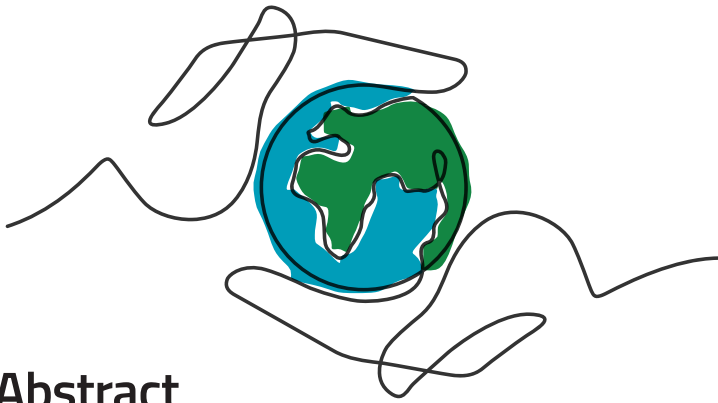# Digital twins:

Saving energy without compromising customer relations

Abstract

Energy costs represent a significant portion of any company's outgoings, especially when combined with progressively increasing common carbon taxes. Their impact on profitability is rising and will likely follow the same trend in the foreseeable future. Keeping energy expenses under control - and even reducing them - is key to helping companies maximise revenue and succeed in a challenging marketplace. Even more, such a strategy is essential to drive more sustainable practices.

The creation of virtual environments, where companies can meet with customers online in one-to-one meetings or as part of a larger conference, can play a substantial role in the reduction of energy usage whilst offering innovative opportunities to enhance profitability and competitiveness.

The importance of energy savings

The operation of buildings, e.g. heating, ventilation, and air conditioning (HVAC) as well as water heating, accounts for approximately one third of global final energy consumption, with non-residential facilities representing the largest contributor . In England and Wales only, electricity and gas use in non-domestic buildings reached respectively 127 TWh and 147 TWh in 2020[1]. While these figures and energy intensity remained broadly stable between 2012 and 2022, it is now more important than ever for businesses to reduce their energy usage, due to challenging market conditions and decarbonisation policies.

More precisely, average electricity and prices for non-domestic consumers in the UK have continued to increase over the last decade, with average price rises between 2011 and 2021 of more than 50%[2]. Even more, from 2021 to 2022 these have nearly doubled, reaching all-time highs of 21.56 GBP/MWh and 6.53 GBP/MWh, respectively[3]. These figures exclude the Climate Change Levy, which would bring the electricity costs to 22.25 GBP/MWh and the gas prices to 6.74 GBP/MWh3.

The electricity and gas rates presented here represent an average, therefore the selection of a cheaper supplier can help minimise any increase in running expenses. However, greater cost savings and opportunities can be achieved by improving energy.

The creation of virtual environments, where companies can meet with customers online in one-to-one meetings or as part of a larger conference,   can play a substantial role in the reduction of energy usage whilst offering innovative opportunities to enhance profitability and competitiveness. use and efficiency. In effect, companies reducing usage can preserve their margins while supporting their customers - who may be cutting their budgets - by avoiding price surges.

Energy savings that look beyond MWh prices are also crucial to tackling climate change, since non-domestic buildings are responsible for nearly one-fifth of the UK's carbon emissions. To align with 2050 net zero carbon emission targets, businesses are being asked to cut or offset their environmental impact to achieve a minimum national reduction of 20% in business energy use[4]. This can be quite challenging for the vast majority of local companies, which are believed to be 'leaking energy', as only 17.8% of the 88,118 non-domestic EPCs published in 2021 were A+/A or B rated[5].
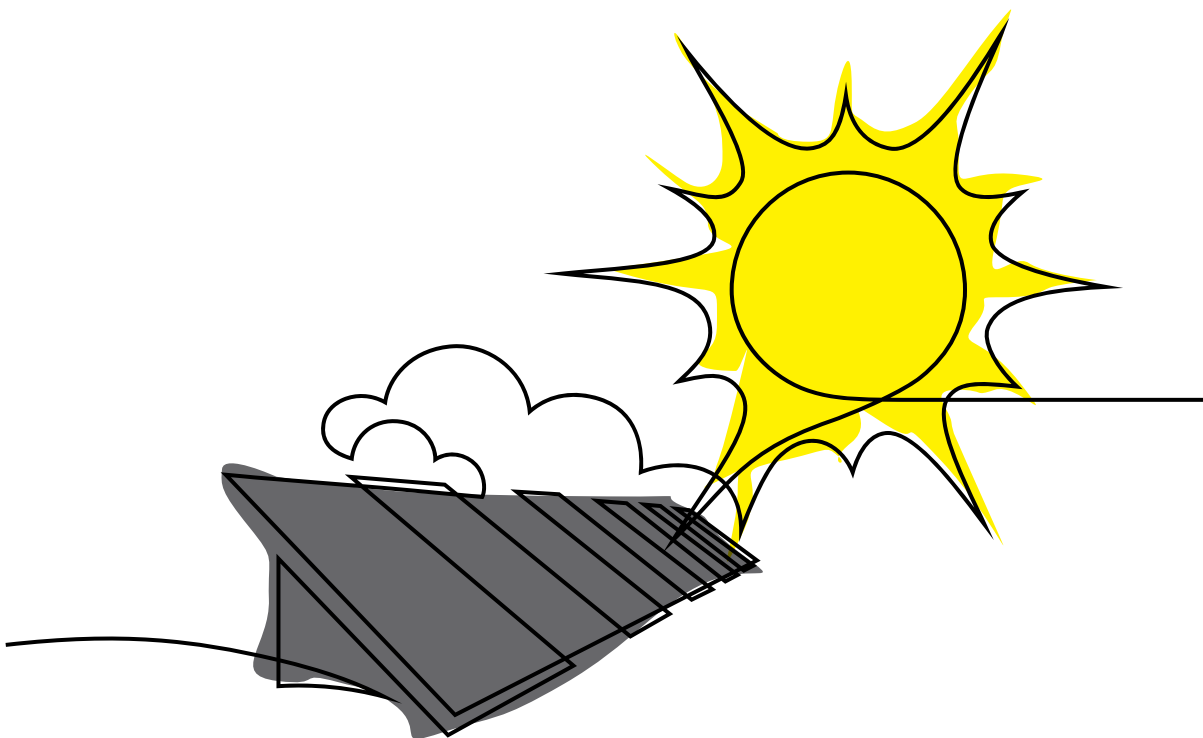
Reducing energy use when interacting with customers

Given a positive correlation between the number of occupants within a commercial building and the energy consumption of the facility, the quickest and most economical method for companies to cut electricity and gas consumption is to reduce occupancy. For example, recent research reports how every additional person in a commercial building can increase the energy needs of the facility by 1 kW[6,7], which equals to nearly 0.2 kg CO_2 eq.[8].

Limiting occupancy rates can typically be achieved through telecommunications, which are supporting the now common practices of telecommuting, remote or hybrid working. This strategy can effectively limit the number of staff and partially reduce the number of visiting customers or partners, which can be engaged through online, virtual meetings.

Besides teleconferencing, there are additional types of interactions that may be extremely valuable to establish and nurture valuable relationships with customers and partners. Showroom events, training, demos and other similar activities cannot be easily and effectively conducted through simple web videoconferences. Nonetheless, the latest advances in digital technology can help to move these events online, away from commercial buildings.

While face-to-face interactions are invaluable and cannot be completely replaced by any current alternative, reducing their occurrence by incorporating digital options can be highly beneficial. More precisely, companies can leverage online or virtual solutions such as digital twins, i.e. dynamic, virtual models that accurately reflect physical assets, to successfully shift a large fraction of key conversations online.

For example, a growing number of companies have been launching interactive, virtual showrooms that replicate their physical counterparts. In addition to showrooms and virtual sales rooms, online interactional training facilities, exhibition stands, conference venues and demo platforms have become increasingly popular.

All these solutions have the capability to engage customers and partners in immersive, photorealistic 3D environments at a fraction of the costs of their physical twins. As a reference, estimates from different sources indicate an average energy usage for online streaming of 0.077 kWh (0.018 kg CO_2 eq.)[9]. This includes the data centres, data transmission and a variety of streaming devices, such as 4K TVs, laptops and phones.

By hosting these activities online, the specific energy and maintenance requirements of sales and teaching rooms, which can feature high power rating equipment and appliances, are eliminated. As the whole building occupancy decreases, HVAC and water heating needs are also limited. Therefore, while having a visitor for 1 hour would increase the energy requirements of a commercial building by 1kW, without considering any special equipment that needs to be switched on, moving online would only require 0.077 kW – and part of the energy consumption would be on the visitor's end, rather than the hosting company.

Moreover, cleaning and waste generation are also reduced, optimising a company's overall environmental performance. This, in turn, can further drive cost reductions, as operational expenses associated with building maintenance activities and carbon taxes can diminish.

Beyond simple savings

Besides cost optimisation and efficiency, virtual environments also offer unmatched flexibility. Unlike physical assets, it is possible to quickly and economically redesign sales rooms and other facilities to match new goals and targets as well as customers' needs.

Furthermore, these solutions can enhance physical spaces, incorporating new digital experiences within a hybrid framework that helps customers and partners make more informed decisions whilst providing key analytics to support sales and customer relationship management. In particular, an online platform that is readily available and easily accessible can assist customers before and/or after physical meetings. They can share it with other parties to have them go through exactly what was experienced during face-to-face conversations in physical showrooms. While this happens, it is possible to gather unique insights to understand what specific visitors were most interested in as well as receive customers' feedback. All these aspects allow for directed and efficient follow-up activities.
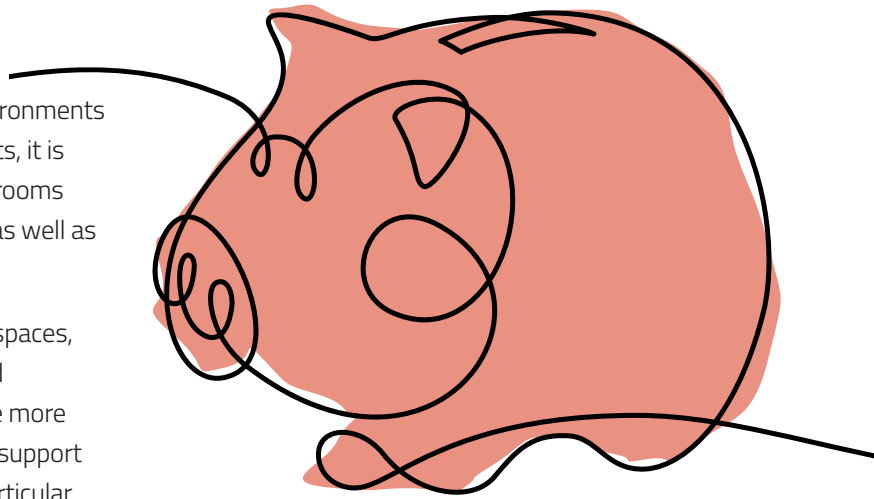
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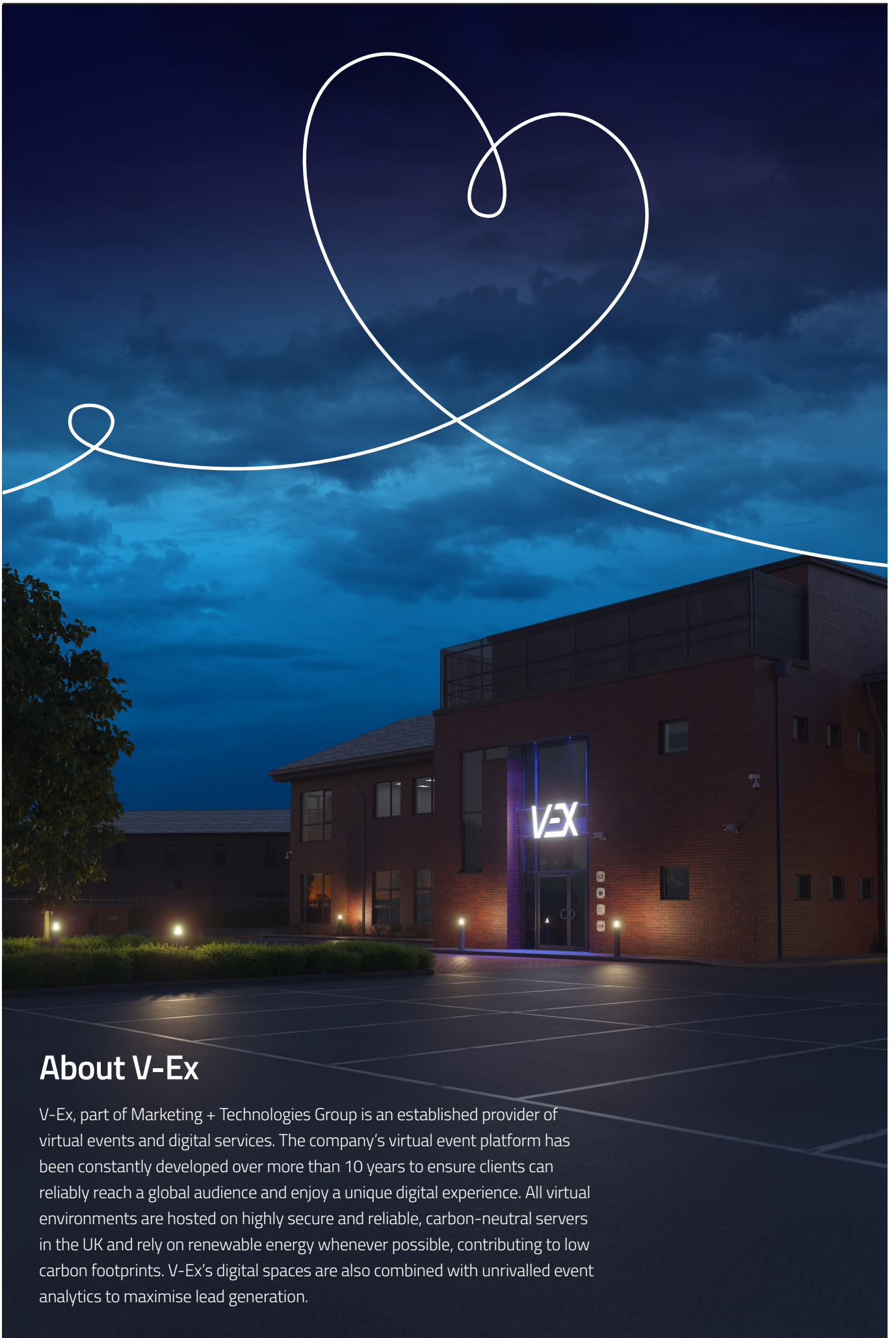
About V-Ex

V-Ex, part of Marketing + Technologies Group is an established provider of virtual events and digital services. The company's virtual event platform has been constantly developed over more than 10 years to ensure clients can reliably reach a global audience and enjoy a unique digital experience. All virtual environments are hosted on highly secure and reliable, carbon-neutral servers in the UK and rely on renewable energy whenever possible, contributing to low carbon footprints. V-Ex's digital spaces are also combined with unrivalled event analytics to maximise lead generation.