than 10 million. By 2030, it is predicted that there will be 43 megacities, and the global population will surge to 8.6 billion.

As they expand, cities are in need of smarter, more eco-efficient technologies. In providing them with digital sensors, devices, solutions and services that enable them to run in cleaner and more sustainable ways, ABB has become a partner of choice for cities around the world.

One of the ways that we are helping cities to become more sustainable is through our ABB Ability™-branded digital offering, which supports smart buildings with integrated solutions that achieve energy efficiency and cut electric consumption and costs in industrial, commercial and residential environments. When fully implemented, these solutions typically deliver a 30 percent reduction in energy costs for heating, lighting and appliances. For example, ABB's energy-efficient motors and drives can radically enhance the performance of the heating, ventilation and air conditioning systems used for heating and cooling, reducing energy consumption by up to 50 percent.

For smart homes, our offering is centered on the ABB-free@home® platform. This complete automation platform enables occupants to centrally manage power consumption and cut costs. With up to 60 functions, ABB-free@home® can integrate up to 150 devices per system. Via a touch control panel, smartphone or wall-mounted switch and motion sensors, one can control everything from blinds, heating and air conditioning, to door communication and lighting.

Critically, this system is flexible. It can be easily integrated not only with ABB's video door entry system, but also with third-party products and services, such as smart home appliances, smart lighting systems, door entry systems, home entertainment devices and cloud-based voice services, not to mention a variety of solar-thermal and photovoltaic energy systems. This smart home solution leverages the Microsoft Azure cloud computing platform.

For smart buildings, ABB's offering is based on the widely used KNX open standard. Our ABB i-bus® KNX system gives occupants and building managers the ability to control lights, window shades and heating/cooling systems for improved temperature management and to program strategies that will optimize a building's energy demand and deliver maximum levels of comfort and safety.

ABB research and development paves the way for cities and industries of the future to become more sustainable, efficient, productive, cleaner, safer, resilient and less resource intensive.

Bazmi Husain – Chief Technology Officer

ABB technology is also being deployed in support of the Netherlands 2019 National Climate Agreement, in which the Dutch government committed to sustainably transforming the Netherlands' existing built environment and adapting the country's 7 million homes and 1 million buildings so that they are all well insulated and use or even generate clean energy. ABB is working together with Factory Zero, a company that builds homes that incur zero energy bills, to help the country create some of the 1.5 million zero-emission homes the Netherlands aims to construct by 2030.

Each of the new structures will use one of our smart energy management modules (SEMs) to coordinate and balance their energy demand and use, controlling a heat pump, ventilation and an ABB solar panel converter and reading energy meters. Energy generated by a home's solar panels and heat pump is monitored, kept within the home and optimally adjusted to consumption. This innovative solution uses data generation and visualization to provide residents with insights into their energy consumption. By continuously measuring and adjusting the amount of energy consumed by a home, SEMs reduce energy costs.

Smart mobility

In an effort to be more sustainable, cities today are looking for ways to get polluting internal combustion engines off the streets without disrupting the daily flow of people and goods. Going forward, e-mobility is the clear, clean choice. That is why ABB is active across the entire e-mobility value chain, offering a complete range of solutions for the electrification of buses, commercial vehicles, trucks, autonomous vehicles, automobiles, ships and railways. We have rapidly become a world leader in fast charging solutions, which are increasingly in demand as urban areas shift away from fossil fuels.

According to the International Energy Agency, the number of electric and plug-in hybrid electric cars on the road reached 5.6 million at the beginning of 2019 and is expected to rise to 125 million by 2030. ABB is supporting this trend in sustainable mobility by providing not only electric vehicle (EV) charging stations, but also critical EV charging network components, such as substations, energy storage systems and eco-friendly switchgear. These technologies are designed so that EV charging stations, once erected, will be both future-proof and scalable.

Case study
Electric fast chargers in Gothenburg, Sweden

Read more

One of the EV solutions developed by ABB is the DC 50 kW Terra 54 fast-charging station, which provides charging on the go for the most common battery sizes within 30 to 45 minutes. The ABB Terra uses open standards to enable connectivity, remote monitoring and remote assistance functions via an ABB Ability™ solution, reliably connecting public EV charging stations to the power grid. Around 13,000 ABB fast chargers have now been sold in more than 80 countries, making ABB a global leader in DC fast-charging technologies.

ABB's Terra HP 350 kW next-generation fast chargers provide a more powerful solution, capable of adding 200 kilometers of range to an electric car in just eight minutes. ABB has already installed 200 of these units for Electrify America, the largest EV infrastructure project to date in the United States. In many other countries, including Germany, Switzerland and Iceland, ABB is the key technology supplier for sustainable mobility infrastructure.

ABB has also been selected as the main technology partner and supplier of fast-charging systems by IONITY, a consortium of major automakers that has opened 202 fast-charging stations across 18 European countries since 2018. Fastned, a Dutch startup that aims to create a European network of 1,000 fast-charging stations, also uses the Terra series of fast chargers, which run on the ABB Ability™ Connected Services Platform. This platform employs Microsoft Azure's cloud services to enhance uptime, scalability and speed of development, as well as to provide real-time remote support services.

For mass transit, ABB offers solutions for the electrification of buses. And for the electrification of railways, ABB supports sustainable mobility with power and automation technologies for customers ranging from train manufacturers to rail operators. We design, engineer and commission solutions to deliver safe, reliable and cost-effective rail freight and passenger transportation solutions. Our product offering includes traction transformers, motors and converters to move vehicles quickly and reliably. This includes leading integrated and collaborative digital solutions with ABB Ability™.

To further enhance our portfolio of EV charging solutions, ABB has invested some $10 million in a new e-mobility research and development facility in Delft, Netherlands, which opened mid-2019. The center focuses on EV charger interoperability and also incorporates large testing areas to accelerate the development of charging solutions for the rapidly growing electric bus segment.

Sustainable infrastructure

ABB contributes directly to the achievement of SDG 9 by developing advanced products, solutions and services that are changing the way facilities and systems deliver essential services to towns, cities and industries.

Since infrastructure comprises the foundation of any properly functioning city, we believe our SDG 9-related products, solutions and services are vital to the success of smart city initiatives. Indeed, ABB technology and leadership are behind many of the major projects that keep our cities and nations running. In cities around the world, ABB's sensors and systems provide real-time information and control for utilities and transport systems, enabling them to save energy, reduce losses of water and power and enhance management processes. And ABB's measuring and detection technology enables city managers to closely monitor and react to dangerous spikes in emissions.