the hotel was faced with rising energy expenses and operational inefficiencies. Post-COVID financial uncertainties made upfront investments daunting, so we introduced an Opex model. Our retrofit-friendly solution seamlessly integrated with existing operations, minimizing disruptions and prioritizing energy-saving measures.

AT A GLANCE

Location	Powai, Mumbai
Building Type	Hotel
Area	1,33,984 Square Feet
75F® Solutions	Dynamic Chilled Water Balancing
	Smart VFD Control
	Number of AHUs: 3
	Number of Chilled Water Pumps: 2
	Number of HyperStats: 14
	Number of CCUs: 5
Results	Number of EMs: 9
	Number of BTU Meters: 3
	Energy Saving: 54,540 kWh
Turnaround Days	Reduced CO ₂ Emissions: 43,087 tons
	90 days from start to commissioning.



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THE SOLUTION

Installation and Execution

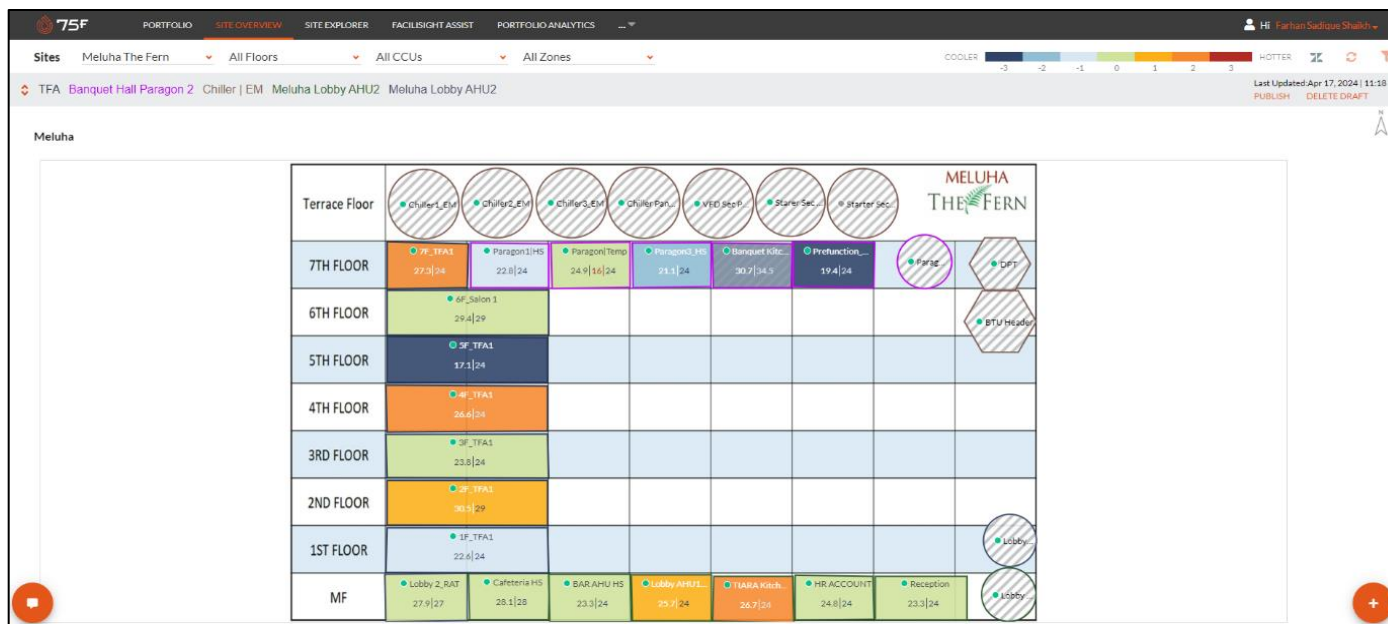
Installing and commissioning HVAC systems at a hotel near Mumbai International Airport was challenging due to the high occupancy rates. The 75F and TPTCL team identified energy-saving opportunities and planned shutdowns during non-peak hours to minimize disruption. Coordinating closely with the client and the chiller OEM, they used 75F's rapid-implementation, retrofit-friendly IoT-based BMS suite to optimize HVAC operations. During brief AHU shutdowns, the team efficiently deployed all necessary solutions. A thorough energy audit and detailed energy accounting ensured optimal performance and maximized energy savings, underscoring their commitment to enhancing efficiency and reducing operational costs.

Dynamic Chilled Water Balancing (DCWB)

Dynamic Chilled Water Balancing provides a distinctive control solution for the chilled water line of Air Handling Units (AHUs). By harnessing the heat load demand derived from the Dynamic Air Balancing (DAB) algorithm, it optimizes chilled water flow through continuous monitoring of inlet and outlet temperatures, while effectively controlling the CHW actuator. This innovative approach minimizes CHW usage while ensuring the desired temperature is maintained. Additionally, the integration of the Central Control Unit (CCU), existing BTU meter, and a new Actuator results in substantial reductions in chilled water usage, leading to significant energy cost savings.

Smart VFD Control

75F's Smart VFD Control, designed for centralized HVAC systems, employs AHU-level sensors to wirelessly transmit data to the Central Control Unit (CCU). This unit efficiently optimizes Air Handling Unit (AHU) motor and CHW actuator operations. Energy savings are realized through precise temperature monitoring and control sequences. 75F's proprietary algorithms dynamically adjust control strategies, gradually modulating VFD and CHW actuators to maintain stable building temperatures, thus preventing unnecessary cooling. Additionally, the algorithm intelligently prioritizes different AHUs based on actual usage, effectively minimizing energy waste.

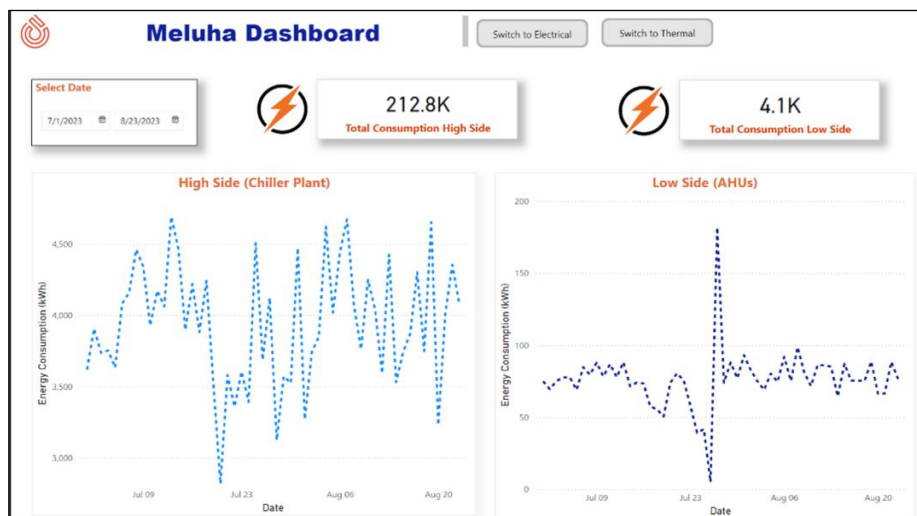


75F Facilisight

Facilisight offers multi-site visibility into HVAC energy consumption, empowering proactive monitoring and automated control. This AI-powered data analysis tool provides real-time insights into critical metrics, such as heatmaps and occupancy trends, through an intuitive graphical interface. As a result, it enables efficient facility management with minimal intervention, enhancing both energy efficiency and occupant comfort.

HyperStat for Smaller Capacity CHW AHUs

For Smaller Capacity CHW AHUs, 75F's HyperStat provides advanced control and energy savings. This cutting-edge thermostat not only manages TFA valves but also measures and displays crucial parameters such as IAQ, temperature, humidity, CO₂, VOC, PM2.5, Lux level, sound, and occupancy. HyperStat replaces outdated thermostats and seamlessly integrates with the 75F IoT Platform for efficient remote monitoring and control.



THE RESULTS

Energy Savings

The Energy Savings installation began in early July 2023 and concluded by September 2023, requiring just 90 days for installation and commissioning. A key enhancement was the integration of **remote monitoring solutions**, granting real-time data access for **efficient control** and **improved occupant comfort**. Moreover, the remote monitoring capabilities played a pivotal role in **optimizing energy usage**, resulting in substantial savings. Over the following 6 months, the **75F solution** delivered remarkable results: a total of **54,540 kWh was saved** on the Chiller Plant and Air Handling Units (AHUs), achieving an impressive **8% reduction** compared to the baseline benchmark. Through collaborative efforts, we've **reduced CO₂ emissions** by an impressive **43,087 tons** – equivalent to **planting 638.12 trees**.

Collaborative Success

Our hospitality energy optimization project succeeded due to the support from key stakeholders from Hiranandani Hotel and Tata Power. Mr. B. L. Walunj, Mr. Kundan Attarde, and Mr. Simon from Hiranandani Hotel, along with Mr. Amit Jain, Mr. Arpan Chhaya, and Ms. Ritika Jain from Tata Power, provided invaluable support and expertise. This collaborative effort highlights the power of partnership and collective action in driving sustainable solutions and achieving mutual success in the hospitality industry.