

# Snam transforms to fuel change

Energy infrastructure fit for energy transition





Call for change

# Innovation to energize agility

**When it comes to energy companies, bigger has long been seen as better. After all, larger providers can be more efficient and keep consumers' costs down. But today, intelligence, powered by data and digital technologies, is proving to be more important than size. Every player in upstream, midstream and downstream will have to navigate the complex and delicate long-term transition from fossil fuels to renewables. That's why Snam, an Italian energy infrastructure company with operations in France, Austria, UK, Greece and Albania, wanted to prepare its systems, processes and infrastructure for the inevitable transition from fossil fuels to more sustainable energy options.**

With more than 32,000 kilometers of pipelines and 17 billion cubic meters storage capacity in Italy alone, Snam serves as the nation's primary transporter and balance operator of natural gas. It is also one of the largest utility companies in Europe. The vast scale of Snam's operations magnified the

challenge of building a more sustainable future. Snam's leadership sought to tackle this problem directly.

Since 2016, their vision for Snam had been clear: shift from asset management and supply security to becoming both a technological leader and an environmental steward.

To enable that vision, Snam is investing €1.4 billion in innovation and energy transition by 2023. This includes the application of new technologies to increase the sustainability of its energy network and a commitment to sustainable mobility, renewable gas, hydrogen and energy efficiency.

As demand for fossil fuels like oil and natural gas declines in favor of cleaner products, such as biomethane and hydrogen, Snam will need both agility and adaptability to deliver the right fuels to the right places in the right quantities to meet consumer demand.

With that scenario fast approaching, Snam

recognized the need to balance sustainability (specifically net-zero and trust imperatives) and environmental responsibility with financial viability. But it also needed to act on it in an intelligent manner that would benefit the business. This is easier said than done, however.

Snam looked to Accenture, with whom it has had a successful partnership for over 20 years, to help execute its vision and prepare its 3,000+ people to participate and lead in a completely new energy landscape.

In November 2019, Accenture and Snam signed a memorandum of understanding to study and assess solutions based on Internet of Things (IoT) technologies to boost innovation and sustainability of energy networks as part of the global strategic push towards an energy transition.







When tech meets human ingenuity

# A modern platform for a low-carbon future

**With resilience, optimization and sustainability as its watchwords, Snam has identified its key objectives: a 40% reduction of methane emissions by 2025, as well as a 40% reduction of CO2 emissions by 2030.**

To do this, and to prepare for the transport of new, low-carbon energy sources such as hydrogen and biomethane, Snam would have to modify and improve its hard-asset infrastructure—compressor stations, compressor unit valves and the company’s vast network of gas pipelines—and implement intelligent automation.

The lion’s share of development would, however, be in software advances, process efficiency and digitization. These changes would enable Snam to use data as an asset, transforming it into a data-

driven multi-energy company that is user-centric and sustainable, and positioning it to achieve its vision, namely becoming an industry and technology leader.

Drawing on its deep knowledge of operational processes and supporting applications for the utilities industry, Accenture helped Snam design a full digital transformation of its supply chain and operations to meet the needs of the changing energy landscape—and cement Snam’s place within it.

The first, formative step? The team identified a new architecture, based on Microsoft Azure, to build a modern data platform on the cloud as a foundation.



## When tech meets human ingenuity

There were myriad operational benefits. Chief among them is that moving to the cloud positions Snam to bolster its system management applications with artificial intelligence (AI) and machine learning (ML) tools to improve performance monitoring and management. These factors are all essential to achieving a successful energy transition in the short and long term.

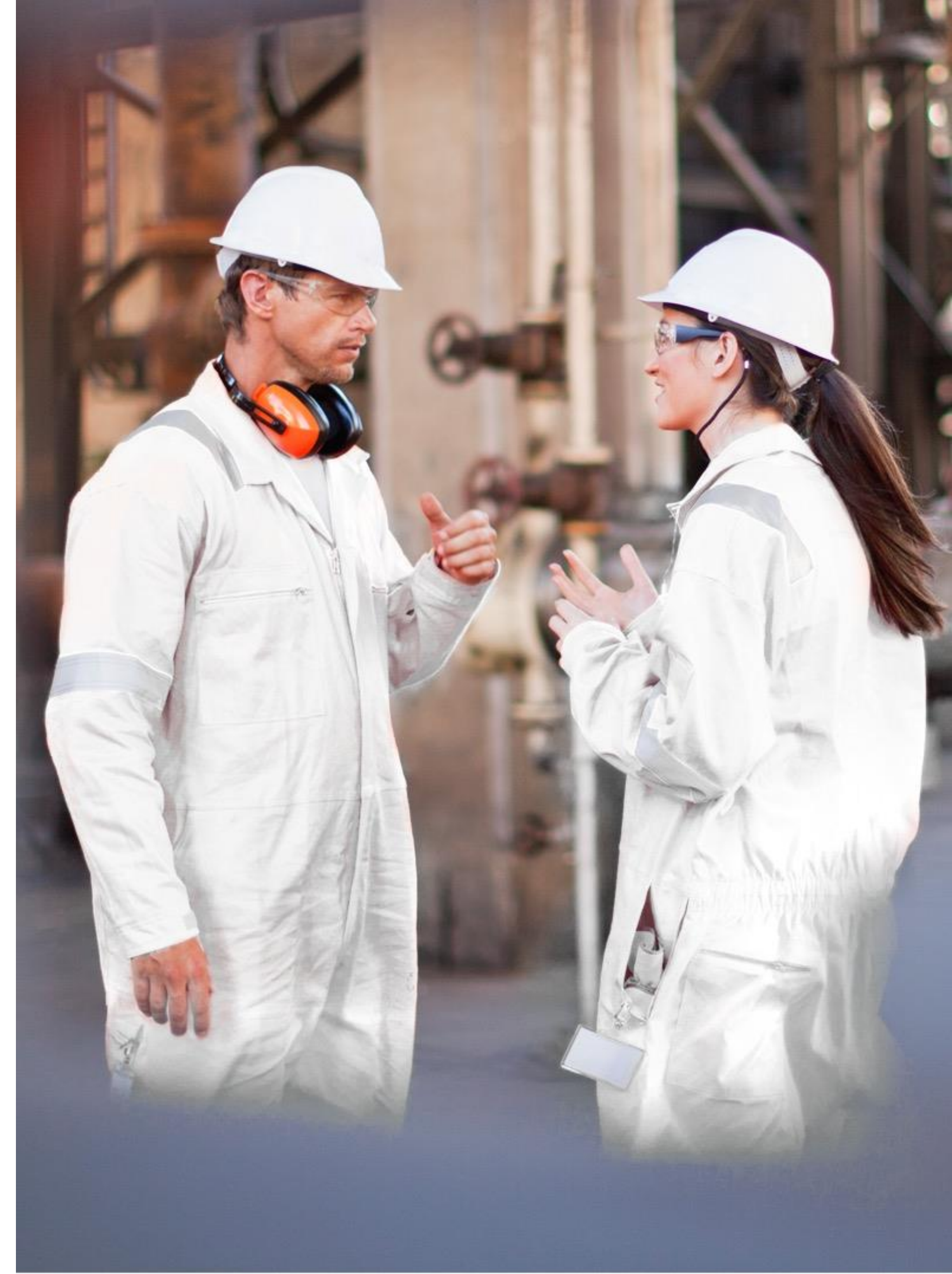
AI and ML enhance user capabilities, automatically intervening to proactively support users, identify and prevent errors, and increase efficiency. A cloud architecture provides the processing power and scalability needed by the AI/ML tools to analyze and process large amounts of data. It also enables a pay per use model, enabling cost efficiencies. To achieve this, ML algorithms developed in Python are deployed on OpenShift containerization software as microservices. Deep learning will, in the future, be used for event recognition by image analysis.

In addition, risk-based, predictive models were adapted to better anticipate energy demand, a critical function for utility operators who must plan for and balance energy demand with availability. Emerging technology from Internet of Things (IoT) sensors and edge computing enable optimization, automation and sustainability. For example, the combination of IoT sensors and edge computing enable real-time calculation of the performance of compression machines in real operating conditions, supporting the identification of possible failures. AI applied on these data sets will enable a predictive maintenance approach.

Accenture is also helping Snam establish a new ecosystem of partners with advanced and leading-edge solutions (from analytics to tailored field solutions and devices) that will support the development of a no-touch, automated environment that can be managed from the center. This will ultimately help Snam establish an intelligent system that is powered by data directly from its pipeline to manage the complexities of delivering alternative products like biomethane and hydrogen, alongside natural gas, to millions of customers.

The centerpiece of the program thus far is Snam's Advanced Control Room. This control tower puts the user at the center, and will, in the final instance, give leadership, line managers and engineers, sales and customer service personnel access to a combination of data, innovative technology and new, intelligent approaches to enable more effective business management, line operation and maintenance, and decision-making.

**The Advanced Control Room (ACR) also extends into Snam's business ecosystem, granting business customers access to advances, while simultaneously gathering their data for further refinement. In future, a portal into the ACR will be available to Snam's clients, including distribution system operators, to support processes. For Snam's customers in the shipping sector (approximately 300 customers representing over 8,000 re-delivery points) access to the portal will improve planning by providing a clear view of energy usage and demand. The ACR creates a seamless, fluid and innovative user experience.**







# Digitally powering new-energy infrastructure

**In the two years since a joint Accenture-Snam team embarked on the digital transformation, roughly 30% of the necessary new infrastructure has been put in place. This lays the foundation for end-to-end digital operations—a physical and digital foundation for the future. And it's as much about people as technology.**

The new ways of working enabled by the transformation has helped Snam begin to remove structural silos. Among other things, this has led to new protocols for gathering data to refine future operations, helping to make them more efficient and cost-effective.

With data in the cloud, AI and ML tools bolster system management applications to proactively support users, increase efficiency and anticipate energy demand. On the hardware side, upgrades to pipelines and IoT sensors on existing infrastructure will help Snam process data directly from pipelines to manage the complexities of delivering natural gas, biomethane and hydrogen to millions of customers.

All of this is run from an Advanced Control Room that gives leadership, field employees and everyone in between the ability to plan effectively, with a clear view of usage and demand.

But hardware and software improvements don't only provide impetus for innovation; they are its instruments. Lasting change is driven by a company culture designed to support that change. With this transformation effort, Snam's leadership is building a company and workforce equipped to thrive amid the changing environmental and economic realities in Italy, and across the globe. With this transition, Snam is quickly becoming an agile, forward-thinking and data-centric company—the kind that will be able to anticipate customer needs for decades to come.

As Accenture continues its partnership with Snam, new use cases continue to emerge. Each one helps Snam evolve with the times, and also better positions the company to shape the future of Europe's energy infrastructure—rather than race to adapt to it.



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