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The University
Of Sheffield.
**Energy
Institute.**

Translational
Energy
Research
Centre.

Understanding the solar
power potential at a Sheffield
manufacturing and engineering
firm.

A case study

Funded by:



European Union
European Regional
Development Fund



Department for
Business, Energy
& Industrial Strategy



Supporting Tufcot Engineering

The Translational Energy Research Centre helped Tufcot to understand the benefits solar power could bring to their operations, costs and to the environment. The Translational Energy Research Centre is part-funded by the European Regional Development Fund.

Founded in 1981 and based in Sheffield, Tufcot has been manufacturing composite bearing solutions for the marine, renewables and railway sectors for 40 years. As suppliers of materials and parts, Tufcot makes up an essential part of the supply chain for key industries, and with its own unique Tufcot® material, the company offers major cost-saving benefits to customers across the globe.

Improving energy sustainability

In order to become a carbon neutral, sustainable company, Tufcot's Environmental and Quality Coordinator Beth Bagshaw approached the Translational Energy Research Centre, which is part-funded by the European Regional Development Fund, to understand whether their idea of using solar panels on the roof of the building would enable them to generate their own energy, saving money and protecting the environment.

The company's manufacturing processes require a lot of energy, currently provided by electric appliances powered through the National Grid. Through a report analysing three different scenarios for installing solar photovoltaic (PV) panels at their facilities, the Translational Energy Research Centre was able to support Tufcot in understanding the potential savings and greenhouse gas reductions for its business by using solar power.

Solar energy potential

The team quantitatively assessed PV solar energy generation on a monthly and annual basis, and evaluated its feasibility to offset current energy use within the buildings of Tufcot. The team also explored other key aspects of transitioning towards PV solar energy, such as estimated potential energy and electricity cost savings, carbon emission reduction and payback time. These aims are achieved through use of a PV solar model that models solar radiation at the specified location and the corresponding energy generation, utilising the PV panel specifications and characteristics. The assessment was aligned with the European and UK government's plan to tackle climate

change, and will open up new opportunities for Tufcot by providing significant information and context on the adoption of PV solar renewable technology.

Reducing emissions by 50%

The results indicate that Tufcot's dependency on the grid can be reduced by up to 38% when the maximum amount of solar generation is deployed. The annual electricity bill also indicates a significant decrease; accounting for a cost reduction of between 33% and 51% depending on the scenario employed.

As a result of the report, Tufcot could put in place measures to achieve a reduction in carbon emissions of 50% in comparison to the actual plant. Over twenty years, that's the equivalent of emissions captured by 1920 English oak trees, or 10 km² of woodland in the Peak District. Overall, the Translational Energy Research Centre's report found that the introduction of solar energy technology would report positive benefits in many aspects for Tufcot.

Tufcot also recognised the importance of a holistic approach with regards to sustainability. Indeed, they went a step further and carried out an energy efficiency assessment of their premises with the Translational Energy Research Centre to understand where energy and electricity use could be reduced or optimised. This is a testament to their understanding of the challenges involved in becoming a green manufacturer, which is not the result of one action but of many steps, including this project.

Greg Majchrzak, Managing Director of Tufcot, said: "The Translational Energy Research Centre has helped Tufcot into making decisions about possible energy saving solutions for now and future projects. The guidance we have received has made us aware of changes we can make to deliver positive environmental impacts. We are happy to say that by mid-2022 we will aim to have reviewed and made decisions on the solutions that TERC suggested."

Get in touch

If you are a start-up or SME in the Sheffield City Region working on an energy-related field or wanting to learn more about your energy usage, you can email the team on terc@sheffield.ac.uk.

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Get in touch:

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