



# Data Visualization and Energy Management at a Luxury Hotel



Case Study



## Background

A Luxury Hotel embarked on a project to modernize its chiller plant and enhance energy efficiency through advanced data visualization and automation technologies. The project was driven by the need to improve operational efficiency, reduce energy consumption, and provide better monitoring and control over the HVAC systems within the hotel.



## Problem Statement

The existing HVAC system at a Luxury Hotel was over 15 years old and lacked integration capabilities, making it difficult to collect and analyze operational data. The manual operation of the chiller plant and other components led to inefficiencies and higher operational costs. The hotel needed a comprehensive solution to automate its systems, monitor performance in real-time, and implement energy-saving measures.



## Challenges

### **Aging Infrastructure**

The old HVAC system posed significant integration challenges

### **Limited Data Collection**

The existing system lacked comprehensive data acquisition capabilities.

### **Manual Operations**

Manual control of the HVAC system components led to inefficiencies.

### **Environmental Concerns**

High energy consumption and CO2 emissions needed to be addressed.

### **Client Dependencies**

Various dependencies on the client for hardware upgrades and system modifications.



# Solutions

The proposed solution involved retrofitting the chiller plant with modern controllers, integrating IoT-based data monitoring systems, and deploying the iBUS Digital cloud platform for data visualization and automation.

## Retrofitting and Upgrades

- ▶ Replaced existing chiller plant controllers and managers with smart controllers.
- ▶ Installed IoT-based data monitoring systems for HVAC components.
- ▶ Added sensors for temperature and differential pressure monitoring.
- ▶ Implemented VFDs for secondary pumps and cooling towers to optimize energy use.

## Data Visualization and Automation

- ▶ Implemented the iBUS Digital cloud platform for real-time monitoring and control.
- ▶ Created analytic and operational dashboards for comprehensive data visualization.
- ▶ Developed smart widgets for top-down views of system performance.
- ▶ Automated control loops for secondary pumps and cooling towers.



## Energy Management and Optimization

- ▶ Monitored critical KPIs for performance analysis
- ▶ Enabled adaptive control based on environmental conditions.
- ▶ Measured and tracked energy consumption to identify savings opportunities.
- ▶ Implemented CO2 emission control measures.



## Implementation

The implementation process included several key steps

### System Retrofitting

- ▶ Replaced outdated controllers with modern smart controllers.
- ▶ Installed sensors and VFDs to facilitate automated control.
- ▶ Integrated all components with the iBUS Digital cloud platform.

### Data Visualization Setup

- ▶ Configured dashboards and widgets for real-time monitoring
- ▶ Enabled operators to add, delete, and modify widgets as needed.
- ▶ Provided training to operators on using the new system.

### Automation and Control

- ▶ Activated control algorithms for automated operation of pumps and cooling towers.
- ▶ Implemented fault detection and handling mechanisms to ensure system reliability.
- ▶ Set up automated reporting for energy consumption and savings analysis.

### Data Visualization Setup

- ▶ Addressed client dependencies for hardware upgrades and system modifications.
- ▶ Coordinated with the client to install necessary components like motorized valves and flow meters.

# Key Achievements

- ▶ **Energy Efficiency**

Improved energy management and reduced consumption.

- ▶ **Operational Excellence**

Enhanced monitoring and control capabilities

- ▶ **Cost Savings**

Lowered operational expenses through automation.

- ▶ **Environmental Impact**

Reduced CO2 emissions and improved ESG reporting.

By addressing the challenges of an aging infrastructure and limited data integration, the Luxury Hotel set a benchmark in utilizing advanced technology for sustainable and efficient hotel operations. The success of this project demonstrates the potential for similar initiatives in other facilities aiming to enhance their operational efficiency and environmental footprint.





## Conclusion

The project at a Luxury Hotel successfully modernized the HVAC system, resulting in significant improvements in energy efficiency and operational excellence. The implementation of the iBUS Digital cloud platform provided real-time visibility into system performance, enabling proactive management and optimization. The automation of control loops reduced manual intervention, leading to lower operational costs and enhanced sustainability through reduced CO2 emissions.