NAVIGATING THROUGH THE ENERGY EFFICIENCY MAZE

UNDERSTANDING ENERGY EFFICIENCY IN BUILDINGS

legrand®

INTRODUCTION

Energy efficiency is a much talked about issue and for good reason. Did you know for example, that existing buildings account for 40 percent of energy consumption in the EU[1].

Effective control and measurement of energy across our building stock, will enable businesses to not only consume less energy and reduce costs but will also help to reduce our impact on the environment.

Our objective in this guide is to provide a simple overview of the drivers of efficiency – exploring how legislation is shaping the built environment and reiterating its importance. Moreover, we provide a simple four-step vision of how to approach an energy efficiency plan before exploring some of the technology and solutions that can help realise savings.

We hope you find the guide useful but if you would like to discuss any of the issues presented here please do get in touch. Legrand UK and Ireland also offers a comprehensive CPD programme, of which 'Solutions for energy efficiency in buildings' provides a more in-depth look at the topic.

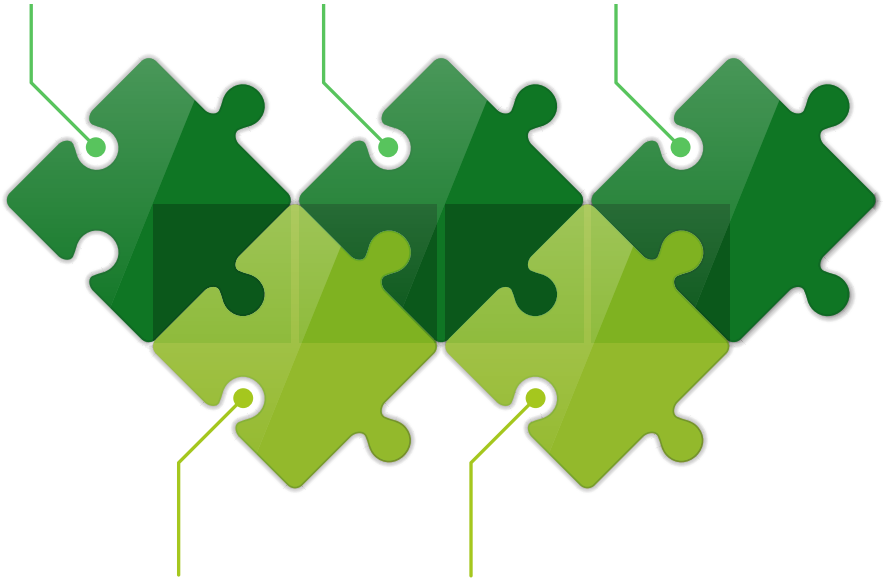
Legrand UK and Ireland

How the Green Building Transformation Impacts on the Building and Construction Industry

Owners and developers
understand the importance

Engineers
develop proper solutions for systems

Product manufacturers
develop sustainable materials



Architects
have access to appropriate design solutions

Contractors
know the impact of the building phase on the environment

[1] https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings

DRIVERS OF **EFFICIENCY**

So why is Energy Efficiency so important? There are many benefits to using less energy in our homes and businesses and being aware of and employing good energy efficiency practice helps our local and international economies. Instead of importing natural gas and electricity from outside of your community for example, domestic and local companies can provide energy efficiency services and equipment such as these.

An energy efficient building effectively controls the flow of air, heat and moisture through the building, consumes less energy and therefore costs less to operate. In turn, this also helps to reduce greenhouse gasses, which of course is good for us and the environment, both now and in the future.

Energy policy forms the basis of efficiency measures around the world and it is these standards that help to drive change. In the UK, Government has committed to reducing emissions by at least 80% by 2050[2]. To help meet these targets, five-yearly carbon budgets have been set to 2030 with more to follow.

A series of implementation tools have been created to help to get us there, including the Energy Efficiency Directive (EED), the Energy Performance of Buildings Directive (EPBD) and the EcoDesign Directive. On a local country level, other programmes exist to help make the targets more tangible and achievable.

[2] https://www.theccc.org.uk/tackling-climate-change/reducing-carbon-emissions/how-the-uk-is-progressing/

A **BASIC APPROACH**

ENERGY EFFICIENCY SUCCESS FACTORS

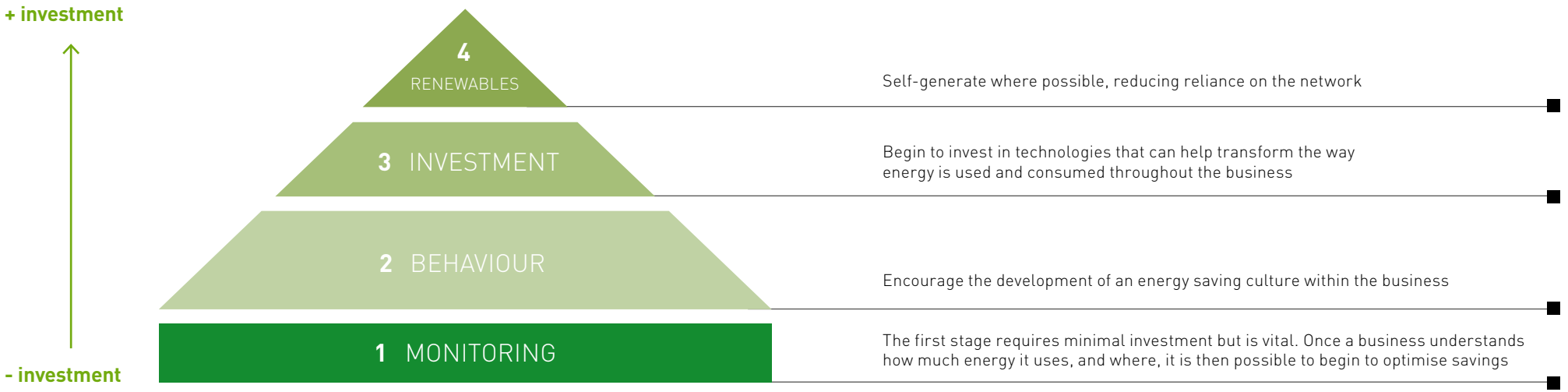
Energy efficiency is being pushed more and more by **standards, legislation and Government incentives on a worldwide scale**

Energy efficiency permits investors to **save energy and thus save money** (return on investment)

Energy efficiency is one of the features of the so called **'Green Building'**

By improving energy efficiency, a business can reduce its costs and improve its competitiveness. However, one of the greatest barriers to efficiency is the cost of implementing energy saving measures, particularly when energy bills are already so high. On a relatively simplistic level, there are a number of key steps that should be taken in the development of a plan and it can help businesses to get a better understanding of what needs to happen, in manageable chunks – rather than seeing efficiency as a major cost burden.

Energy Efficiency Business Model



Each step of the pyramid identifies the additional investment required to gain improved efficiencies, with each stage offering comparable results in terms of potential savings.

The pyramid can help businesses to strategically determine where they should begin the first draft of an energy efficiency plan.

TECHNOLOGY OVERVIEW

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Legrand provides a host of solutions designed to manage lighting, energy, networks and building access via a portfolio of flagship brands and from more than 90 product families.

a. IME Measurement Instruments - Monitoring the site or building

IME specialises in display and measurement products and is among the largest European companies in the sector. A wide range of meters that can measure a selection of active and reactive energy, voltage current, power factor, power frequency and harmonic distortion are available.

b. Green Transformers - Supply to the site

As part of the EcoDesign Directive, all manufacturers and suppliers of power transformers in the EU, must meet stringent efficiency targets, set out by the European Commission.

Purchasing a transformer such as the Green T.HE transformer, designed in accordance with the directive, offers both cost and environmental advantages, demonstrating the importance of considering the Total Cost of Ownership (TCO), and not simply the purchase price.

DID YOU KNOW?
the operating cost of a transformer represents more than 80% of the TCO.

c. Busbar - Electrical distribution around the site

Segmented into three core areas; low, medium and high power, busbar is the most efficient and adaptable solution for power distribution across a variety of building applications. Busbar is ideally suited to spaces where speed of assembly is important and is frequently used to supply the backbone of buildings as a power transmission system.

d. Uninterruptible Power Supply (UPS) - Power quality on site

In critical infrastructure like hospitals and data centres, Uninterruptible Power Supply (UPS) is essential for storing energy, conditioning power and protecting against fluctuations, as well as providing back-up power in the event of a blackout.

UPS systems require a level of power input in order to operate, which is why it's essential to choose equipment with certified efficiencies. Products are now available with up to 96% certified efficiency and a unity power factor, resulting in significant savings and a reduced Total Cost of Ownership (TCO).

TECHNOLOGY
OVERVIEW

2/2

e. **Power Distribution Unit (PDU) Metering** - Data Centre monitoring

Smart PDUs offer more than simply power distribution, enabling real-time monitoring of temperature, humidity and airflow and allowing users to optimise conditions and reduce operational costs wherever possible. A wide variety of models are available featuring outlet switching, individual outlet metering, high power blade servers and 400v three-phase power distribution to make savings a reality day-to-day.

f. **Cold Corridor** – Data Centre air control

Energy is unsurprisingly one of the largest operating costs for data centres, consuming 10-100 times more energy per m^2 than a standard office building. Finding ways to reduce consumption is therefore paramount, with one solution – the Minkels Cold Corridor® offering average energy savings of 30 per cent.

The concept works by separating out the hot and cold corridors, at the point of design. This is achieved by creating dedicated corridors using roofs, panels and doors at the entrance and exit. In doing so, the energy consumption of the air conditioning unit is significantly reduced, saving money.

DID YOU KNOW?
The Cold Corridor generates average energy savings of 30%

g. **Lighting Management Distribution** – Lighting power and communications around the site

Energy efficient lighting can only be achieved when the right lighting is installed, in the right location and, when it is used at the right time. Accounting for around 20% of a building's energy consumption, according to the Carbon Trust, lighting presents significant energy saving potential.

Buscom trunking provides a unique power and communications backbone. In fact, Buscom trunking, quickly and simply pushes together, delivering a plug and play solution for future lighting layout changes to be made quickly and efficiently.

Buscom operates over a KNX backbone, so that all devices connected to it can communicate with one another – offering seamless interoperability and greater scope to achieve savings.

h. **Lighting Controls** - Control at your fingertips

With a robust backbone in place, such as a Buscom trunking system, the next step is choosing the right lighting control solution. Key to this will be making the most of daylight but can include switching options, daylight harvesting and scene setting. According to the Carbon Trust[3], occupancy sensors can reduce electricity use by 30%. There are, however, numerous options available to help manage any light source, in any building and within any space.

[3] https://www.carbontrust.com/news/2014/04/challenging-the-accepted-wisdom-around-leds-and-energy-efficiency/

A **FINAL NOTE**

Energy efficiency within our buildings is a vital component of day-to-day operations. For organisations, understanding the importance of efficiency is of course vital but there are numerous steps to success, which we hope this document has helped to outline.

At a basic level, we should all be able to:

- Understand the importance and relevance of energy efficiency in buildings
- Recognise the drivers of efficiency and outline global standards
- Understand the basics of an energy efficiency plan
- Have a grasp of the technologies available and know where to go to find out more
- Collaborate - share solutions and options for a wide variety of buildings with colleagues and the wider industry

If you are interested in learning more about energy efficiency and the potential solutions within your commercial premises, Legrand UK and Ireland offers a CPD entitled 'Solutions for energy efficiency in buildings'.

If you are interested in attending or would like to know more,

please visit **www.legrand.co.uk/cpd**

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