AVEVA

Power growth, spark change

Revolutionizing power through industrial intelligence

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Innovate today, excel tomorrow

You've heard it before: "The power sector faces a complex set of challenges." Escalating demand, a growing appetite for sustainably sourced power, and increasing grid complexity have left many power producers and utilities searching for answers.

The sector's strategic imperative has likewise become a familiar refrain: New problems demand new tools. Yet, while power leaders widely acknowledge the need for advanced solutions and AI-powered tools, digital adoption sector-wide continues to lag behind targets.

Moreover, fresh research confirms what power insiders have known for years—the time to innovate is now. Consider these key metrics[1]:

55%	77%	23%	95%
55% of leaders lack access to reliable, real-time data and insights most or all of the time when making key business decisions	77% of organizations have yet to adopt industrial AI organization-wide	Executives report that just 23% of their workforces, on average, has self-serve access to real-time data and key insights	95% agree that their organization must deploy digital technologies to accelerate its ESG agenda

As the scope of these challenges has come into focus, calls from industry leaders for immediate, intentional innovation are growing more urgent, and their message is clear:

“The old methods will no longer suffice. To prosper tomorrow, we must innovate today. To power the future, we must spark change now.”

But, given the breakneck pace of technological innovation and shifting industry dynamics, cutting through the noise to find real solutions can be difficult and time-consuming. This ebook was created to help you do exactly that.

Read on to get a complete picture of the power sector’s current state-of-play, as well as practical solutions that are easy to understand—and easy to implement and scale for traditional power companies and emerging enterprises alike.

By the numbers: Power’s state-of-play[2]

4%

Global electricity demand increased 4.3% year-over-year (YoY) in 2024, with 4% YoY increases forecasted through 2027

3

Three main demand drivers—electrification, new data centers, industrial production—will account for additional demand growth in the next two years

100%

Renewables and low-emissions generation will likely cover the gap between supply and added demand

47%

Low-emissions technologies will account for 47% of global generation portfolios by 2027

While it can be difficult to identify the underlying causes behind these shifts, three overarching challenges highlight the industry’s dynamic landscape:

Pressure from all sides: Challenges across the power lifecycle

Whether you're in the conventional power gen. space, emerging renewables, transmission and distribution (T&D), or somewhere in between, your unique set of obstacles most likely stem from major industry-wide challenges, like:

Decarbonization and shifting regulatory targets:

ESG and sustainability mandates are growing stricter and evolving rapidly, requiring increased compliance.

Energy transition hurdles:

Increased demand, combined with outdated infrastructure, renewable intermittency, and the integration of distributed energy resources (DERs), add complexity to power capacity and grid stability initiatives.

Deploying new assets:

Scaling operations, managing data, and navigating supply chain bottlenecks pose significant challenges for established organizations and new players alike.

Fortunately, the tools you need to solve these problems not only already exist, but they've been deployed by power leaders and have been proven to deliver significant impacts. In the next section, we'll cover the key use cases behind early-adopters' successes.

Spark change now: How to drive intentional innovation

The future belongs to power producers and utilities that embrace integrated, data-driven ecosystems in which real-time insights empower proactive decision-making.

Those who invest in digitization now—driving collaboration, operational efficiency, engineering speed, and new value streams—will reap compounding benefits as the industry undergoes its transformation.

Power industry challenge	Solution	Key use case
Lack of agility	Gain global operational visibility and data-driven insights.	Digital twins, advanced AI-powered analytics, and remote monitoring optimize operations.
Asset utilization and situational awareness	Drive reliability through improved asset performance.	Reduce downtime, optimize capacity planning, minimize operational risks, and achieve safety excellence.
Engineering speed and cost	Accelerate engineering cycles to decrease costs and project timelines.	De-risk CapEx by streamlining engineering cycles and enabling collaboration and scalability.
Capacity planning and execution	Bridge CapEx and OpEx to enhance planning and execution.	Eliminate data silos, improve engineering efficiency, and seamlessly evaluate multiple scenarios to optimize sustainability and profitability.
Digital adoption	Build agility and resilience with industrial intelligence for power.	Leverage AI tools, hybrid data management, and data-driven ecosystems to improve scalability, unlock new revenue streams, empower workers, and drive secure collaboration both inside your organization and beyond.

Data in action: Powering growth across the energy value chain

Data isn't just a byproduct of operations, it's the engine driving new growth, agility, and resilience. When power organizations adopt industrial intelligence solutions at each stage of the power lifecycle, the benefits amplify one another.

Operate efficiently: By linking real-time monitoring, AI-powered advanced analytics, and predictive maintenance, you improve forecasting, information management, and asset performance.

Duke Energy

A single early-catch event, identified by its predictive analytics program, equated to cost savings of over $34M for US-based power leader Duke Energy.

Gain reliability through visibility: A unified data platform collects and aggregates operational and energy market information in real time, empowering operators to make informed decisions.

Western Energy Imbalance Market

A unified real-time data platform empowers teams across 22 different utilities with real-time operational analytics, giving them insight into where the market is driving the balancing authorities (BAs), as well as potential future misalignments.

Transform at speed and scale: A system-of-systems approach means your digital toolkit always keeps pace with your growth and lowers the burden of adoption, whether in a single plant or across a global fleet.

AGL Energy

Though AGL's generation portfolio grew from 300MW to 10,000MW in under a decade, its hybrid-cloud data management solutions ensure everyone organization-wide has the data they need when they need it.

Accelerate engineering and de-risk CapEx: Digital twins, simulation tools, and design optimization shorten project timelines, protect against cost overruns, and improve project outcomes—and form the foundation for optimal operations upon commissioning.

EDF Energy

Advanced engineering solutions allow EDF's team to collaborate on the same projects simultaneously, reducing rework, improving efficiency, and ensuring projects are delivered on time and on budget.

Unlock ecosystem value: Secure data-sharing enables seamless collaboration across stakeholders, unlocking new value streams and streamlining carbon accounting and compliance practices.

Dominion Energy

By securely sharing its energy-sourcing data with customers, the US-based power leader unlocked a new model for profitability in the connected industrial economy.

Scaling for the future: The industrial intelligence advantage

Scalable digital infrastructure isn't a luxury. It's a necessity. The ability to adapt to evolving business needs, diversifying generation portfolios, and emerging technologies sets leaders apart—and will play an outsized role in determining future competitiveness.

What defines top-tier scalable digital infrastructure?

Adaptable systems

From solar to nuclear, digital tools must accommodate the varied operational demands that systems of different ages and complexities require

Open, agnostic, scalable, & flexible

Agnostic platforms integrate seamlessly with new and existing systems, delivering unmatched scalability and fostering agility and growth

Hybrid-cloud enabled

The best of both worlds, a hybrid-cloud approach delivers all the security of on-prem data management and the flexibility, ROI, and advanced analytics capabilities of cloud-based SaaS offerings

What does industrial intelligence deliver sector-wide?

Want to power growth? Spark change.

To thrive during and after the green energy transition, power and utilities must:

1. Embrace data-driven decision-making

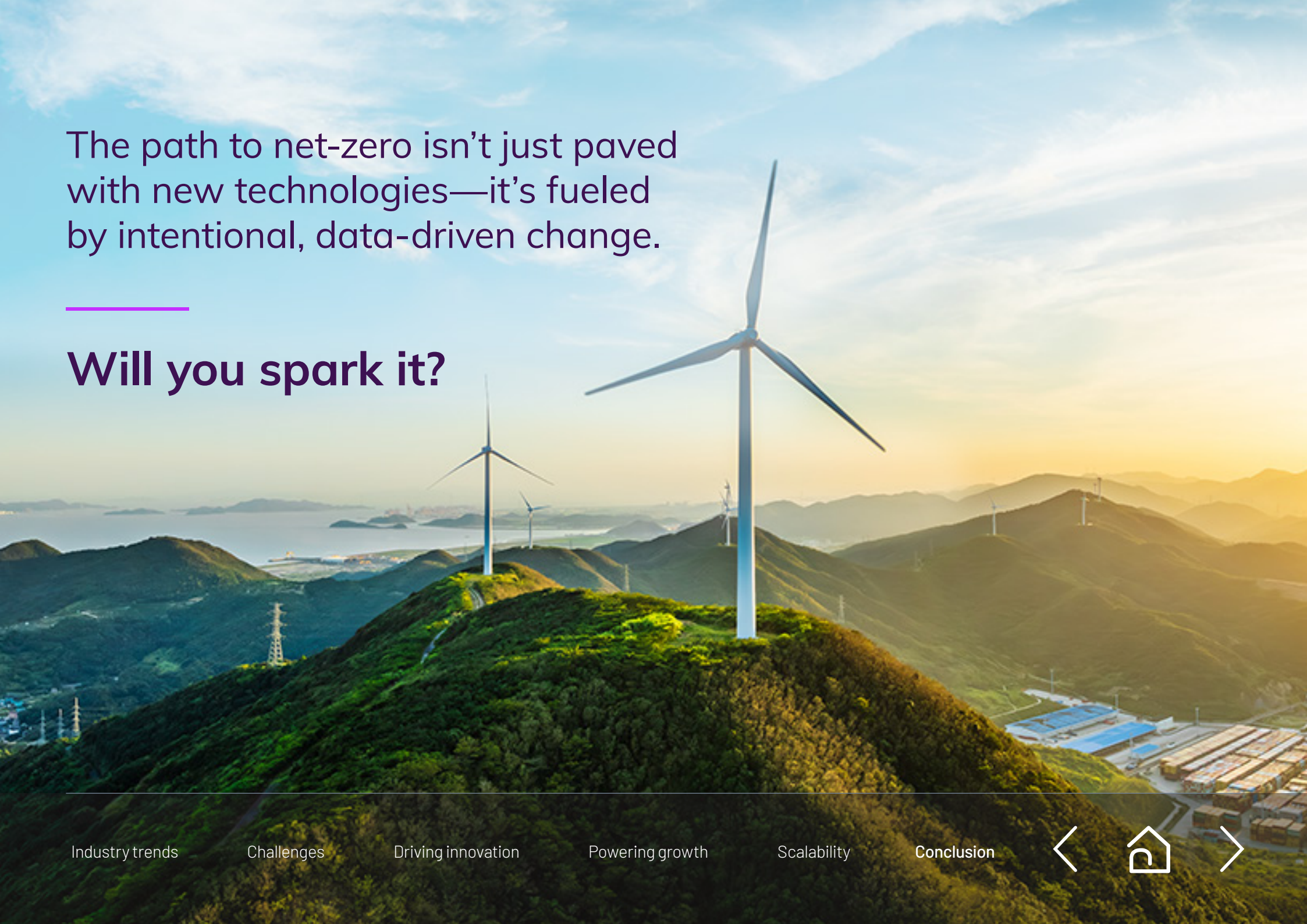
Turn insights into action for strategic advantage

2. Foster collaboration and innovation

Invest in technologies that accelerate digital transformation, build agility and resilience, and scale in tandem with your evolving business needs

3. Build resilience

Create systems capable of withstanding market volatility, security threats, and environmental challenges



The path to net-zero isn't just paved with new technologies—it's fueled by intentional, data-driven change.

Will you spark it?

References:

1. Wakefield Research. “Solving Tomorrow’s Challenges, Meeting Today’s Goals: A Look at Industrial AI in Power, Chemicals, Manufacturing, and Infrastructure.” 2024. Independent survey commissioned by AVEVA.

2. IEA. 2025 Electricity Analysis and Forecast to 2027.

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About AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA’s comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

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