



Our New World of Energy

Life Is On



At Schneider Electric, our mission is to serve our customers by developing innovative products and solutions that simplify the lives of those who use them. We bring together our expertise and solutions to drive new possibilities for efficiency and savings.

As the global specialist in energy management and automation, we are committed to worldwide improvement in connectivity, sustainability, efficiency, and reliability and safety in five primary areas: [in our homes](#), [in our cities](#), [in our industries](#), [in our buildings](#), and [in the cloud](#).

Life Is On!

The change in our world is more profound than ever. New technologies, enabling for the first time distributed and connected energy, challenge us to redefine the way we live our lives.

To meet these changes, we invent technologies that will transform the places where we live, work, and play. With our ingenious design philosophy, we deliver solutions that integrate seamlessly into our environment, supporting the rhythm of our lives and empowering people to do more with less.

Our intent is to make sure **Life Is On for everyone, everywhere and at every moment** with our technology.

Life Is On today because energy is on. And life gets richer and more sustainable tomorrow if energy gets safer, more reliable, and more efficient. When energy is on, people everywhere develop a passion to make a difference. We get the energy to tackle the toughest challenges, energy to turn the best technologies into innovation, and energy to deliver the best for our customers



Access to energy

We believe that access to energy is a basic human right. We want everyone on our planet to have access to safe, reliable, efficient, and sustainable energy.

But today about 1.1 billion people have no access to modern energy. What those of us in the developed world take for granted at the push of a button is unavailable to almost 1 out of every 5 people on the planet. Another billion have only an unreliable and intermittent supply. Virtually everyone without access to modern energy is poor, earning less than \$2 per day.



[Access to energy](#) is transformational. Electricity reduces poverty, improves health (especially for women and children), increases productivity, enhances educational opportunities, improves the standard of living, and promotes environmental sustainability.

“Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive.”

—UN Secretary-General Ban Ki-moon

Three mega-trends sweeping the globe

We all know that there is a rise in energy demand — in fact, it will double in the next 40 years. Three global mega-trends are provoking this increase in demand: **urbanization**, **digitization**, and **industrialization**. But these trends also present us with new opportunities to realize energy efficiencies.

Urbanization By 2050, the world’s cities will be home to an additional 2.5 billion people, 66% of the global population. Imagine the stress on infrastructure, on transportation, on public services. The number of cities with a population of more than 10 million has grown from 10 in 1990 to 28 today and will hit 41 in 2030. Cities need to look into new ways of achieving efficiencies — especially energy efficiency. To be a livable city, you have to be energy efficient.



Digitization is pervasive — in our homes, in our buildings, in the cloud, and in our industries. There will be 50 billion more connected devices and “things” in the next 5 years. According to IDC, we generated some 1.8 zettabytes (1.8 trillion gigabytes) of data in 2011 — enough data to fill 57.5 billion 32GB Apple iPads. It is

predicted that in 2020 we will generate more than 20 times as much data (40 zettabytes). This implies a continuing rise in energy demand, presenting us with an unprecedented obligation to seize efficiency opportunities.

Industrialization Industries account for one-third of the total world energy consumption. This global industrial energy use is projected to double by 2050 in the absence of any new policy measures. Even with the ambitious emissions reduction policy changes, the International Energy Agency estimates that we will still see an increase by at least 50% by 2050.



The energy paradox

So, we have an energy paradox. On one hand, energy demand will almost double in the next 40 years — stemming from the twin challenges of access to energy and the mega-trends of Urbanization, Digitization, and Industrialization. However, at the same time, we have to reduce CO₂ emission by half to avoid significant irreversible damage to our planet. The way we currently manage energy is unsustainable. All government and scientific institutions agree: the choices we make today about energy affect our climate and will impact future generations forever.

Therefore, we have to become 3 times more efficient.



The emerging efficiency potential

Our world is becoming **more electric**. Almost everything we interact with today is either already electric or becoming electric. From the time you start your day in the morning to the time you finish at night, almost everything is electric — your home, your car, your work, your devices, your entertainment. The rising demand for electricity — in particular, buildings, industry, intelligent devices, and even transportation — demands proven energy management approaches.

Our lives are also becoming **more connected**. The Internet has already transformed the way we live, work, and play. Now the Internet of Things is going to take this to a brand-new level: 50 billion things connected in the next 5 years. Connectivity is transforming our world. Connectivity refers to machine-to-machine (M2M), people-to-people (P2P), and people-to-machines (P2M). Sensors and embedded electronics in machines enable new operational intelligence from data uncovered. This, in turn, will drive vast efficiency opportunities.

With such a widespread electrification and connectivity, energy models need rethinking as well. Which is why the generation of power needs to be **more distributed** and closer to users. Distributed energy is rapidly evolving globally. This is driven by new capabilities to provide local energy to facilities, particularly around positive or renewable energy and micro grids.



When our world is more electric, more connected, and more distributed, new opportunities emerge that allow us to realize more efficiency — [in our cities](#), [in our industries](#), [in our buildings](#), [in the cloud](#), and even [in our homes](#).

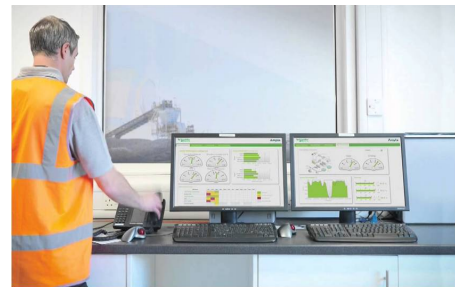
However, **two-thirds of the energy efficiency potential remains untapped.**

Unlocking energy efficiencies

Schneider Electric is uniquely positioned to make the demand for and consumption of energy more efficient. This is the basis of our innovation in energy management and automation. In particular, two transformational developments are driving the new opportunities and advances in energy efficiency:

- the convergence of Operational Technology (OT) and Information Technology (IT), driven by the Internet of Things (IoT)
- the progression toward a more distributed energy model, enabled by today's Smart Grid technology

Traditionally, IT managed information for humans, and OT managed data for machines. But this paradigm is undergoing a radical change as OT systems now are connected to the same networks as IT resources. The [operational intelligence](#) that allows IoT devices to communicate in a bidirectional fashion makes possible “active energy efficiency.” Active energy efficiency leverages connected “smart” technology to automatically measure, monitor, and control energy consumption and demand. (This is different from “passive” energy efficiency” efforts — LED light bulbs, building insulation, low-energy appliances, etc. — which are basically countermeasures to mitigate energy loss.) It is this aspect of automated control that is critical to achieving maximum efficiency.



A prerequisite to extracting optimal efficiency is the coming together of energy, automation and software & analytics. This makes the energy value chain more intelligent — more predictable. Adding IoT connectivity to automation and software & analytics drives even greater energy and process optimization.

EcoStruxure™: Integrated intelligent energy management architecture

Schneider Electric's active energy management architecture — EcoStruxure — integrates energy, automation, and software to drive greater energy and process optimization, from power plant to plug.

EcoStruxure is not a product but rather an approach that creates intelligent energy management systems. By converging management of power, process and machines, IT, buildings, and security, it acts as a solution ecosystem that takes multiple, silo'ed systems and adapts them to an integrated solution. EcoStruxure has been designed from the ground up to enable customers to measure, control, and manage energy use across the entire enterprise — data centers, industrial plants, buildings — with guaranteed compatibility.

Leveraging open standards across both Schneider Electric and third-party products, the EcoStruxure integrated system architecture is scalable and can be applied to both retrofits and new construction. Customers have reported up to 30% savings on capital expenditures (CapEx) and operational expenditures (OpEx).

StruxureWare™:

StruxureWare is, essentially, Schneider Electric's platform of integrated software applications and suites that help our customers maximize business performance. It is an integral part of EcoStruxure with solutions for segments such as Buildings, Plants, and Data Centers.

StruxureWare empowers our customers in three ways – it allows them to **control** their facilities and processes better; it allows them to **operate** more efficiently by optimizing operations and assets; and it allows them to **manage** their enterprise better by conserving resources.

We are specialists in Operational Technology. We have built a whole platform that extracts deep [Operational Intelligence](#) and feeds the Enterprise Information Systems with real-time actionable insights. We also leverage this integration to drive specific applications and end-to-end solutions for whole vertical segments. We have a vast software suite, called StruxureWare.

With IT-OT working together, users experience far better efficiency.

Empowering distributed energy resources

Traditionally, we have addressed the energy equation from the supply side— adjusting the amount of electricity generated to ensure that supply matches demand. But depending solely on supply-side solutions will not allow us to meet our obligations to reduce our carbon emissions and reduce energy consumption. And in our new energy world, we are better able to address the problem from the other side — from the demand side, from the perspective of the energy user.

The old world of energy is going through a massive transformation: from a centralized, one-way, supply-side-oriented grid designed for answering peak demand to a distributed, two-way, demand-side-oriented model where consumers are empowered to take a more active role in their energy decisions.

This paradigm shift literally gives “power to the people.” Electricity is increasingly distributed and connected, and flow is bi-directional between smart supply and smart demand.

Made possible by Smart Grid technologies, the emerging new world of distributed energy offers enormous potential to boost efficiency and reduce CO₂ emissions. Grid automation and a more flexible distribution model enable a more responsive network that allows consumers to realize their active energy efficiency savings. Microgrids and distributed energy resources (DER) — small-scale renewable energy sources and energy storage — allow consumers to produce their own energy and shift to a greener energy mix. The costs of both solar and storage have dropping by a factor of 5 in the past few years. And analysts expect the renewable sector to account for up to 50% of new capacity additions by 2030.



Schneider Electric: Connected from Plant to Plug

All across the new world of energy's value chain we are seeing an increasing level of IT-OT convergence, the Internet of Things, and operational intelligence. It is the integration of Smart Grids, Distributed Generation, and Efficient Demand that drives this new distributed and connected ecosystem from plant to plug.

Schneider Electric shares its expertise in energy management, industrial automation, and process efficiency to help customers connect to an always-on world. The evolution of technologies, through software and the Internet of Things, is creating new opportunities to render more efficient the overall energy chain through which systems operate. By enhancing existing operational technologies with a layer of interconnected intelligence, our solutions harness the ecosystem of new connection points to deliver business performance improvements: uptime is more efficient; processes simpler and safer; businesses more reliable and predictable.

Without question, urbanization, digitization, and industrialization enrich our lives. Yet we know that each trend is escalating energy and resource consumption worldwide. From the enrichment of the energy value chain to the modernization of industrial technologies, the principle of business growth must be balanced with an equal effort to reduce carbon emissions. Schneider Electric products are designed to embrace our philosophy of "green premium". A green premium product allows our customer to calculate carbon footprint, anticipate and ensure full regulation compliance, and reduce the end-of-life cost of installation by optimizing recyclability.



From the simplest of switches to the most complex operational ecosystems, the core of our connected products and solutions is quality, reliability and safety, and efficiency. Our industrial expertise has allowed us to develop a portfolio that goes beyond industry standards. We make things work. While remaining true to our fundamentals of energy and automation, we've added new capabilities with software and connectivity to help industries, enterprises, and cities to maintain operational uptime.



Efficiency is in our DNA. Our expertise in sustainable energy management, industrial automation, and software and services allows us to integrate and connect operational technologies in ways not possible just a few years ago. The result? We are delivering better energy and process efficiency [in our cities](#), [in our industries](#), [in our buildings](#), [in the cloud](#), and [in our homes](#).