
# Advancing Thermal Building Management with Predictive Tools

## Utilizing Machine Learning for Optimal Comfort Forecasts and Adaptive Indoor Environments.

### INDUSTRIAL DATA ANALYTICS

This is the process of collecting, analyzing and using plant data to harness the hidden value. Tools like e-DAP are capable of modelling a physical phenomenon on the basis of data collected over time. The insight gained helps improve operational efficiency, optimize process, and plan maintenance ahead of time.

### SITUATION & CHALLENGE

- Optimize thermal comfort throughout a building using the PMV (Predicted Mean Vote) as a measure.
- Monitoring and forecasting temperature 24 hours in advance poses complexities due to varying internal and external factors.

### SERVICE & APPROACH

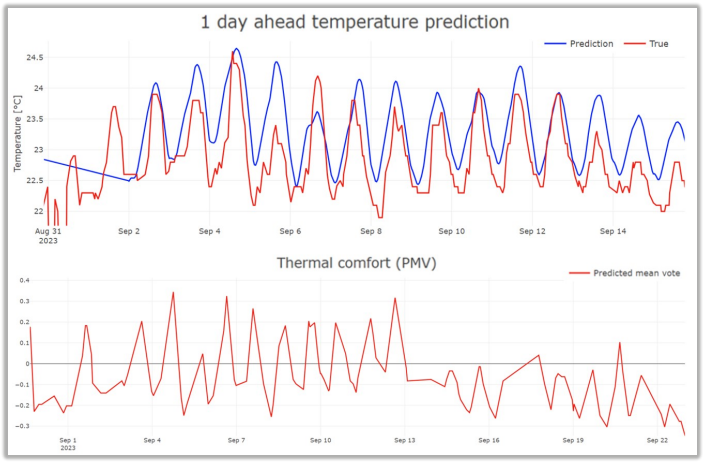
- Integrated temperature and humidity sensors strategically placed around the building collecting real-time environmental data.
- Legacy data, combined with live data inputs, was processed using feature selection, normalization, and other data engineering methods.
- Once sufficient data is collected, appropriate ML/AI algorithms are used to predict the next day's temperature within the building.
- This predictive insight was further utilized to calculate the PMV, offering a comprehensive perspective on indoor comfort.

**E-DAP: the *end-to-end* data platform**

A cloud-hosted infrastructure for the treatment of plant data: from IoT sensing, through engineering, dashboarding, ML/AI, digital twinning, to insight

### IMPACT & ADDED VALUE

- Incorporated a state-of-the-art thermal building management system for proactive comfort adjustments.
- Facilitated an environment where occupants experience optimal thermal conditions, backed by data-driven PMV (Predictive Mean Vote) evaluation.

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