



EUROPEAN ALLIANCE TO
SAVE ENERGY

Creating an Energy-Efficient Europe



STRATEGIC INVESTMENTS FOR EUROPE

EVIDENCE FROM COST-EFFECTIVE ENERGY EFFICIENCY STORIES



E3G



JUNE 2019

FOREWORD

We recognize in both public and private sector an urgent need to move from policy to practice and to replicate and scale sustainable technologies and practices. Doing so will unlock the multiple economic, environmental and social benefits that are needed to create a sustainable development pathway in our 21st century. This is especially true in the area of energy efficiency. Consequently, we are addressing one of the main hurdles to accelerated adoptions of energy efficient products and solutions - which is a widespread lack of awareness about existing energy efficient solutions and their cost effective, social-economic benefits. This is why we are pleased to present this collection of business success stories, as 'seeing is believing'.

We look forward to contributing to the next policy cycle by presenting such success stories that underpin the well-being and prosperity benefits for a Europe that advances towards reaching climate neutrality by 2050.



Harry Verhaar
Chair EU-ASE Board
Head of Global & Government Affairs
Signify

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BUILDING TOMORROW'S SUPERMARKET TODAY



Supermarket reduced its energy costs by 20% with Danfoss cooling system.

Tomorrow's supermarket already exists. Energy costs are one of the largest cost factors for supermarket operators and as they continue to increase, Günter Walter, general manager of aktiv & irma, was looking for innovative refrigeration system solutions. The system had to be energy-efficient, environmentally friendly and guarantee maximum food safety.

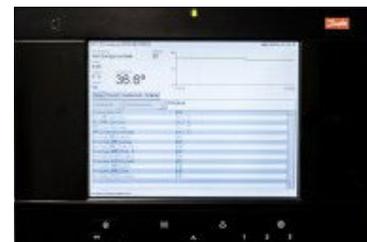
CHALLENGE



aktiv & irma, a supermarket chain that operates 10 stores and is growing steadily, wanted to use CO2 as a refrigerant in the new supermarket, green electricity with solar power, and reduce lower energy consumption.



The supermarket of tomorrow in Oldenburg.



The Danfoss System Manager uses the latest technology to optimize energy savings and control.

SOLUTION



Danfoss Smart Store concept with central refrigeration control offered a tailored solution. The products installed included the Danfoss System Manager, refrigeration controllers and programmable controls to regulate cooling, heating, ventilation and air-conditioning. Additionally, the compressors of the refrigeration system were linked to Danfoss' drives, which compensate fluctuations, guaranteeing maximum food safety and minimum energy consumption. Furthermore, the Danfoss multi-ejector made it possible to use the environmentally friendly CO2 as refrigerant for cold-storage shelves and freezers. The refrigerant also reduces energy consumption at higher outdoor temperatures. Thanks to these innovations, waste heat from the cooling system can be - and is - used to heat the market, making additional heating redundant.

RESULT



 **ENERGY COSTS REDUCED BY 20%**

 **PAYBACK PERIOD OF 6-7 YEARS**

"Looking at the big picture, Danfoss has the technology to unlock the capacity to integrate supermarkets into the energy system. In this way, supermarkets do not only provide green energy, but can also reduce the carbon footprint of the store and enable it to reduce operating expenses. A win-win for climate and business."

Jürgen Fischer, President of Danfoss Cooling

KINGSPAN RENOVATES ITS OWN PLANTS TO ACHIEVE NET ZERO ENERGY BY 2020



CHALLENGE A building products manufacturing plant for high-performance insulation materials belonging to Kingspan Insulation in Selby, West Yorkshire, was chosen by the Group to be upgraded with a roof mounted PV system.



The building needed a comprehensive programme of improvement with its old roof, inefficient lighting and a poor overall EPC rating of an 'F'.

Kingspan believes in leading by example. Since the introduction of their Net-Zero Energy initiative in 2011, various manufacturing sites have undergone deep renovation. Various solutions have been used that include energy efficiency measures such as high performance building envelopes and intelligent LED lighting, and renewable energy generation such as Kingspan Energy Rooftop solar PV and Kingspan Solar Thermal Panels.

SOLUTION The building required a replacement of the existing ineffective and inefficient roof with an enhanced insulated system. 30,000 m² of high-performance Kingspan Trapezoidal Roof insulated panels have replaced the old roof, delivering a low infiltration and weatherproof solution. This was followed by an installation of a rooftop solar PV system. The solar PV array covers over 15,000 m² of the roof space (equivalent to two and a half football pitches) and is expected to generate 2.14 GWh of electricity per annum, making a significant contribution to powering the plant's electricity needs. Finally, a full LED lighting system upgrade took place.



RESULT As a result of the project, the building's EPC rating has increased from an 'F' to an 'A'.



Expected savings over the next 25 years amount to:

79.2 Gwh, equivalent to energy consumption of 6,980 homes

£5.2 million in energy costs
34,895 tonnes of emissions



INSULATION HALVES FAMILY'S ENERGY BILL



Two families took part in an ambitious experiment organised by Knauf Insulation to quantify how much money could be saved through renovation.

Two Hungarian homes, comparable in size and occupancy, had their energy use measured for six months. One home was thoroughly insulated with Knauf Insulation, while the second house was left untouched. The house without insulation spent €835 on winter heating while the insulated house saw their energy bills cut by 46%, spending a total of €455, adding up to a saving of €380.

CHALLENGE



The family wanted to reduce its natural gas consumption used for heating their house and upgrade its energy category.

SOLUTION



Two homes, comparable in size and occupancy and only 7km apart had their energy use measured for six months. The only difference was that one home was thoroughly insulated with Knauf Insulation products - 25cm Glass Mineral Wool in the loft and 20cm Rock Mineral Wool boards on the facades. The second house that fell into the lowest 'Category G' of energy efficiency was left untouched.

RESULT



Renovated house saw **energy bills cut by 46%**.

The renovated house is now a '**Category A**' building, consuming 56-75kWh/sqm/year compared to 400-500kWh/sqm/year.

Winter heating bill of the renovated house amounts to 455€ compared to €835, adding up to a saving of 380€.

"The most effective way of improving a home's energy efficiency is to install insulation. In fact, simple wall and roof measures can cut by half the energy needed to heat and cool a building."

László Kanyuk, Knauf Insulation's spokesman in Hungary

A COMFORTABLE AND EFFECTIVE LEARNING ENVIRONMENT STARTS WITH ENERGY EFFICIENCY



CHALLENGE King's Hawford is one of the two junior schools of The King's School, a family of independent schools offering an outstanding educational experience. The new hall needed to be comfortable and bright enough to create a happy and productive environment for learning. But it is on the acoustics that the design cracked the challenge: for some activities, the hall needs to be quiet and free from distracting noises from outside. On other occasions, the sound of noisy sports games and concerts needs to be controlled for user comfort and to ensure high levels of speech intelligibility.



King's School needed a new school hall that had to be suitable for a variety of activities, including pupils' sports, assemblies, drama, music and dance. After hearing about Saint-Gobain's Multi Comfort design concept (the approach to building that aims to improve comfort, wellbeing and environmental performance), the school decided to implement the first Multi Comfort building in the UK, building a hall with a stable, comfortable internal temperature all year round and superior Indoor Air, Acoustic and Visual Comfort.

SOLUTION Bartholomew Barn is designed to have low energy consumption and optimizes the use of natural light. Investments implemented included a highly insulated building fabric and triple glazing, in line with the Passivhaus standard; automatic opening skylights and a central ventilation system with heat recovery, for a constant supply of clean, fresh air and a balanced temperature; and sound absorbing ceiling for a good internal acoustic environment.



RESULT Minimization of artificial lighting, with **daylight autonomy of 60%**
Heating and cooling energy demand of only **4 kWh/M2/y** in the first measured season
Protection from external noise, with **controlled reverberation time** and **excellent speech clarity**
A **constant supply of fresh air**, with pollutants kept to minimum



"We spend 90% of our time indoors, whether that is at home, at work, or in school, so it's important that the environment that we have is as nice and friendly and comfortable as possible. It all starts with energy efficiency, that together with acoustics, air-quality and glazing forms the key ingredients to ensure comfort and wellbeing. Our Multi Comfort approach helps to make tangible progress in decarbonizing the building sector, and while putting users' at its centre, is putting us on the right road to Paris."

Mike Chaldecott, Chief Executive Saint-Gobain, UK and Ireland

BUILDING AN OFFICE THAT GENERATES MORE ENERGY THAN IT CONSUMES



Building the world's most sustainable office building involves leveraging the best and the latest technologies. The Edge in Amsterdam, head office of Deloitte Netherlands knows this first hand. Using a range of Schneider Electric offers, including its EcoStruxure™ Building and SmartStruxure™ solution, they have succeeded in setting a new global benchmark for energy efficient commercial office environments while prioritizing the satisfaction and well-being of its employees. Schneider Electric EcoStruxure Building provides real-time access to a building's energy efficiency data. This forms the backbone of a Net Zero-Energy Building which produces 102% of its own energy use.



CHALLENGE



The Edge Amsterdam is the head office of Deloitte Netherlands, located in Zuidas, Europe's fastest growing business and knowledge district. The Edge is designed according to 'The New World of Work' principles, which challenge traditional organizational cultures to create an agile, high-performance workplace where innovation can thrive in an open and flexible environment.



SOLUTION



A broad range of Schneider Electric integrated facility management and energy solutions, an electrical distribution system, IT infrastructure, control devices and EcoStruxure Power Monitoring Expert software are featured in The Edge.

BMS-compatible field devices, including sensors, valves, actuators, and heat meters provide energy-related measurement of the thermal energy used in the building. Access and connection to critical building data is available via easy-to-use dashboards and advanced reporting to make information-based decisions to optimize HVAC energy use and reduce waste. Schneider Electric electrical distribution products are also used throughout the building, including electrical panels, busbars, energy meters and frequency drives. Over 180 energy and heat meters are installed in the building, and energy measurement information is captured in EcoStruxure™ Power Monitoring Expert software.

RESULT



A Net Zero-Energy Building which produces 102% of its own energy use

<0.3 kWh/m²/yr estimated energy consumption

The Edge is the greenest building in the world, according to British rating agency BREEAM, which gave it the highest sustainability score ever awarded: 98.4 percent

"Sustainability is about more than a great BREEAM rating. It is also about a building's overall comfort and efficiency for its occupants, so that they can operate with ease in a productive and healthy environment."

Coen van Oostrom, Founder and CEO of OVG Real Estate

GREENEST SHOPPING CENTER IN EUROPE SAVES €110,000 IN ENERGY CONSUMPTION COSTS PER YEAR



CHALLENGE Sello is Finland's most visited and most sustainable shopping center. It hosts over 170 shops, a concert hall, a library, hypermarkets and entertainment attractions.



The shopping center needed to be modernized and its efficiency improved to secure ongoing LEED certification. This was critical to shop tenant retention who expect fair and consistent rents and low operating costs. This was equally important from a marketing perspective: air quality is key for the overall quality of the shopping environment offered to the public, because visitors want to feel comfortable. The diversity in space use means high demands on monitoring and control of all systems to meet Sello's two major goals: energy efficiency and perfect conditions for the 24 million customers that visit the shopping center each year.

Siemens and Sello began their cooperation when Siemens supplied the building automation system for the new shopping center. Siemens solutions delivered a comprehensive optimization program for Sello's building systems focused on energy consumption and air quality. In recognition of these efforts, Sello shopping center was awarded the European Union's Energy Service Award. Sello has been the first shopping center in Europe to be granted the LEED environmental rating system's platinum classification for its operations.

SOLUTION Smart energy management as a service with guaranteed energy savings



- Solar Panels (PV) 600 kW
- 1.68 MW battery storage
- DALI LED-lighting system
- Upgrade of automation system



RESULT



- €110,000 energy savings per year
- Reduction of 281 tons of CO2 per year



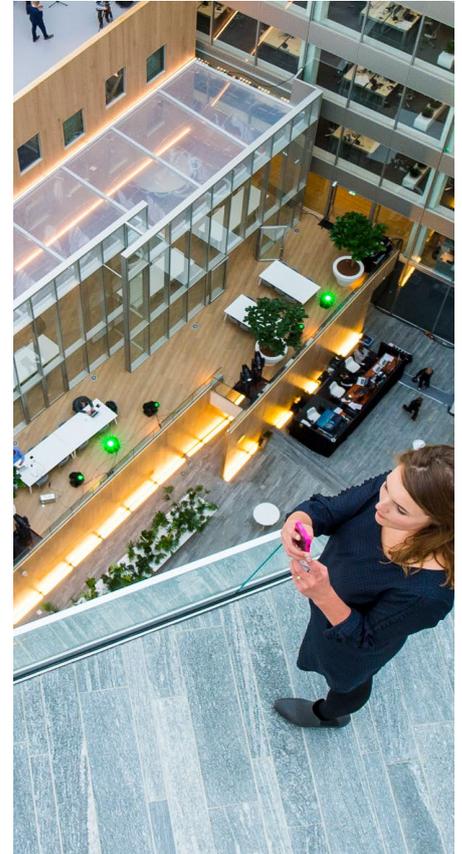
"The aspired holistic EU energy system is only feasible with an active participation of buildings. To really be part of an integral energy system, buildings must de-carbonize and change the way they use energy. The basic requirement is that buildings must dynamically manage energy usage, leverage onsite generation and storage capacity, and integrate data analytics into building operations. The necessary investments for this will create local employment, support a faster retirement of fossil-fired over capacity, improve economic competitiveness and finally enhance quality of life."

Peter Halliday, Head of Building Performance and Sustainability Siemens Smart Infrastructure

CONNECTED LIGHTING SYSTEM CREATES MORE PRODUCTIVE WORKING ENVIRONMENT



Using a connected lighting system with cutting-edge IoT technologies to enable data collection and insight via customized Interact Office software applications, Signify have succeeded in setting a new global benchmark for energy efficient commercial office environments. The system allows employees to personalize the lighting and temperature at their workspaces using an Interact Office smartphone app, and provides building managers with real-time data on operations and activities via Interact Office dashboards. This data allows facility managers to maximize operational efficiency as well as reduce the building's CO2 footprint.



CHALLENGE Building a sustainable and energy efficient commercial office prioritising the satisfaction and well-being of employees.



The Edge Amsterdam, the head office of Deloitte Netherlands, was designed by OVG Real Estate and is located in Zuidas, Europe's fastest growing business and knowledge district.

SOLUTION



Signify equipped The Edge with nearly 6,500 connected LED luminaires to create a "digital ceiling" in the building's 15 stories. With integrated IoT sensors in 3,000 of these luminaires that work with Interact Office lighting management software, the system captures, stores, shares, and distributes information throughout the illuminated space. Facility managers use the Interact Office software to visualize and analyze this data, track energy consumption, and streamline maintenance operations.

RESULT €100,000 saved in energy costs per year



Reduced amount of space per employee from 12.6 to 7.6 square meters with improved employee comfort and satisfaction. This translated in €1.5 million in space utilisation cost saved.

REDUCED ENERGY CONSUMPTION AND BETTER AIR QUALITY FOR HIGH SCHOOL STUDENTS AND STAFF



CHALLENGE Decrease overall heating energy consumption

Decrease global electricity consumption



Improve inside temperature, in particular in the summer, with the use of high efficiency glass

Improve classrooms lightings, while reducing energy consumption

The "Île-de-France" region (RIF), responsible for the management of all high schools in Paris and its surroundings, was confronted with the challenge of optimizing the consumption of energy and try to reduce overall operational costs in one of its centres. They once again chose Veolia Energy France, entrusting the operator with the mission of carrying out a global renovation and energy efficiency improvement operation in a high school in the city of Les Ulis.

SOLUTION In order to reduce consumption and allow students to enjoy better lighting conditions, improved air quality and more stable temperature variations indoor, Veolia proposed a comprehensive approach. It combined external wall insulation, installation of high-performance windows and global and advanced air treatment.



RESULT Heating consumption decreased by 42%

Electricity consumption decreased by 4%



"Veolia is honored to be selected again by the Ile-de-France regional authority to carry out the second comprehensive energy renovation and insulation project in one of the local high schools. We work very closely with the client to define the needs and tailor the best and the most adapted solutions to meet the expectations of both our clients and direct users of facilities. Our project proves how important energy efficiency measures are in moving towards decarbonised society and how public and private stakeholders can partner to achieve the goal of the energy transition"

Ahmed Ben Allel, Director for Île-de-France and North Regions, in charge of energy efficiency unit

ABOUT EUROPEAN ALLIANCE TO SAVE ENERGY

EU-ASE was established in December 2010 by some of Europe's leading multinational companies. The Alliance creates a platform from which our companies (Danfoss, Kingspan, Knauf Insulation, Signify, Schneider Electric, Saint-Gobain, Siemens and Veolia) can join with politicians and thought leaders to ensure the voice of energy efficiency is heard from across the business and political community.

EU-ASE members have operations across the 28 Member States of the European Union, employ over 340.000 people in Europe and have an aggregated annual turnover of €115 billion.

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