

# MERCEDES-BENZ CASE STUDY

MBRDI saves up to 25% on HVAC & Lighting energy, improves occupant experience and enhances operational efficiencies with 75F



75F's vertically integrated solution provides unified HVAC Control & Automation + Lighting Control & Automation + iBMS + Energy Management + Remote Management capabilities at Mercedes Benz's new R&D Center



## THE BACKGROUND

Innovation, efficiency, and comfort are the three signature virtues that characterise every Mercedes-Benz automobile. The same principles extend to how they operate their offices, and MBRDI's (Mercedes-Benz Research & Development India) recently inaugurated state-of-the-art facility in Bangalore is a shining example.

Firm on its mission to nurture excellence, MBRDI dedicated a whole floor of this facility to Learning & Development and aptly called it "Gurukul". Comprising of training rooms, meeting rooms, quiet areas and even in-house banquet halls, Gurukul's design and build prioritizes occupant needs and experience. MBRDI was seeking an automation solution that would enhance their occupant's experience further - a system that improves thermal (temperature and air quality) and visual (lighting) comfort, provides tailored occupant experiences and empowers the facilities team with visibility into their energy consumption and HVAC & Lighting systems as well as remote management capabilities. All this while making saving energy and improving the facility's carbon footprint!

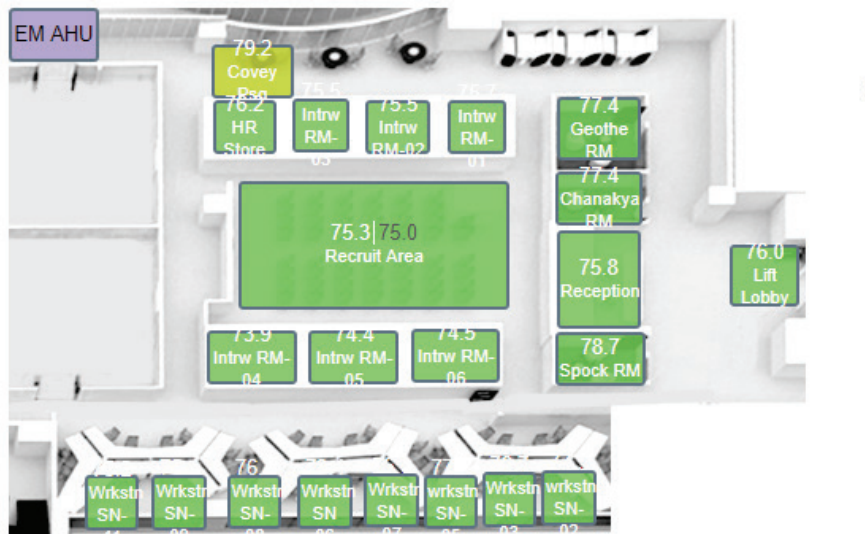
## AT A GLANCE

Location	Bangalore, India
75F® Solutions	75F® Dynamic Airflow Balancing 75F® Dynamic Chilled Water Balancing 75F® Advanced Lighting Solution Outside Air Optimization
Square Footage	38,000 sft
Primary Requirements	- Automation and control of HVAC units (AHUs, VRFs, TFAs) and Lighting fixtures - Energy Savings, visibility & insights - Remote Manageability & control - Tailored occupant experience

# THE 75F SOLUTION

MBRDI conducted a thorough assessment of 75F's solution, comparing it to some of the most prominent players in the industry. 75F stood out from the pack as the only player that offers a vertically integrated solution (Hardware + Software + UI + Data Analytics + Services) and for providing unified HVAC, IBMS & Lighting Control & Automation capabilities. MBRDI also found 75F to be a better fit, both in terms of value and capabilities. Even finer details, such as 75F's aesthetically designed sensors that complement the facility's design and the intuitive graphic user interface that serves up insights and analytics to the FM team, contributed to 75F winning this project.

75F built a highly customized solution for MBRDI working closely with MBRDI's Project Management Consultants, Architects, Electrical Consultants and HVAC Design Consultants. Smart sensors were installed across the site, to collect real-time inputs for temperature, humidity, VOCs, CO<sub>2</sub>, movement, sound levels, LUX levels and even occupancy count for each zone. With millions of data points processed daily, 75F applies machine learning to predict daily challenges and proactively control HVAC and lighting systems for optimum comfort and efficiency.

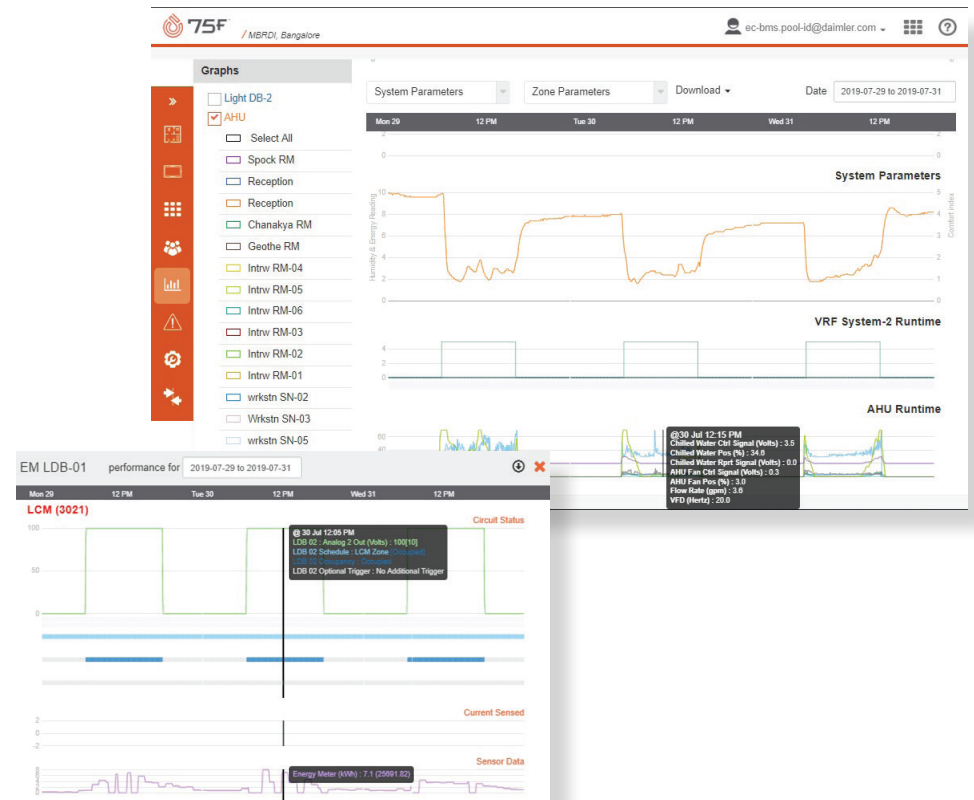


A live zone view from Facilisight. Each zone can individually controlled and monitored for thermal comfort, lighting and indoor air quality parameters.

## HVAC Automation and Control

75F installed its award-winning Dynamic Airflow Balancing System and Dynamic Chilled Water System, providing comprehensive integration between the high-side & the low-side and ensuring greater comfort and more efficient operations. Depending on the thermal, airflow and humidity requirements in each zone, the system proactively controls the chilled water flow rate, ramps up/down the VFDs for fan motors, turns on/off the AHUs and modulates the Smart Dampers installed across the site. Thereby, 75F creates a continuous dialogue between multiple HVAC units in the facility and ensures they work together to reduce energy usage and deliver even temperatures throughout.

Additionally, 75F's system is also integrated with Mitsubishi VRFs at the site. 75F Smart Nodes communicate with the VRF indoor unit & turn it on/off based on setpoint temperatures, occupant preferences and schedules.



75F automates and controls the AHUs, VRF, TFAs, Chilled Water System, and schedule & dimming of lights, creating a continuous dialogue between the systems and optimising efficiencies.

## Indoor Air Quality Management

The 75F® Smart Stat™, installed in all the training rooms, has 7-onboard sensors that collect real-time data about various parameters including VOCs and CO<sub>2</sub> concentration. If the CO<sub>2</sub> concentration approaches threshold limits, the 75F system automatically modulates the Treated Fresh Air Units (TFAs) to push in more fresh air. These TFAs are also auto-scheduled to run on an hourly basis to keep fresh air circulating in the facility. The system also provides the facility manager with insights on CO<sub>2</sub> build up and relevant trends for pre-emptive action. It also proactively sends alerts if the VOCs are higher in an area.

## Lighting Automation & Control

75F's system automates lighting in the facility based on real-time factors such as weather forecasts, occupancy, scheduling, user preferences, etc. 75F installed motion sensors across the facility so lights turn on/off automatically based on occupancy, saving energy and time. Daylight harvesting in areas which get direct sunlight offset the amount of energy needed to artificially light the space. The LED lights automatically dim or brighten as per the sunlight, making sure optimal lux levels are maintained.



Occupants are provided with an Occupant App and Intelligent Temperature Mote™ (ITM) sensors in each room for superior temperature and lighting control

## Occupant Control & Feedback

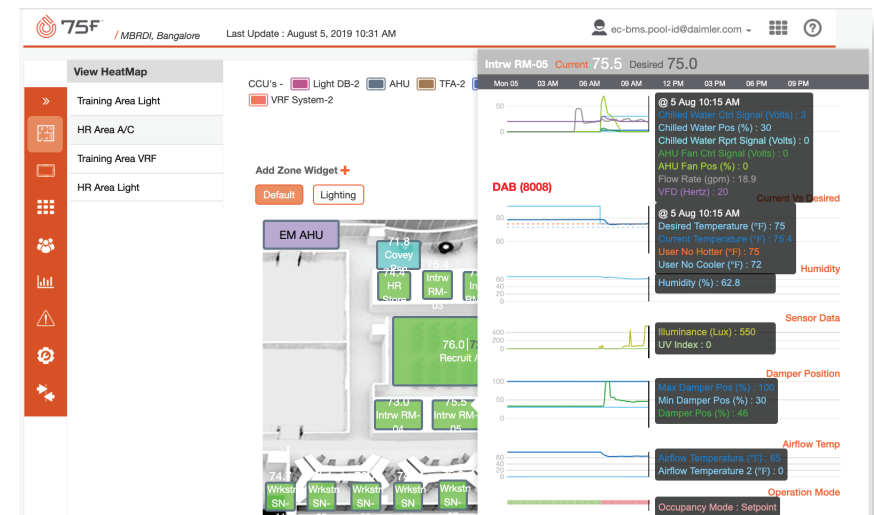
One of the unique features of 75F's solution at MBRDI is the 'Occupant App'

running on tablets deployed in each training room. Occupants can now adjust the temperature and dim/brighten or switch on/off different lights at any given moment using the app. If during a training, the first row of lights need to be turned off, second row to be dimmed and third to remain bright, then the occupants can do this themselves using the Occupant App. They can also schedule changes to the temperature and lighting. The facility is in effect “switch less” as the capability to control and monitor is provided through the App.

## Energy Management

75F Facilisight provides the facility team with remote management capabilities along with visibility and insights into HVAC and Lighting energy consumption. From heatmaps and occupancy maps to trends, analysis and granular reporting - the facility team at MBRDI gets a single pane view of the entire facility. These insights and analytics are served up in an intuitive graphic user interface allowing the facility team to monitor and proactively manage the facility, adding efficiency and value for their occupants.

Besides automatically monitoring, managing and controlling these systems proactively, 75F also provides the FM power to control their buildings at a click anytime, anywhere.



MBRDI facility team can remotely adjust and schedule temperatures and lights and the health of the system can be monitored to ensure maximum efficiency

# THE RESULTS

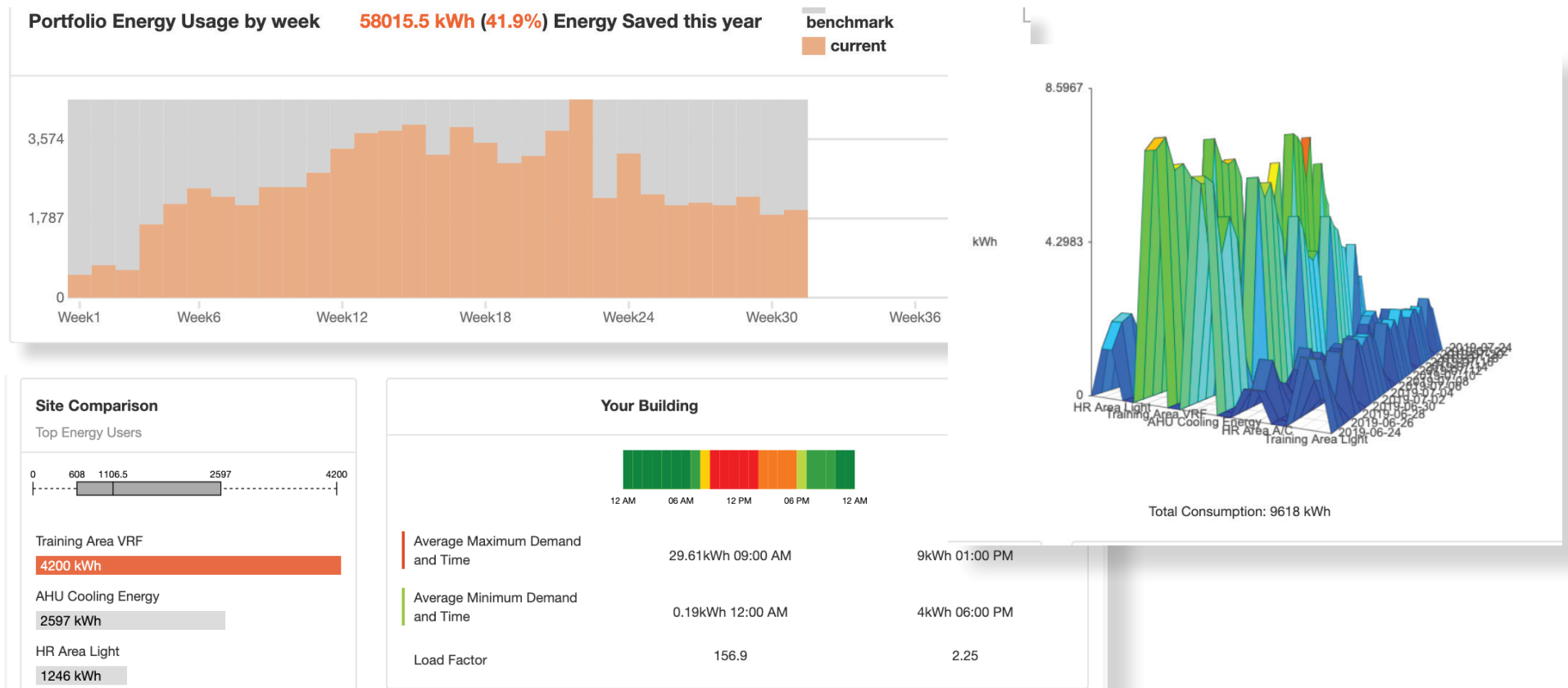
75F's innovative system has brought incredible efficiency to MBRDI. With 75F system in place, the facility has been recording **25% savings on HVAC and lighting energy** each month. Moreover, occupants enjoy a better work environment and increased productivity thanks to comfortable temperatures, improved air quality and better lighting.

Occupants of the facility are empowered to tailor their zones for temperature and lighting, allowing for precise comfort at all times. Features such as scheduling, daylight harvesting and occupancy-based control have made the facility 'switch-free' and intuitive, resulting in better occupant experience.

The facilities team at MBRDI now spends lesser time responding to occupant

complaints and is able to deploy those resources to other important tasks. They have also noticed a marked improvement in their operational efficiencies; as a result of quick Installation, zero downtime and no on-site IT infrastructure and maintenance costs. Facilisight has provided the team with insight and control over the HVAC & lighting system in the facility. They are now able to monitor and control energy usage in real-time remotely.

75F's self-optimising, intuitive system echoes the same principles that MBRDI holds close: innovation, excellence and comfort. MBRDI set out with great plans for their new state-of-the-art R&D centre and 75F took it to the next level with its unified HVAC, lighting, iBMS, automation and energy management system.



View of 'Energy Portfolio Manager' where MBRDI team can compare energy use in kilowatt-hours (kWh) for selected date ranges, energy used through the course of the day, and compare with movable 3D graph analysis.