SECURE
THE FLOW

Building safe, efficient and sustainable utilities across Europe

Honeywell

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ABSTRACT

Utilities in Europe are at the intersection of big occupational challenges — and bigger opportunities. Spurred by the quick pace of digital transformation and growing demand, the fast, significant shifts in how utilities must generate, transmit and distribute energy have created a distinct gap between *where utilities truly are* and *where they should be*. Closing this gap with the right strategies and technologies will help utilities secure the flow of our resources today and tomorrow.

Utilities are designed for reliability efficiency and safety, not disruption. But within the last decade, despite utilities' focused efforts, Europe's once-robust grid is showing cracks in a foundation that didn't anticipate today's needs and future ones. The natural gas that keeps our homes comfortable, heats our water and powers our important industrial processes is becoming more difficult to measure and manage. Water — the lifeblood of our agricultural sector — is leaking and less available than it once was. There are many factors responsible for this current state of utility and grid strain, which pose risks for future energy systems too.

Predictable demand, manual metering and minimal digital requirements of the past have been replaced by ageing infrastructure, shrinking workforces, sophisticated cyberthreats and technology that's evolving faster than utilities can modernise their systems. Fundamental operational differences aside, these challenges aren't unique to one utility over the other. For example, the infrastructure that supports around 70 gigawatts of Europe's gas power capacity is over 20 years old, while water pipelines and distribution systems have been in operation for more than half a century.[1,2] Skilled workers are retiring in droves, their tenured knowledge going with them. And both sectors must adhere to strict regulatory policies.

Honeywell understands that utilities' existing infrastructure and personnel primarily dictate their short-term and long-term operational realities. We're ready to help utilities turn what's complex and challenging into streamlined, future-proofed and compliant. By leveraging simplified, data-driven and enduring solutions for enhanced life safety and security, operational efficiency, cybersecurity and energy innovation, utilities that partner with Honeywell can close the gap and secure the flow of energy — for generations.

INTRODUCTION

> Our approach to helping utilities navigate their challenges and changes is tailored and outcome-based. Across each — life safety and security, operational efficiency, cybersecurity and energy innovation — we empower utilities to protect their people and assets, reduce downtime, enhance resilience and deliver reliable energy in a connected world.

The toughest part of utility transformation is knowing when, where and how to start. Existing resources and bottom lines must be considered. Business priorities and compliance must be weighed. Future operational capabilities must be accounted for. Each variable and moving target emphasise the value of an expert partnership throughout the creation, deployment and follow-through of modernisation plans.

We help utilities focus on what matters by evaluating and understanding first, then integrating intelligent, field-proven and safe systems that fit your operations. Sometimes, smart meters elevate network performance, the last piece in an otherwise complete system. Other times, an entirely new advanced metering infrastructure is what's needed to secure the flow. No matter your plan, we help you control and strengthen actions and processes across the following outcomes:

Life Safety and Security
From the field to the control room, utilities depend on safe operations and protected infrastructure to deliver reliable energy. We have technologies that help you detect risks early and maintain compliance with evolving safety standards.

Operational Efficiency
High speed, low costs, always-on performance — all are key determinants of a utility's operational efficiency. We help optimise each by unifying data and decision-making, which can reduce downtime and extend asset life.

Cybersecurity
Trust underpins a reliable grid, meaning utilities need strong threat detection and defence. As an industry-recognised leader in cybersecurity, we help secure critical infrastructure by integrating comprehensive technologies directly into operational systems.

Energy Innovation
Adapt confidently to what the landscape demands with sustainability-driven management systems that provide real-time visibility and a future-ready capacity for the next generation of energy.

> Critical infrastructure demands critical safety, especially at the distribution level where utility assets are closest to communities, customers and frontline operations.

The smart devices and innovative technologies that accompany utility transformation are only effective and worth the investment when they put life safety and security first. This people-centric outcome involves more than just manuals and protocols. It means systems can never fail and accuracy can never waver because, in the high-risk environments where utilities often operate, it only takes a second for something to go wrong, for lives to be endangered or for costly, damage-induced downtime to occur.

A CLOSER LOOK AT LIFE SAFETY AND SECURITY FOR GAS UTILITIES

In the field, different causes can create the same detrimental effects. Corroded distribution infrastructure or extreme weather events or abnormal flow patterns — they can all lead to gas leaks, the release of harmful emissions, fires and explosions. Advanced monitoring and diagnostics can help utilities manage these risks, moving them from reactive to proactive in the protection of people and assets. Here's a potential path forward for this outcome, completely supported by Honeywell:

Replace manual meters with smart meters
With offerings for residential, commercial and industrial environments, our **themis® series of smart gas meters** has capabilities far beyond remote reading. These meters measure and report volumes at regular intervals, with alarm messages sent as needed if anomalies are detected. And the long-term battery life of up to 20 years helps keep workers out of potentially dangerous sites. While meters tell you what happened in the past, smart meters tell you what's happening now.

Use real-time operational data
Our smart meters and communication networks are compatible with **Honeywell Forge Performance+ for Utilities**, a unifying digital platform that collects, stores and analyses network data (consumption, flow rates, pressures, etc.). Presenting an organised view of assets, resources, alarms and metrics, this end-to-end solution improves information accessibility and incident response.

Control the flow of gas remotely
With the **EI6 smart electronic index meter**, the integrated "Valve Ve" allows for remote control of the gas supply, which enables fast responsiveness in critical situations and reduces the costs and personnel required for a shutdown. To prevent gas release in unsafe installations, this meter performs an intelligent check of downstream installation before the valve is opened.

THIS STARTS A RIPPLE EFFECT
When people, assets and information gathering are protected, utilities' operational efficiency is too.

RETHINK OPERATIONAL WORKFLOWS FOR GREATER EFFICIENCY

When manual becomes predictive and raw data becomes actionable insights, greater operational efficiency becomes achievable in the forms of reduced costs, fewer losses, minimal downtime and faster decisions. But first, utilities must acknowledge and eliminate what stands in the way of reliable, productive performance. We can help.

The combination of automation and data analytics is the answer to many operational inefficiencies...

Shrinking Workforce

As retirements outpace the hiring and upskilling of new talent, asset digitalisation and workforce automation, like remote metering and systems that forecast how to enhance water distribution over time, can reduce manual tasks while closing the skills gap.

Ageing Infrastructure

Operating for decades beyond its intended design life, existing utility infrastructure is showing its age through leaks, failures and high maintenance costs. Smart devices and analytics that pinpoint network losses, plus predictive maintenance technologies, can help utilities build a modernisation plan that focuses on replacing assets with highest benefit-to-cost ratio (instead of replacing every asset at once).

Merging Old and New Systems

While modernised systems produce real-time data, legacy systems often can't share it. And integration complexity creates fragmented operations, which often require slow workarounds and reduced system visibility. Unified data platforms and standardised communication protocols can help consolidate processes, reducing operational stress.

...including non-revenue water (NRW), one of utilities' biggest operational efficiencies throughout Europe.

Average levels of non-revenue water sit at 25% across European countries.[3] That means only 75% of water intended for our homes, towns, cities, businesses and industries is distributed to its final destination. When utilities treat and pump water that doesn't generate revenue, it wastes production expenses. High leakage, the primary reason for loss, also makes it difficult to forecast demand. The net effect? Limited insights, an unreliable supply and higher operating costs. Controlling losses with intelligent technologies can shift this effect to efficiency, transforming many layers of water utilities' operating models.

25%
AVERAGE LEVELS OF NON-REVENUE WATER
across European countries[3]

75%
WATER REACHING ITS DESTINATION
Only 75 percent of the water intended for homes towns cities businesses and industries actually makes it where it is supposed to go.

A PORTFOLIO PRIMED FOR OPERATIONAL EFFICIENCY

SMART METERS AND COMMUNICATION MODULES

Our advanced metering infrastructure digitalises processes and operations with accurate data
and remote capabilities across residential, commercial and industrial applications.

IMAGE	PRODUCT
	M140H – A hybrid-measuring capsule water meter, this device has a fully electronic counter for accurate remote reads and integrated wMBus, OMS-compliant communication. The robust construction can withstand various operational conditions, keeping this meter fully operational in the long term.
	S110H – Single-jet and surface-mounted, the S110H offers secure, remote consumption monitoring and supports higher flow rates for larger buildings or peak demand. It's designed for long-term performance with minimal maintenance.
	Q600 – This ultrasonic NB-IoT water meter has a 15-year battery life, requires lower deployment costs and accurately captures leak flows for more reliable and profitable utility operations.
	Merlin NB-IoT Clip-On – This smart clip-on module for basic water meters is a cost-effective way to boost operational efficiency without major overhauls. It helps utilities identify leaks, measure flow rates and upgrade existing infrastructure to improve water conservation and operational performance.

Honeywell Forge Performance+ for Utilities and Value-Added Applications

With Honeywell Forge Performance+ for Utilities, metrics like consumption, flow rate, pressure, time-of-use data
and backflow are captured from meters, stored and monitored to help ensure a consistent, safe supply. Its data-
driven recommendation engine recognises abnormal trends, which helps utilities identify leak locations across vast
networks and secure flows with quick maintenance. This platform can also track a water network's meter health and
any outages to help prevent downtime. Changing water utility management changes efficiency for the better.

- **GridFin** – This platform transforms fragmented data from different meters and infrastructural components into financial and operational insights. Utilities can track supply costs on demand, design smarter rates and detect billing discrepancies early.

- **AMI View** – This application gives utilities the tools they need to operate smarter and respond faster. Insightful analytics, standard reports, self-service reporting and streamlined expansion capabilities come standard.

- **Utility Data Hub** – Tap into curated historical and on-demand data in one integrated platform, instead of wrangling data with time that could be spent improving operations.

Analytics improve visibility and understanding, no matter the experience level of your workforce.
Automation improves real-time control, no matter the age of infrastructure. Both improve opportunities
to remove efficiency disruptions from distribution — and are available from Honeywell.

OT RESILIENCY AND RELIABILITY NOT RISKS

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As Europe's utilities adopt connected technologies and smart devices, the risk of cyber threats grows across operational systems. It's imperative that meters, networks and data management platforms uphold cybersecurity because, without encryption, tamper detection and event alarms, utilities' operational efficiency and life safety and security are extremely vulnerable.
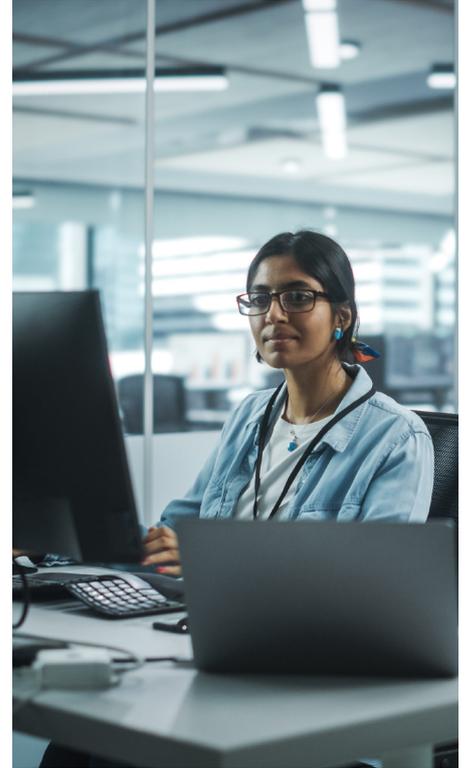
For resources to be continuously available, they must be continuously protected from threats at the meter level, across network layers and beyond. It's not a recommendation — it's regulation. Overarchingly, the European Union's Cyber Resilience Act states that manufacturers must "ensure cybersecurity throughout the lifecycle of their products."[4] For utilities, this means every asset in the value chain requires timely security updates to help manage evolving risks, especially those that threaten operational technology (OT).

OT Risks
OT cybersecurity efforts protect the physical continuity of operations by mitigating unauthorised actions at the infrastructure level.

• Tampering • Meter bypassing • Forced valve manipulation • Unauthorised property access	⏩	• Water contamination • Gas theft • Pressure spikes • Physical equipment damage and disruption

A single cyber incident immediately risks compliance with safety regulations, safe operating thresholds and costly downtime.

UTILITY ASSETS MUST ALSO COMPLY WITH THE NIS2 DIRECTIVE

This directive mandates the implementation of risk-management measures, incident reporting and compliance with minimum cybersecurity standards across public and private utilities.[5] These stricter requirements, mandatory protocols and penalties for non-compliance come at an important time; within the last two years, cyberattacks on utilities have increased by more than 200%.[6]

With deep expertise in utilities' environments, we embed protection directly into every part of utilities' operations.

Our infrastructure is specially designed and engineered to protect data, limit tampering, comply with risk-management directives and deploy the latest software and hardware upgrades so utilities can operate with greater cybersecurity. Here's how:

Smart Meters

In the field, our smart meters are hardened against cyberattacks with encrypted data storage, technologies and event alarms.

Our **S110H single-jet water meter** has tamper-proof electronic sensing of the impeller and an AES-128 data encryption.

The **Electronic Index EI6 gas meter** also supports symmetric AES-128 encryption, secures end-to-end data transmission according to the latest technological standards, and receives ongoing firmware updates.

Software

Connexo® is an advanced software solution that also includes robust security measures, protecting all phases of gas metering distribution processes while allowing gas utilities to extract the maximum value from advanced metering infrastructure.

From access, authentication and encryption protection to monitoring and reporting, Connexo's scalable cybersecurity architecture evolves as threats do, despite utilities' growing attack surfaces.

Meter Data Management

Real-time performance management and visualisation of utility assets and analytics can help reveal risks before they cause catastrophic events.

Honeywell Forge Performance+ for Utilities includes predictive maintenance to increase threat-readiness of field assets, alarms for physical manipulation and monitoring of other metrics that signal intrusion.


When assets' individual strengths, defences and compliance converge, entire networks are best positioned to maintain reliability, public trust and secured flows in an increasingly connected energy system.

ENERGY INNOVATION IN EUROPE

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> The grid's needs for future readiness and greater flexibility coincide with mandated goals. So, while gas and water aren't going anywhere as resources, they are changing to make room for additional processes and sustainability initiatives as the energy landscape becomes more dynamic.

Optimal life safety and security, operational efficiency and cyber resilience outcomes are big drivers of transformation. The European Union's climate framework is too. Because the EU aims to be climate-neutral with net-zero emissions by 2050, utilities are obligated to modernise distribution pathways and comply with environment-first initiatives. As the 2030 check-in date for this sustainability target apporaches, taking action is vital.

Honeywell's intelligent energy management technologies can help utilities gain full control of their energy strategy.
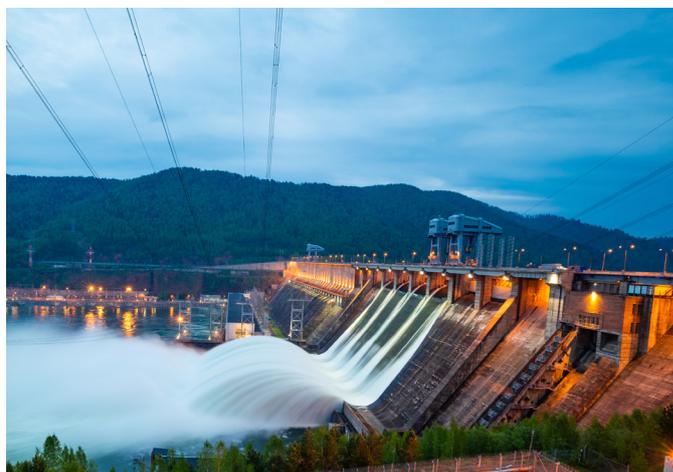
ENERGY INNOVATION ACROSS GAS UTILITIES

- Because utilities are exploring clean-combustion hydrogen and hydrogen derivatives as renewable alternatives to natural gas, new infrastructure becomes essential for integration. We have the **first-ever, commercially available, hydrogen-ready diaphragm gas meter** to support this energy transition. This meter helps provide precise measurements for the safe and efficient use of hydrogen, a key fuel for Europe's future, while connecting to existing pipelines and distribution systems — saving operational costs and adding network flexibility.

- **Honeywell Forge Performance+ for Utilities** digests meter data, displays it and uses its data-driven recommendation engine to provide actionable energy innovation insights. This unifying platform also has accurate carbon footprint calculations and analytics that help gas utilities achieve net-zero goals, identifying problem areas and mapping out next steps.

ENERGY INNOVATION ACROSS WATER UTILITIES

- Non-revenue water is an operational efficiency problem *and* an environmental challenge for water utilities, especially as water stress mounts in southern and eastern Europe. When leaks occur (the primary cause of non-revenue water), many utilities dispatch service trucks to patch or replace the affected infrastructure. Truck rolls emit a significant amount of greenhouse gases, which multiply if utility networks are comprised of manual components that prevent quick fixes and remediations.

- **Honeywell smart meters** and **Honeywell Forge Performance+ for Utilities** arm water utilities with the right information at the right time, pinpointing the precise location of inaccurate reads and suspected leaks in real time. Smart water management with advanced metering infrastructure results in fewer truck rolls, higher water efficiency and progress toward measurable targets.

CONCLUSION

The next generations of energy will be led by those who prepare for them now.

With the right partner, transformation becomes far less overwhelming and essential outcomes become far more achievable. We don't just understand your challenges; we anticipate your needs, putting the right expertise and technologies behind your operations, one meter, one platform and one network at a time. There's no guesswork, just a guided path forward that creates stronger systems, reinforces resilience at every level, readies you for tomorrow's demands and secures every flow.

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THE
FUTURE
IS
WHAT
WE
MAKE IT

—

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