

Building Sustainable Cities



GE imagination at work

The 21st century has brought with it major economic, social and environmental challenges for cities from population growth to climate change. By 2050, over two-thirds of the world's population will live in cities, placing an increased strain on resources and infrastructure. Europe's cities are facing the additional challenge of meeting the European Union's environmental targets. Their successful implementation will depend on the ability of Europe's cities and regions to deliver local solutions to the global problem of climate change.

Governments and local authorities are, therefore, seeking ways to better manage the services they provide to their citizens, whether it is improved healthcare, more efficient electricity distribution from diverse sources, effective water management schemes, better transportation or more efficient public lighting.

As cities face increasingly complex challenges, we at GE remain committed to working with our partners, customers and regulators to help them deal with their cities' issues in sustainable ways. Our technologies can help city planners to ensure that city infrastructure and development respond to the needs of citizens today, while enabling cities to achieve their long-term environmental goals such as reducing carbon emissions.

Our ecomagination strategy reflects GE's commitment to invest in innovative solutions to environmental challenges and deliver energy-efficient products and services to our customers. We are working closely with many European towns and cities on sustainable development and infrastructure modernisation. Many of them have already implemented solutions that are delivering tangible benefits for their citizens e.g. reduced utility bills.

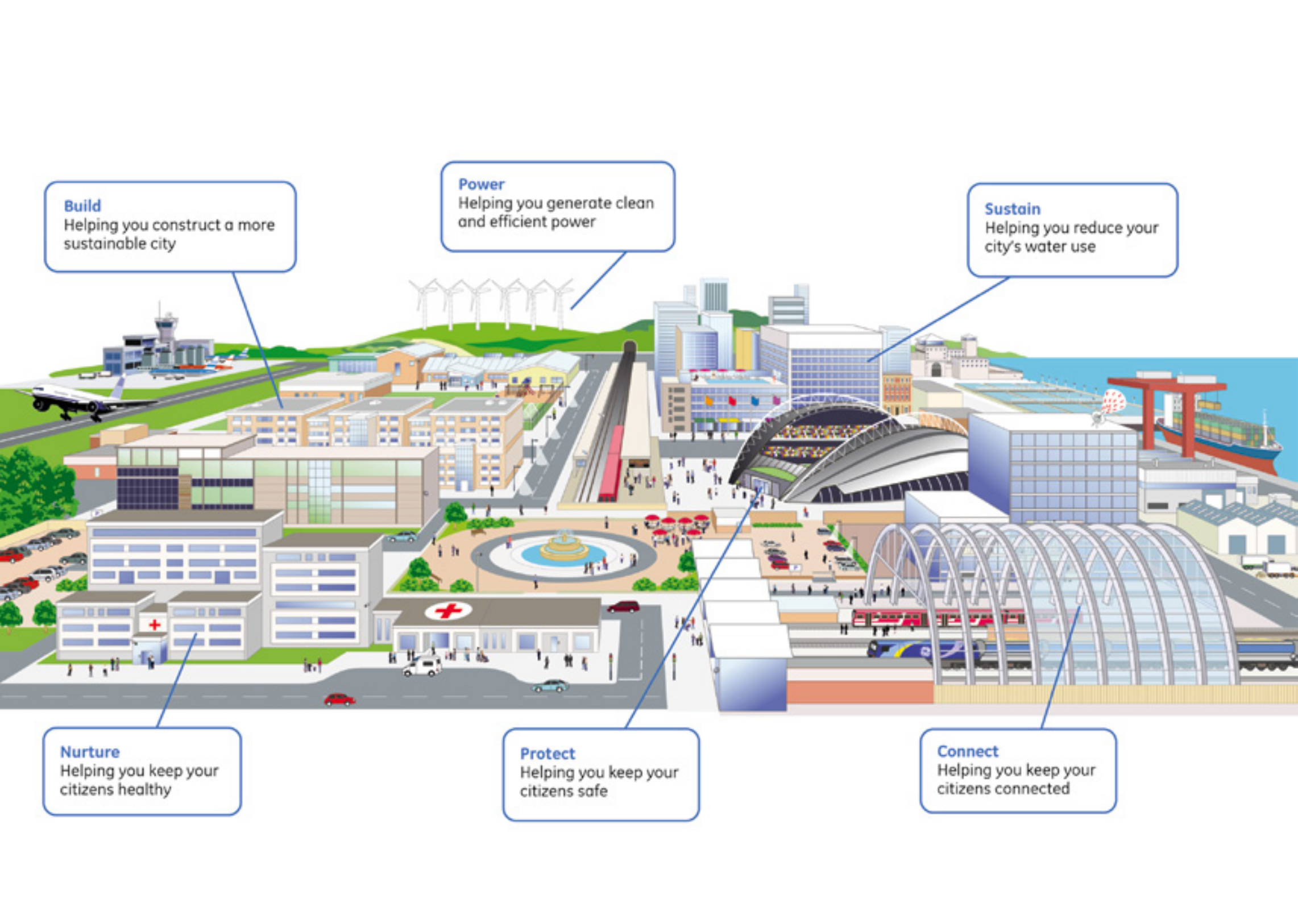
Taking on another of the world's toughest challenges, healthymagination, GE's commitment to making sustainable health a reality, will deliver dramatic new investments towards a healthier population. It will apply our technology and innovation to bring high-quality care at lower cost to more people throughout the world.

Since our founder, Thomas Edison, invented the light bulb, GE has been setting standards in innovation, and this drive for excellence remains a top priority today. From hospitals and commercial offices, to transportation, power generation and water treatment, GE supports cities - and the people who live in them - in creative, efficient and sustainable ways.



Jeffrey R. Immelt

Chairman of the Board and Chief Executive Officer



Build
Helping you construct a more sustainable city

Power
Helping you generate clean and efficient power

Sustain
Helping you reduce your city's water use

Nurture
Helping you keep your citizens healthy

Protect
Helping you keep your citizens safe

Connect
Helping you keep your citizens connected

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Build

Buildings are responsible for 40% of Europe's total CO₂ emissions, according to the European Union (EU). The significant potential for improvement in this sector has led to new EU energy performance standards for buildings. These factors, combined with the 20% CO₂ reduction target by 2020 and rising energy prices, mean that local authorities, city planners, architects and property owners are searching for solutions to improve the efficiency of city buildings and reduce their overall utility bills.

From lighting to power, GE has technology that can help cities improve the energy performance of buildings. From refurbishing an existing building to planning a new one, GE's solutions can help create smarter, more efficient and sustainable buildings that will reduce costs and contribute to the 2020 targets.

GE believes that the time to start building sustainable cities is now, cities where emissions reduction and highly efficient infrastructure are top priorities. So whether it's refurbishing a hospital or building a stadium, GE can help.



Preserve the
for future gene



Build more sustainable
hospitals

past
rations



Achieve significant
energy savings
by retrofitting
old buildings

Saving our heritage with modern technology

The Society for the Protection of Ancient Buildings (SPAB) in the UK aims to improve the energy efficiency of old buildings in a way that is compatible with holistic conservation. To help SPAB achieve this goal, GE equipped its headquarters in London with a remote monitoring system (the Protimeter HygroTrac™), which consists of small wireless sensors placed in each room that send data on the

environmental conditions of the building, specifically the relative humidity, temperature and moisture levels. In addition, this technology allows owners and users to access the environmental data from anywhere via the Internet. This means they can be informed about potential problems before any serious damage or deterioration can occur, helping to preserve the building for future generations.

A brighter future: School illumination programme in Hungary

GE offered its expertise when the Hungarian Ministry of Education announced that it wanted to upgrade the lighting systems in all of its educational institutes. Working together, GE helped the Ministry achieve brighter classrooms by installing light fixtures and lamps with reduced energy consumption and maintenance costs without any additional state financing. All of the project funding came from the energy savings made

by upgrading the current system. The entire heating and lighting project is expected to save the Hungarian Ministry of Education \$310 million (€210 million) throughout the duration of the programme.

GE's Energy Star® Compact Fluorescent Lamps, High Efficiency Halogen Lamps and High Efficiency Linear Fluorescent Lamps are all ecomagination certified.

GE and international hospital group Asklepios - Setting standards in healthcare

GE and Asklepios have been working together on an innovative concept for the sustainable construction and operation of hospitals. We have adopted a multi-dimensional approach where complex medical procedures and the various demands of a hospital are considered in the early planning stages. The architectural design and building technology incorporates intelligent energy and lighting solutions based on the principles of efficiency, conservation

and patient well-being. The design also considers natural ventilation, including plans for water purification and minimising waste. GE is in a position to provide the most innovative solutions at every stage of planning which, in addition to ecological and economical advantages, ensure the well-being of the patients and hospital personnel. Asklepios Group is responsible for more than 90 facilities in Germany, Europe and the US.

Power

In 2008, the European Environment Agency stated that “more than 80% of total greenhouse gas emissions in the EU are caused by energy production, energy use by industry, services and households, and transport.” Therefore, it is very important that Member States review their power generation as well as their energy consumption, with a view to emissions reduction, especially where increased demand for electricity is concerned.

As cities develop their energy infrastructure to produce more and emit less, GE’s diverse energy technology portfolio can help them to achieve these goals. From cogeneration to waste-to-energy solutions and renewable energy to smart grids, GE’s technology can solve the power and distribution needs of cities.

GE understands that sustainable cities will no longer be serviced by remote carbon-based power plants. We need integrated, intelligent systems that will efficiently utilise power from diverse sources and distribute electricity to the highest efficiency standards. So whether it’s updating the grid infrastructure or powering a building, GE can help.



Discover
neutral



Use your waste
to generate electricity



Reduce primary energy
usage by up to 35%



carbon
energy

Biomass in France

GE designs and manufactures a complete line of steam turbines for mechanical and generator drive applications. Fourteen biomass plants in France already use our technology to produce enough electricity to power 325,000 French households. This process is fed

by steam generated from renewable resources like wood, straw, bagasse, etc. GE is also involved in the current development of new biomass plants as part of a government initiative that plans to add an additional 550 megawatts over the next three years.

Waste to watts: Powering the future

GE has been involved in the development of a new landfill project in Montalbán de Córdoba, Spain. The installation is equipped with two Jenbacher landfill gas-to-power engines and is an excellent example of the waste-to-energy concept. The gas that escapes into the atmosphere as a result of the decomposition of solid urban waste – also known as biogas – is used to produce electricity. This plant will

power 6,000 local households through environmentally sustainable energy generation while helping to reduce greenhouse gas emissions by an amount equivalent to the annual emissions of 48,600 cars.

Jenbacher landfill gas-to-power engines are ecomagination certified.

Greening the grid in Poland

GE has supplied wind turbine technology for two wind farms in northern Poland that will add a total of 58.5 megawatts of wind power capacity to the country's electricity grid. Wind Farm Kisielice, near the city of Grudziadz, consists of 27 GE 1.5 megawatt wind turbines and, in terms of the number of installed

turbines, is Poland's biggest wind energy project to date. Wind Farm Malbork includes 12 of GE's 1.5 megawatt machines. GE also provided installation, commissioning and maintenance services for both projects.

GE's 1.5 megawatt wind turbines are ecomagination certified.

Harness the wind
to generate energy

GE cogeneration reducing operating costs in France

The Gonfreville combined heat and power plant is located close to Total's refinery in Normandy, which needs to process constant steam. The old conventional boilers inside the facility have been replaced with a modern combined-cycle plant. This has reduced operating costs and CO₂ emissions, as cogeneration typically achieves 25-35% reduction

of primary energy usage compared with separate electricity-only generation and heat-only boilers. All electricity produced in the new plant flows to the national grid. The power plant is capable of producing 125 megawatts and depending on working conditions is above 70% thermally efficient.

Sustain

As cities and their populations grow, so does the demand for water. Water demand already exceeds supply in many parts of the world. The United Nations predicts that by 2030 half of the world's population will experience severe water shortages.* In Europe, energy production, irrigation, industry and public supply are key drivers behind this growing demand. In addition, outdated infrastructure is contributing to substantial water losses (over 40% in some areas**) and many cities do not take advantage of their biggest resource – wastewater.

Technology from GE can help a city reduce its environmental impact by providing solutions that will reduce fresh water consumption as well as wastewater discharge. Whether it's self-sustaining waste-to-value systems or desalination plants, GE can help cities find the right solution to reduce water usage.

GE understands that cities need sustainable solutions that are economically viable. GE's water solutions make it possible to minimise exposure to water scarcity, and help reduce consumption and costs. Whatever a city's water needs, GE can help.

* United Nations World Water Assessment Programme, 2009, *Water in a Changing World*, United Kingdom, UNESCO Publishing.

** European Environment Agency, 2009, *Water resources Across Europe – confronting water scarcity and drought*, Denmark, Office for Official Publications of The European Communities.



Rejuvenate degraded ecosystems



Reuse water

GE technology restores health of German waterway

When Germany's Environment Minister agreed to improve water quality in the Nordkanal, German water management company, Erftverband, turned to GE's advanced ZeeWeed® Membrane Bioreactor (MBR) for help. A growing population in the city of Kaarst was hindering the ability of its 30-year old wastewater plant to consistently meet discharge standards and

its effluent was polluting the Nordkanal. The plant installed GE's MBR technology, which has significantly improved the environmental, public health and water quality in the canal. The plant's effluent now consistently exceeds the Bathing Water Quality Standard.

GE's Zeeweed MBR technology is ecomagination certified.

Wastewater: An abundant resource

Resources are significantly strained in the coastal town of Benidorm in Spain during the tourist season. To cope with the added demands on its limited water resources, the regional government of Valencia decided to upgrade the Benidorm wastewater treatment plant with GE water reuse technology. GE's ZeeWeed ultrafiltration membranes produce high

quality treated effluent for a reverse osmosis system. This sustainable new source of recycled water is used for irrigation and reduces demand on the potable water needed by residents and visitors.

GE's Zeeweed ultrafiltration technology is ecomagination certified.

Companies conserve scarce municipal water supplies

With its low-lying coastal geography, the Netherlands has long needed to carefully manage its water resources. GE and DuPont partnered to find a way to reduce water usage in DuPont's Fluoroproduct plant at Dordrecht. A specialised GE chemical treatment program with Spectrus™ OX1272 enabled DuPont to begin using water from an onsite groundwater

remediation plant for its cooling towers, rather than discharging the treated effluent to the Merwede River. This allowed the plant to reduce its municipal water usage by 265,000 m³ each year, equivalent to the amount of water used annually by about 5,000 Dutch residents.

GE Fanuc technology is also used in numerous water treatment and desalination plants to control and monitor processes in order to ensure water quality, safety and compliance.

Take advantage
of city wastewater

to reduce costs

Connect

An increasing number of European cities are suffering from congestion, noise, traffic, accidents and pollution – in fact urban traffic accounts for one-tenth of all EU CO₂ emissions.* The big challenge for city officials is to balance environmental and cost factors with the need to transport people and goods locally and internationally, both quickly and safely.

This requires robust transportation infrastructure and GE has just the technology. Signalling technology and smart software can help update existing city infrastructure, while new trains and security systems can help improve urban mobility and create the fast, safe, economical transportation system that modern cities need.

GE understands that sustainable cities must have a transportation system that operates efficiently. So whether upgrades are needed to the metro signalling system, or the cargo inspection and safety facilities for air and rail transport, GE can help.

* Euractiv, 2009, *Urban Transport*.



Create a
public tra



Ensure the mobility of citizens

more secure transport system



Optimise city transport links

Moving people and goods safely and efficiently in Europe

In the Netherlands, GE will modernise the Rotterdam Metro's signalling and communications system - more than 55 km of double track, 48 stations and two main lines serving over 88 million passengers annually - with a complete, cost-effective solution, upgrading equipment to increase efficiency and ensure continued passenger safety.

In Italy, GE will design and install an automatic train protection system for Trenitalia's diesel fleet. By continuously monitoring train speed, GE's solution will guarantee that the maximum speed limit is not surpassed, increasing safety while enabling maximum safe traffic density.

Connecting Barcelona

When Transports Metropolitans de Barcelona (TMB) wanted to improve urban mobility, they partnered with GE to implement automation solutions. The status information of all escalators, elevators, ventilation and lighting in the Barcelona metro is routed to a central control room for real-time monitoring. This ensures that any breakdowns are detected immediately, significantly reducing downtime.

Simultaneously, GE equipped the Barcelona metro network with its fire detection and alarm system. This can be operated both by local station personal and remotely from the TMB central control room. High-risk areas below ground, like lifts and escalators were equipped with special sensing systems featuring high sensitivity smoke detection providing safe public transportation for its 1.1 million daily passengers.

GE lighting the way in Madrid

In Madrid, the M30, the inner ring road of the city, has been the focus of a major urban renewal project. Forty-three kilometres of tunnels were dug and parts of the motorway were redirected underground to improve connections and transportation. This also meant that Madrid could recover the environmental areas surrounding the old M30, and clean up the

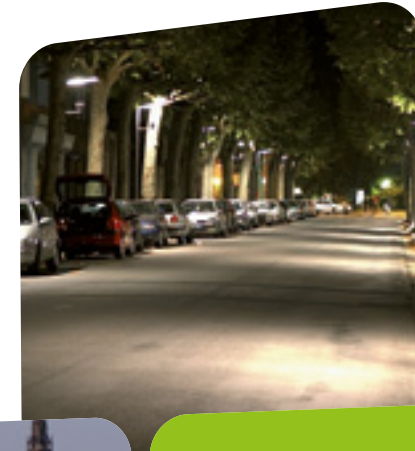
Manzanares River. For their lighting needs, city officials turned to GE. We provided the tunnel's emergency lighting and also reinforcement lighting at the entrances and exits. The installations are extremely reliable and low maintenance. In addition, the human eye responds faster to these white light bulbs thus reducing reaction times and improving driver safety.

Protect

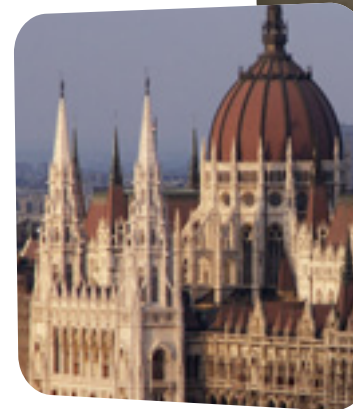
The safety of a city's population is of utmost importance and for years has been among the top priorities for city officials. A city needs robust, unobtrusive technology conducive to a safe yet vibrant urban environment.

GE's security systems can help to monitor cities. GE provides security and life safety solutions for use in all kinds of buildings, from homes to retail outlets to manufacturing facilities. We have individual products for fire protection, intrusion and lighting, as well as central monitoring software and wireless security systems. All of our solutions can be used in a wide range of public spaces to provide a complete solution for a city's security needs.

GE believes cities need to be places where people feel safe, and our technology makes it easier to achieve that necessary sense of security. Whether it's an individual monitoring product, an entire wireless security system or efficient public lighting, GE can help.



Ensure the safety
of your citizens



Secure public and
historical buildings



Lighting the way for Albi's citizens

GE and the town of Albi, France worked together to ensure the safety of its citizens by installing white lights on the city's roadways. With enhanced luminance, GE's CMH lamps made streets brighter making people feel more secure walking and driving through the streets at night. Using a monitoring

system, the city can dim these energy efficient lamps as required via wireless remote control. This allowed Albi to achieve energy savings of 45% without compromising the necessary brightness for the city at night.

Reliable protection for Hungarian House of Parliament

The Hungarian House of Parliament, which is over 100-years old, is a building of high architectural importance. The most important political and historical site in Hungary, it is also home to the ancient royal crown and, as such, needed a tight security system. GE's integrated security system is able

to provide access control, intrusion detection, fire detection and video surveillance functions. All of these systems can be operated from one single shared platform with the help of a pictorial map. In addition to unlimited extension possibilities, the system offers excellent reliability for the government of Hungary.

Beautification and power protection in one

Nowadays, with growing city populations, municipalities are keen to maximise public space, keeping streets, squares and parks free of obstacles. In the marketplace in Deurne in the Netherlands, city officials used GE's underground cabinet (UC-Cabinet™) as a solution. This is a black box that can hide the housing for energy distribution underground. The

UC-Cabinet can house various types of equipment that need temporary (festivals or markets) or permanent connections (low-energy, fibre connections for all types of IT functions). Another advantage is that these cabinets are no longer targets for graffiti or vandalism. In fact, the top of the cabinet can be finished to complement its surroundings.

Protect city power
infrastructure

Nurture

Aging populations and the associated health implications are a big concern for European governments. Older people tend to need more healthcare and facilities, which puts pressure on already stretched resources. Health services in European countries are, therefore, keen to make their own processes more effective and cost-efficient wherever possible.

GE has been at the forefront of innovative healthcare technology for many years. We dedicate our resources to help healthcare providers and clinicians around the world to predict, diagnose, inform, treat and monitor disease, so patients can live their lives to the fullest. And, as the world moves towards the “digital hospital,” we are leading the way with technologies for patient monitoring, imaging (MRI, CT, ultrasound and digital x-ray), healthcare IT, maternal and infant care and performance improvement.

Healthmagination, GE’s commitment to making sustainable health a reality, will apply GE’s technology and innovation to bring high-quality care at lower cost to more people throughout the world. GE believes that healthcare providers in sustainable cities will share our vision, one of “early health”, focusing on early diagnosis of disease and efficient healthcare. So whether a city is planning a hospital or health centre, or looking to increase efficiency in healthcare delivery, GE can help.

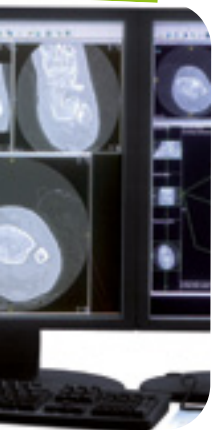


Help people achieve their potential



Use advanced technologies to support independent living

ve



Combine IT and expertise
to improve healthcare

Going for gold with GE Healthcare

The English Institute of Sport (EIS) and GE, as a worldwide partner to the Olympics, have signed a unique 5-year agreement in the lead up to London 2012. All athletes run a risk of injury and this agreement will see the EIS utilising compact

ultrasound and bone densitometry technology to help diagnose injury and disease earlier. GE is helping to keep the best sportsmen and women on the field of play rather than in the rehabilitation room.

Linking hospitals to help patient care

GE and the FTE Hospitals Association in Berlin have been working together on a data centre that will link its five hospitals in the city with an integrated Centricity RIS/PACS™ solution (Radiology Information System/Picture Archiving and Communication System). This system allows patient data and images to be saved digitally for diagnosis and archiving.

It represents an improvement in efficiency and quality and helps hospitals to work filmless and paperless. Simultaneously, operational efficiency is increased – images and patient data can be accessed in any hospital making it quick and easy to obtain a second opinion.

Care of the elderly and patients with chronic disease

GE is bringing its expertise in passive activity monitoring, disease management, healthcare IT and medical engineering to develop long term, sustainable solutions. With the dramatic increase of people with chronic conditions and an aging population there is a need to extend care from the hospital to the home.

GE is working with a number of partners - including the Hungarian government - to develop innovative technologies to help the elderly live healthy and independent lives in their own homes for as long as possible, and to help patients with chronic conditions to manage their care from the comfort of their home.

About GE

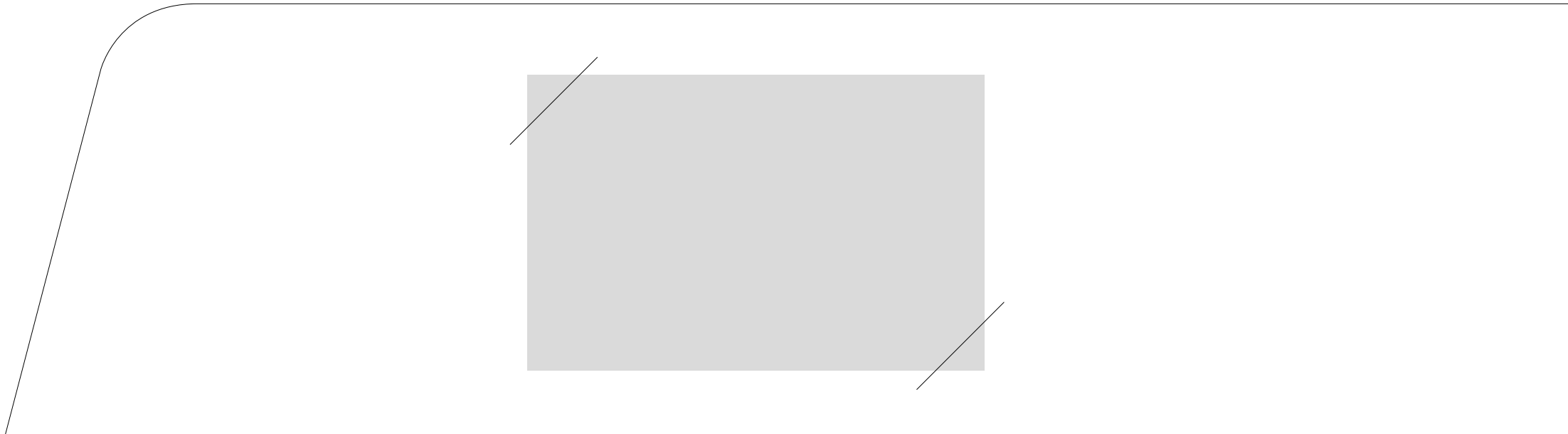
We are a global, diversified infrastructure, finance and media company, dedicated to providing products and services that are focused on solving some of the world's toughest challenges.

We make it a priority to help our customers succeed by delivering enhanced value through our broad offering. Through our green strategy ecomagination, we strive to achieve our vision that financial and environmental performance can work together to drive growth and success for our customers.

Taking on another of the world's toughest challenges, our healthymagination commitment will deliver dramatic new investments toward a healthier population. It will apply our technology and innovation to bring high-quality care at lower cost to more people throughout the world.

GE has been operating in Europe for over 100 years and we continue to invest in the region today where we employ over 100,000 people. Each of our global businesses is present in Europe, with GE Healthcare's global headquarters in Amersham, UK. Other GE divisions also have their headquarters in Europe, such as GE's Jenbacher gas engine business located in Jenbach, Austria and GE Oil & Gas in Florence, Italy.

Our culture is based on a passion for progress, quality and delivering value to our customers with unyielding integrity. No matter what industry, culture or location, we are driven by the simple belief that what our customers imagine we can make happen.



www.ge.com/sustainablecities



GE imagination at work