

5G Enabled Energy & Environmental Monitoring

University of Glasgow (Communication, Sensing and Imaging)

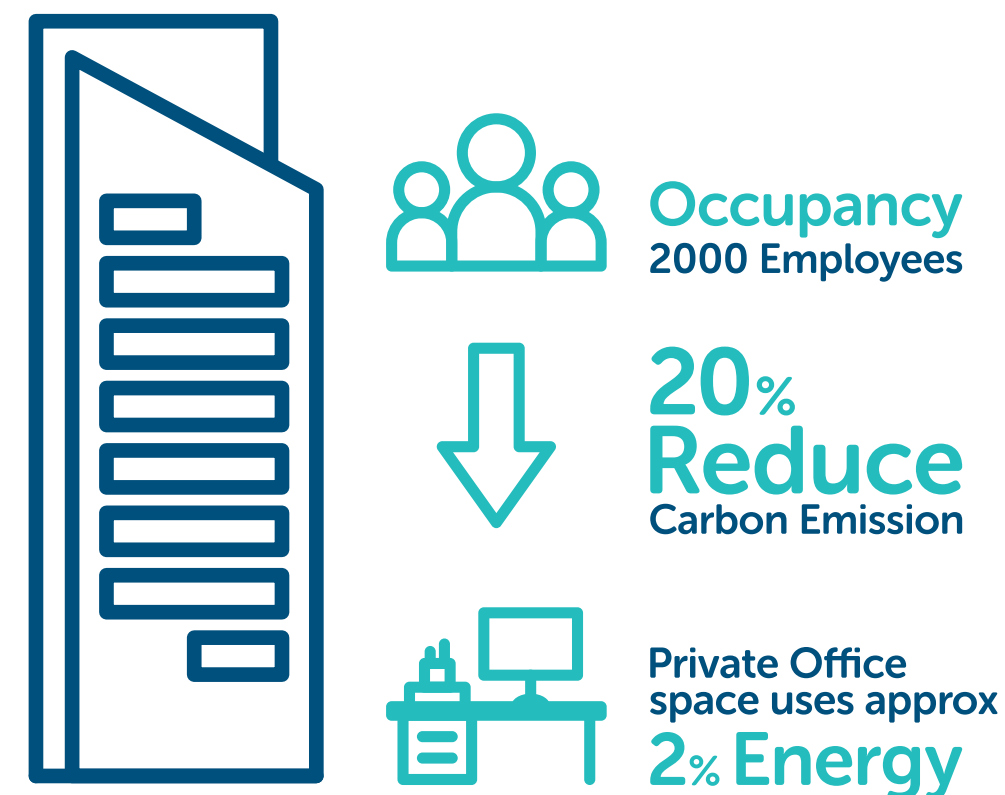


Supported with S5GC co-investment on Wave 1 Urban Project

The race against climate change and the targets set for 2030 and 2050 mean we need to think collectively of solutions to tackle all aspects that can help us achieve such sustainability goals. Taking into consideration the huge increase in energy prices that we are seeing across the UK and the challenges this has on SMEs, a simple and effective 5G solution like the Persuasive Energy Conscious Network (PECN) can help businesses in assessing their energy usage behaviours and work towards improving it to reduce costs and negative impact on the environment. Here is an example on how this emerging 5G technology from the University of Glasgow can be applied to industries.

1 Situation

Inefficient use of space management within commercial buildings, resulting in wasted space and energy resources. Lotrex UK Ltd* wants to reduce its carbon emissions by 20% and make a annual saving of approx. £4,000. They have an office space with an occupancy of 2000 people and each private office space uses approx. 2% of the total energy. With the introduction of flexible working, this size of commercial space is no longer required however they want to understand what size of space is needed for their business and where they can save on energy costs.



2 Task

Monitor space occupancy and energy consumption in real time, providing accurate and precious data needed to make efficient decisions for future space management and energy.



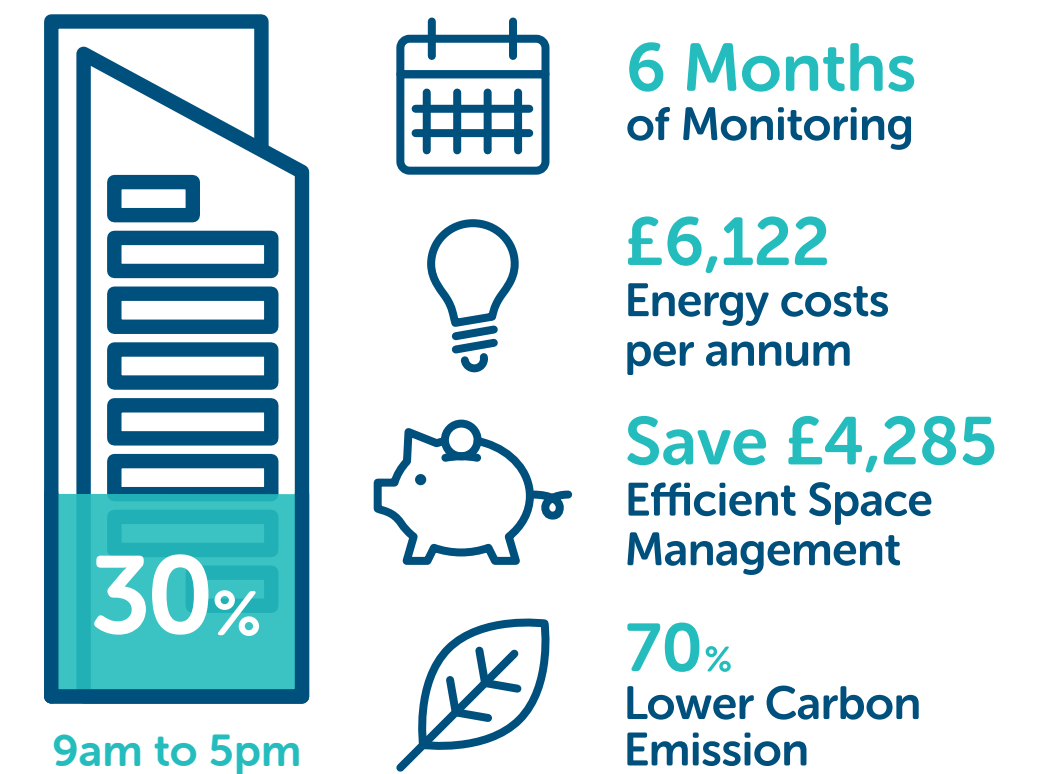
3 Action

By using 5G enabled LoRa technology we can perform desk-level energy sensing and room-level environmental monitoring to understand energy consumption patterns, in the context of the environment, and extract insights on occupancy and energy usage behaviour in the workplace.



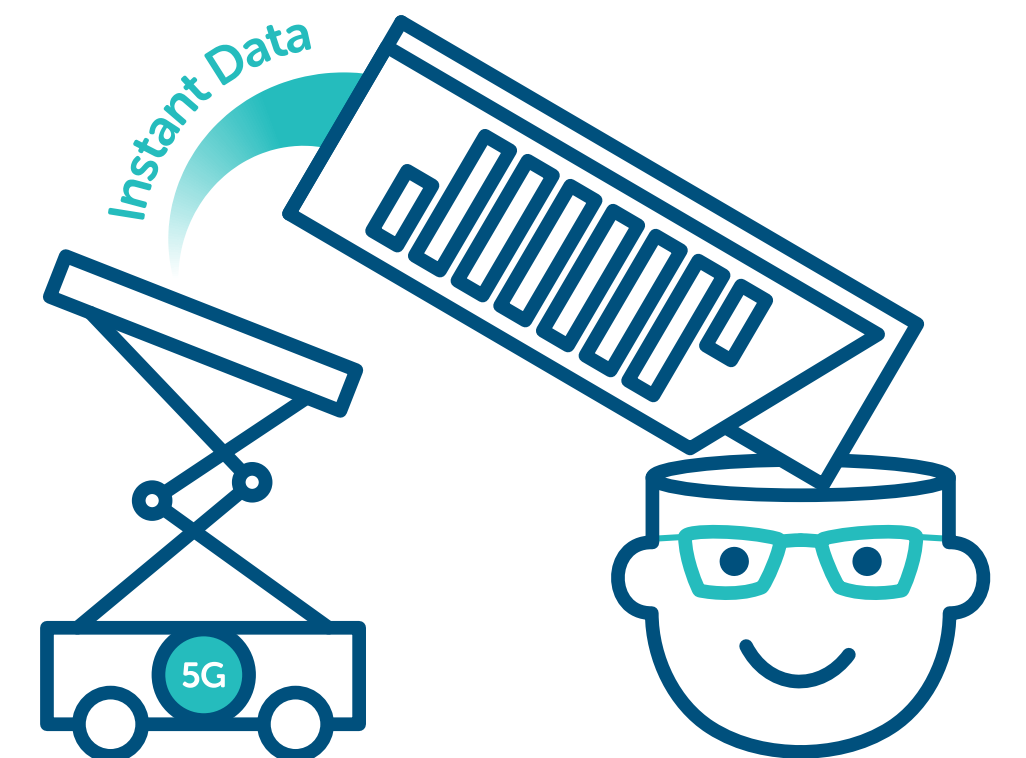
4 Results

They established that on average the building was at 30% occupancy during operational hours. To heat, light and run electrics, this costs the organisation on average £6,122 per annum. If they were to re-access their spaces they have the potential to reduce these cost by 70% and make a saving of £4,285.



5 Why 5G?

Due to the geographical size of building and the occupancy of 2000, 5G has the capacity to collate the large volume of data needed to provide real time results. It has the ability to support the massive connectivity demand of multi-sensing PECN.



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*Please note this is a concept-based example.