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**Company Represented:** Confidential company in Dubai, a market leader in Facilities Management.

**Role:** Senior Facilities Manager

**Sector:** Facility Management

**Asset Owner:** Confidential hospitality group in the UAE

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**Introduction**

**Description of assets in study**

This study revolves around critical HVAC and plumbing systems in a 5-star hotel located in Dubai, with assets including:

- **HVAC Systems:** 30 rooftop chillers, 250 fan coil units, and advanced air handling units.
- **Plumbing Systems:** 20 hot water boilers and a network of high-capacity pumps.

**Operational Issues and Impacts:**

Recurring failures in HVAC and plumbing systems severely disrupted guest experiences. Specific problems included:

- **Cooling Failures in Peak Summers:**
  - **Scenario:** During high-occupancy summer months, cooling systems frequently failed due to ageing chillers, resulting in complaints from over 50 guests weekly.
  - **Revenue Impact:** An average of **5% loss in occupancy per week** due to negative reviews, amounting to a **loss of AED 200,000 per month**.
- **Inadequate Hot Water Supply in Winters:**
  - **Scenario:** The hot water system failed to meet peak demand during winter mornings, leading to service delays in 100+ rooms daily.
  - **Revenue Impact:** Compensations offered to guests (free meals or discounts) led to **additional costs of AED 150,000 per month**.

These issues compounded operational costs, guest dissatisfaction, and reputational damage, prompting urgent action.

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**Description of Activity**

**Methodology Adopted to Address Issues:**

- **Data Collection and Root Cause Analysis:**
  - Historical maintenance logs revealed that **60% of cooling failures** were due to inefficient chillers operating beyond their lifecycle.
  - Sensor data showed uneven water distribution caused by outdated pumps.
- **Asset Prioritization:**
  - Assets with the highest failure rates were scored based on criticality, energy consumption, and replacement costs.
- **Maintenance Regime Optimization:**
  - Introduced predictive maintenance schedules leveraging IoT-enabled sensors.
  - Regular descaling and preventive maintenance for boilers.
- **Technological Upgrades:**
  - Installed **Variable Frequency Drives (VFDs)** on chillers, leading to optimized energy consumption.
  - Upgraded water pumps to ensure consistent pressure during peak demand.

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**Key Data and Outcomes**

**Pre-Improvement Metrics:**

- **Cooling Failures:** Averaged 15 incidents/month, costing **AED 75,000/month** in repair costs.
- **Hot Water Supply Interruptions:** Averaged 20 complaints/day, resulting in **AED 150,000/month** in compensation and discounts.
- **Energy Consumption:** HVAC systems consumed 400,000 kWh/month, costing **AED 120,000/month**.

**Post-Improvement Metrics:**

- **Cooling System Efficiency:**
  - Failures reduced by **80%**, with incidents dropping to 3/month.
  - Repair costs decreased to **AED 15,000/month**, saving **AED 60,000/month**.
- **Hot Water Supply Reliability:**
  - Complaints reduced by **90%**, dropping to 2-3 complaints per week.
  - Compensation costs reduced to **AED 15,000/month**, saving **AED 135,000/month**.
- **Energy Consumption:**
  - HVAC energy consumption reduced to 320,000 kWh/month, saving **AED 24,000/month**.

**Revenue Improvement:**

- Occupancy losses mitigated, contributing to **AED 200,000/month recovery**.
- Net revenue increased by **AED 400,000/month** through reduced operational costs and improved guest satisfaction.

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**Facility Improvements**

- **Operational Enhancements:**
  - Installed IoT sensors for real-time monitoring of chiller efficiency, enabling proactive interventions.
  - Introduced automated alerts for uneven water flow and temperature anomalies.
- **Energy Optimization:**
  - Replaced ageing chillers with energy-efficient models, achieving a **20% reduction in energy costs**.
  - Retrofitted boilers with advanced thermostatic controls for precise temperature regulation.
- **Maintenance Efficiency:**
  - Shifted from reactive to predictive maintenance, reducing downtime by **25%**.
  - Comprehensive staff training programs were introduced to improve technical handling and quick response.

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**Outcome and Validation**

**Was the activity successful?**

Yes, the initiative yielded significant operational and financial benefits:

- **Improved Guest Satisfaction:** Positive reviews increased by **35%**, contributing to enhanced reputation.
- **Increased Uptime:** Equipment uptime improved by **25%**, ensuring seamless service during peak seasons.
- **Sustainability Impact:** Carbon emissions reduced by **18%**, aligning with local green building regulations.

**Validation:**

- Performance validated through IoT analytics and third-party audits.
- Continuous feedback loops ensured long-term adherence to improvements.

**In hindsight, what would you do differently?**

- Accelerate the adoption of energy-efficient technologies earlier.
- Enhance guest communication to mitigate dissatisfaction during the transition period.