



Green Building Technologies

Introduction

Jardine Engineering Corporation (JEC) provides a complete range of green building technologies that improve efficiency, human health, and reduce wastage. JEC manages all stages of a building efficiency project, from initial assessments, to product sourcing and installation, to ongoing technical facilities management.

Buildings account for around 40% of the world's total energy consumption and new technologies have presented attractive opportunities for reducing energy consumption and saving costs. JEC keeps abreast of the latest technical developments to provide integrated green building solutions.

JEC's green technologies provide solutions for enhanced energy efficiency, water efficiency, building integrated power, optimised building materials, waste management, and indoor air quality.



Why the Need for Green Building Technologies?

Whilst buildings worldwide are major energy consumers, Asian buildings are among the least efficient in their use of energy for lighting, heating and cooling. Significant environmental issues connected with buildings are water wastage, inefficient use of building materials and poor indoor air quality. In addition to these issues building regulations and legislation are set to increase, creating further risks for inefficient buildings.

Three factors are needed to make buildings more efficient: sustainable design, green building technologies, and user education. Of these three JEC is a specialist in providing green building technologies.

Advice and Assessment

Before sourcing products and designing systems, JEC can provide comprehensive technical advice. This could take the form of an energy audit in which JEC's specialists collect and analyse data to identify energy management opportunities. System improvements are identified and the time frame and potential cost savings are mapped out. Advice can also take the form of reviewing compliance with local building regulations and the achievement of green building certifications such as LEED, HK-BEAM PLUS, and Green Mark.

After an assessment JEC can assist with applications for government subsidies and recommend third-party funding schemes in certain jurisdictions.

JEC acts as a reliable technical partner at every stage of a building efficiency project from the initial assessment to installation and maintenance.

JEC's Green Building Technologies Value Chain



Green Technologies: Products and Solutions



Energy Efficiency

Well-considered improvements in energy efficiency are among the most effective methods of optimising building performance. JEC's energy efficient technologies have the potential to significantly reduce a building's operation costs and, in many cases, provide a rapid return on investment.

HVAC equipment

Air-conditioning is the single largest end-use consumer of energy in buildings in South-East Asia. JEC has extensive experience in sourcing, designing, and installing high performance HVAC systems that reduce energy costs and improve indoor air quality.

A broad range of HVAC technologies such as high efficiency chiller with R123 refrigerant, energy efficient cooling towers, automatic tube cleaning systems, and variable speed drives (among others) can be incorporated into air-conditioning systems to enhance efficiency. JEC's approach to air-conditioning upgrades involves examining the system, identifying areas for improvement, and delivering tailored cost-effective solutions.





Lighting Solutions

Energy efficient lighting is one of the fastest ways to improve electricity consumption. LED lights last longer, produce less heat, and consume much less energy. JEC is partner to some of the world's leading energy efficient lighting producers and provides a range of advanced lighting and automatic lighting control technologies.

Building Automation Technologies

For a building to be truly energy efficient it must also be smart. JEC integrates various control and monitoring systems by open or proprietary protocol. These systems not only monitor different aspects of the built environment but also provide a platform for optimising the control of building systems. Operating data can be collected and analysed on a single platform accessible via the internet. Understanding how a building functions provides the basis for an effective energy management and equipment maintenance strategy.





Building Integrated Power Solutions

Recognising the enormous potential of renewable energy, JEC sources, designs, installs, and maintains a range of building integrated power solutions that reduce buildings' energy needs and enhance efficiency.



Building Integrated Photovoltaic (BIPV) Systems

Building Integrated Photovoltaic (BIPV) Systems harness the potential of solar power technology to significantly reduce overall energy consumption. JEC's BIPV systems are uniquely tailored to the specific needs of different buildings and customers. Recent advances in solar technology have dramatically reduced the cost of PV systems and JEC can help customers to analyse the cost and payback period for a BIPV system. JEC also provides reliable maintenance services to ensure that systems continue to operate as intended.

Wind Power

Building integrated wind turbines can support photovoltaic power systems to enhance power supply stability. Solar-Wind hybrid systems take advantage of both energy sources under different environmental conditions. JEC offers traditional horizontal axis wind turbines, latest technology implementing vertical axis wind turbines and building integrated wind turbine to fit urban site requirement and building construction.



Combined Heat & Power Systems

Co-generation systems allow buildings to obtain all their heating and power needs from a single, integrated infrastructure. JEC designs customised co-generation plants that meet customers' most stringent economic and environmental requirements. JEC has experience combining heating and cooling by using cutting edge gas turbine and gas engine driven generators and waste exhaust to generate electricity and run chillers. Such combined heat and power plants can deliver around a 35% increase in efficiency in comparison with conventional power plants. This technology can be further extended to integrate boiler applications where hot water/steam services are needed.



Water Efficiency

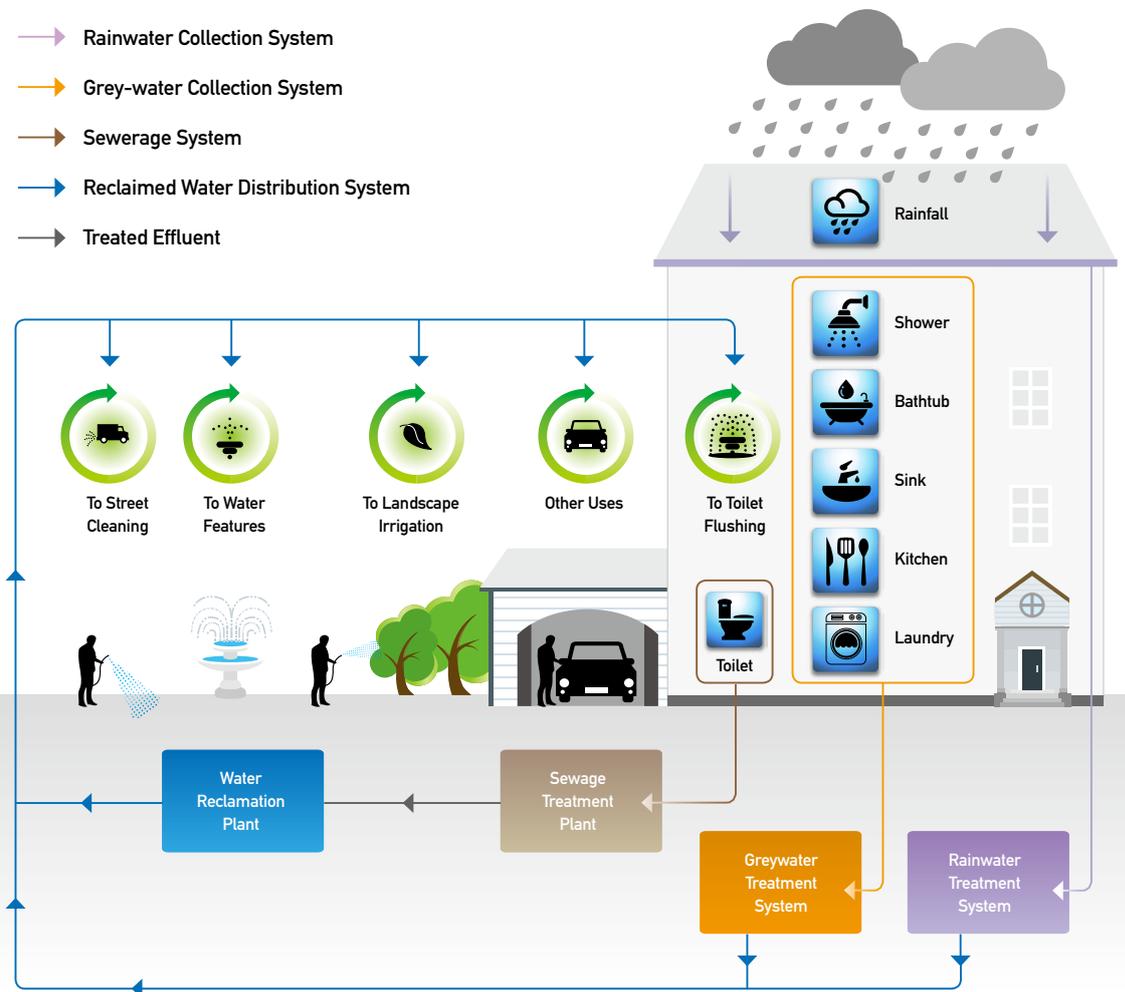
As modern lifestyle changes have triggered a 55% increase in human water consumption over the past 25 years, water efficiency is now a growing concern. JEC's water saving technologies are focused on water reclamation solutions and low flow fixtures.

Water Reclamation Solutions

Collecting rainwater, greywater and sewage from households through different filtration and disinfection processes, water treatment systems significantly recycle the wastewater, reduce a building's total water demands and facilitate the users in the demand of water reclamation applications. JEC provides full set of water reclamation solutions to ensure quality of water content for reclamation and achieve water efficiency.

Low-flow Fixtures

Statistics show that most water wastage occurs in bathrooms. Water usage can be reduced by 50% in comparison with normal usage when water saving fixtures are correctly installed. JEC partners with leading brands to supply bathroom fixtures that reduce water flow without undermining comfort or design.





Optimised Building Materials

High quality, resource efficient building products last longer, release less harmful chemicals, and are often better for the environment. JEC is partner to some of the world's leading sustainable flooring and sanitaryware producers. Among JEC's range of products is recycled carpets, natural linoleum, innovative natural wood flooring that neutralises harmful air borne substances and low formaldehyde partition systems. Many of the products that JEC represents are endorsed by organisations such as the US Green Building Council and Forest Stewardship Council (FSC) and can help developers achieve green building certifications.



Waste Management Solutions

Increasing urban density and calls for better hygiene have led to a need for innovative waste management systems. JEC designs and installs centralised waste management systems for single buildings or entire neighbourhoods.

Centralised Refuse Rooms

JEC sources and installs technology for waste compaction through centrifuge or compression in building refuse centres.

Urban Waste Handling Solutions

JEC works with market leading waste handling companies to deliver systems that convey solid waste to underground waste stations or central refuse rooms from where it can be transported in containers to recycling centres.



Indoor Air Quality (IAQ)

As outdoor air pollution levels rise and with concerns about the possibility of a global pandemic, the provision of satisfactory indoor air quality represents a growing challenge for building owners and managers. JEC assists in two areas:

Ventilation System Design and Maintenance

JEC designs, installs, and maintains high performance ventilation systems that improve indoor air quality. JEC manages IAQ monitoring services and proactively suggests improvements to HVAC systems.

Indoor Air Quality Technologies

JEC sources and installs a range of advanced air purification systems for the elimination of air borne bacteria, odour control, and to minimise air pollution.



Technical Facilities Management

To reap the full benefit of green technologies these systems must be properly operated, maintained, and managed. In addition to sourcing and installation, JEC has extensive experience in managing buildings to ensure that they operate at peak performance.

Technical facilities management is a proactive approach to operating and maintaining buildings that constantly seeks out best practice. Mechanical and electrical systems are monitored and tested against benchmarks. Where gaps are identified, JEC suggests improvements that ensure facilities are managed to a world class standard. Improvements draw on our technicians' combined pool of years of experience in optimising engineering systems.



Green building technologies form a critical aspect of the drive towards greater building efficiency. Whether it is a whole green building development or simply the upgrade of a small outdated system, green building technologies present an opportunity to reduce costs and improve the planet.

Applications for JEC Green Building Technologies

- Commercial Offices
- Retail & Shopping Centres
- Hotels
- Hospitals
- Residential Developments
- Schools and Universities
- Industrial Buildings
- Data Centres
- Municipal Buildings

About Jardine Engineering Corporation

Jardine Engineering Corporation (JEC) is a leading provider of products and services that enhance Asia's built environment. The group provides sourcing, engineering contracting, and technical services for buildings, the energy and transport sectors, and environmental infrastructure.

JEC specialises in the provision of electrical, mechanical, and building technologies. The group provides contracting expertise to deliver large-scale installations and ongoing operation and maintenance services which help our customers to operate their facilities to a world-class standard.

Established in Shanghai in 1923, JEC is now headquartered in Hong Kong and operates throughout Asia. JEC is a member of the Jardine Matheson Group.

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