

Honeywell Forge Energy Optimization

Transforming the way you manage
building energy costs without sacrificing
occupant comfort



**HONEYWELL
FORGE**



Microsoft



Agenda

1. Energy optimization and HVAC systems
2. Optimization challenges
3. Introducing Honeywell Forge Energy Optimization
4. The power of end-to-end Azure solutions in the cloud
5. Opportunities

The quest for energy efficiencies begins with HVAC systems

40-60%

HVAC systems can account for 40-60% of energy consumption in most buildings¹

3x

Global energy demand from air conditioners is expected to triple by 2050²

30%

Up to 30% of HVAC energy costs can be reduced using data analytics³

¹"How to achieve energy efficiency in commercial buildings: IoT-enabled solutions for smart HVAC," waylay

²"How IoT is Changing the Commercial HVAC Industry," aeris

³"Big Data: Big opportunity for smart buildings," Smart Buildings Magazine

Building portfolio managers' challenges

Interpreting energy consumption, savings and occupant comfort

In order to maximize energy efficiencies, portfolio managers must be able to collect, connect, and interpret isolated data about weather, building occupancy, and energy costs.

Limited functionality

Fixed or scheduled setpoints and conservative building management systems (BMS) configurations can hinder efforts to reduce waste and maintain occupant comfort.

Complex decisioning

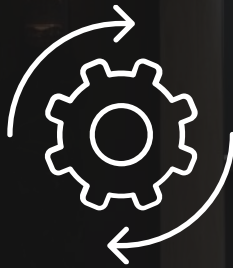
Teams of engineers are not capable of calculating zone dynamics plus changing occupancy, climate, and energy costs at the speed and precision required to optimize performance and comfort.

Introducing Honeywell Forge Energy Optimization

Transforming the way you manage energy costs without sacrificing occupant comfort



**Connect &
collect** data



Optimize
operations



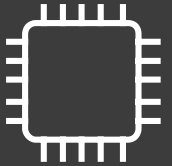
Deliver
intelligence

Honeywell Forge Energy Optimization

Connecting data and systems to drive energy savings while protecting comfort

Easy deployment

The system-agnostic solution can auto-discover and seamlessly connect to any HVAC system or BMS within minutes



Smart connectivity

It also captures expected occupancy data, weather data, energy pricing, and comfort targets



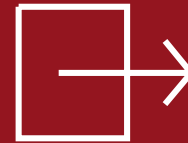
Powerful cloud

Use machine learning to analyze and combine data with deep learning about building and system dynamics



Business optimization

Enable **autonomous control** by sending messages back to the BMS to make automatic adjustments at regular intervals (every 15 minutes, minimum)



Actionable insights

Generate and visualize meaningful insights in a web-based dashboard to drive centralized and remote data-driven decisions



Connect & collect data



Establish a single, secured connectivity strategy between all systems and buildings.

Deploy a system-agnostic solution fast

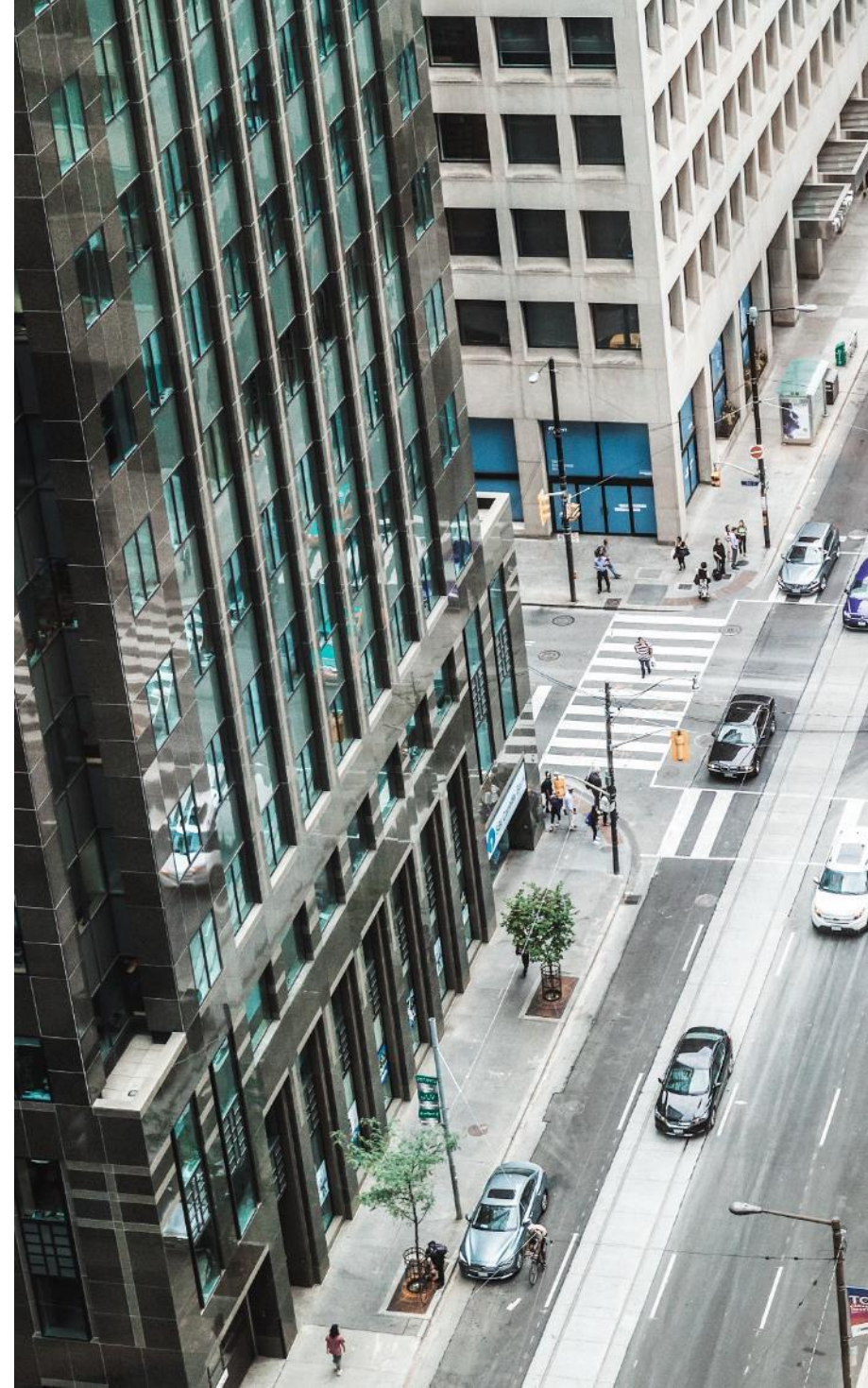
Set up the system in just a few minutes, and the solution can auto-discover and connect with any HVAC or BMS on-site.

Adopt proven technology

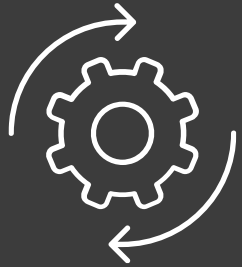
Machine learning models are continually informed by Honeywell technologies used in millions of buildings worldwide.

Secure your platform

Protect business assets while reducing costs and complexity with Azure's enterprise-grade security controls—built-in from the ground up.



Optimize operations



Leverage centralized
autonomous control
to correct
inefficiencies at scale.

Save time and money with autonomous asset control

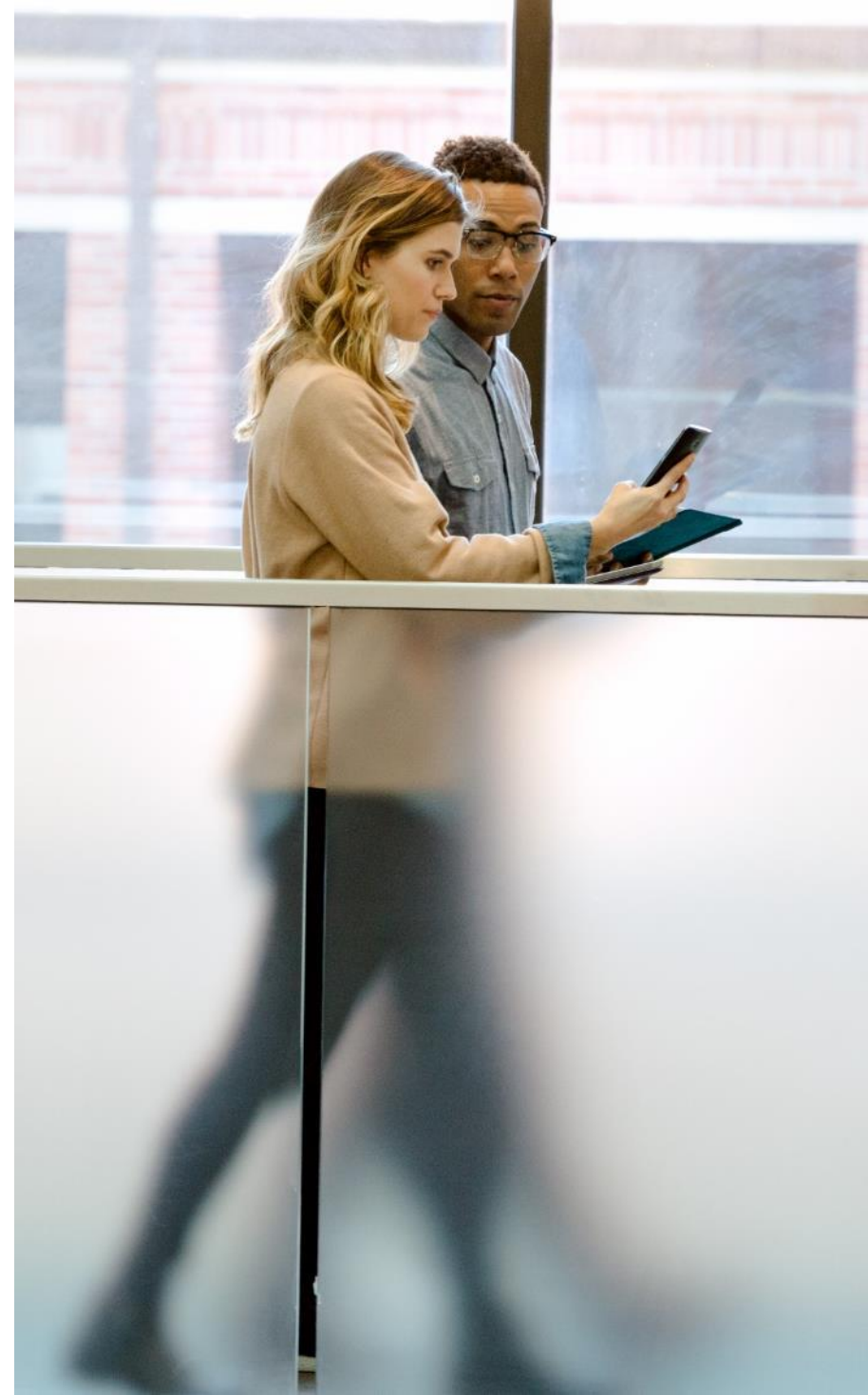
Use AI to autonomously control HVAC systems—sending instructions through the BMS to continually adjust energy usage by zones without human intervention.

Measure performance

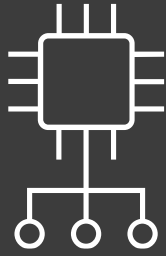
Objectively compare performance across your portfolio, and periodically run the original strategy to compare results using smart tools.

Employ a solution that scales

Evolve and build on the cloud-based solution as your needs change or your buildings or portfolios grow.



Deliver intelligence



Visualize energy consumption, savings, and occupant comfort insights.

Understand energy use and comfort levels

Monitor and receive real-time 24/7 normalized energy and comfort metrics from systems in one or many buildings.

Gain visibility

Aggregate standardized data in a single, secure, cloud-based platform to gain a universal, 360-degree "truth" about energy consumption and comfort levels.

Receive real-time intelligence

Apply advanced machine learning models to identify opportunities to gain efficiencies by optimizing set-points.



Powered by Azure IoT Hub

Experience the simplicity of a scalable SaaS solution



Straightforward
deployment



Connect devices
at any scale



Consolidate data and
visualize insights



Best-in-class security
and enterprise-grade
services



Full integration into
business systems

10% energy savings achieved across campus



Hamdan Bin Mohammed Smart University (HBMSU), the first and only accredited smart university in the United Arab Emirates, sought to reduce energy consumption, carbon footprint, and operating costs across its smart campus. The management team's goal was to reduce their impact on the environment and save money while protecting occupant comfort levels. But they needed a solution that could integrate easily with existing third-party systems to minimize capital expenses. Honeywell Forge Energy Optimization enabled a quick and secured integration to a cloud-based, autonomous energy solution.

System-agnostic integration

Optimized to auto-discover all on-site systems, Honeywell Forge Connect connected easily, and immediately identified system mechanical issues requiring repair.

Robust analytics

The solution enabled cloud intelligence to analyze real-time weather, occupancy, and tariff data in order to calculate optimal HVAC settings.

Automated controls

The solution enabled continuous, autonomous adjustments to HVAC settings from the cloud-based application without the need for human decisioning or management.

Cost savings

The institution experienced energy savings of 10% enabled by Honeywell Forge Energy Optimization.

A smart university gets smarter with energy optimization

“ At HBMSU, we are innovative in all our endeavors. We remain steadfast to our commitment to deploy the latest technological and smart innovations on our campus and ensure the provision of the highest levels of operational efficiency that matches the best in the world. We were pleasantly surprised by the positive results that we saw from Honeywell Forge, and we’re excited for the energy savings it’ll continue to harvest.”

— **DR. MANSOOR AL AWAR,**
Chancellor, Hamdan Bin Mohammed Smart University



Next steps

- Find out how easy it is to adopt Honeywell Forge Energy Optimization
connectedbuildingforge@honeywell.com
- Learn more about
[Honeywell Forge Energy Optimization](#)
- Learn more about Azure IoT Hub at
azure.microsoft.com





The diagram illustrates a multi-stage architecture for a digital twin solution, organized into five main columns: Sensors / Connections, Edge Intelligence, Cloud Services, Cloud Intelligence, and Mgmt. Experience. Each column contains specific components and their interactions, with a legend at the bottom identifying Partner components (star icon), Azure services (gear icon), and Customer components (person icon).

- Sensors / Connections:** This stage helps operations teams optimize energy usage and drive cost savings while maintaining occupant comfort. It includes components like HVAC System, Lighting System, Lifts and Elevators, and Employees and Visitors, all connected to a central BACNET, MODBUS & 200+ OTHER DRIVERS block.
- Edge Intelligence:** Custom logic analyzes thousands of data points and tags the most important information and control signals for an energy-focused digital twin. Key components include the Customer WAN or Cell Connection, Industrial PC and Gateway with Kubernetes and Cloud-Synced Logic Containers, and a Digital Twin for building/maintenance analysis.
- Cloud Services:** Microsoft's Azure cloud provides a scalable, secure, and resilient platform. Components include Azure IOT Hub, REST API on Azure App Service, Event Hub + Azure Kubernetes with managed microservices, data quality checks, and storage in Time Series DB and Azure HD Insights + Blob Storage.
- Cloud Intelligence:** Cloud modules integrate telemetry with occupancy information and energy pricing to calculate optimal equipment settings every 15 minutes. This involves importing occupancy and calendar data, analyzing comfort vs. energy usage, determining optimal set points, and detecting underperforming zones.
- Mgmt. Experience:** The team uses a web-based app to optimize ongoing operations and review energy savings, space comfort, and equipment response. This includes Energy Savings Dashboards, Comfort vs. Savings Analysis, Underperforming Zones, Navigation of buildings/floors/zones, and a Responsive Web App for various devices.

Legend:

- Partner component
- Azure service
- Customer component