

# Terra Firma and Sustainability





## Composite Products (GFRP)

Fibreglass composites can significantly reduce the environmental impact of major building and infrastructure projects. Production of cement, iron & steel and other non-ferrous metals used in infrastructure account for 16% of all green house gas emissions. Using composites can reduce this impact through lower energy use in manufacturing, lower transport costs of lighter materials and more durable products. The world needs scalable solutions that address our challenges, and composites can be part of the answer in a world demanding sustainable solutions. Technology and innovation are critical to reducing carbon emissions and ensuring a sustainable future.

Fibreglass reinforced composites cause significantly lower emissions than alternative products (see

graph below). The main CO<sub>2</sub> emission in composites is from manufacturing the raw materials. When manufacturing our products, CO<sub>2</sub> emissions are very low. Our manufacturing processes are low energy use. We only require energy to heat moulds to between 80-250 °C. This is a significantly lower requirement than needed to cast aluminium or steel. Indeed, some of our products require no energy input, relying purely on a chemical reaction to harden the resins.

Air and water pollution in the production of glass fibre reinforced composites is very limited compared to alternatives such as aluminium, steel or concrete.

## Transport

Another factor to consider in CO<sub>2</sub> emissions is the impact from transporting the product. Being a lighter weight product this means that emissions from transport are far lower than heavier steel & concrete alternatives.

## Sustainable Energy

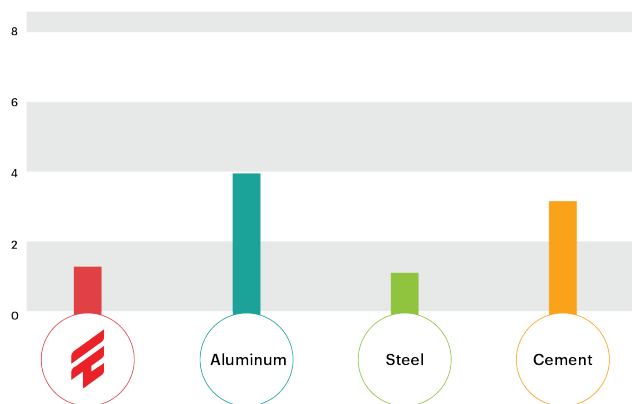
The Terra Firma premises are solar powered with a 10.5KW system. This enables us to generate approximately 14.19MWh of power per year and cover over 60% of our daily needs (averaged over the year) plus export back into the grid during peak production and weekends. Solar power generation has resulted in Terra Firma saving approximately 17.93t of CO<sub>2</sub> emissions each year since 2018.



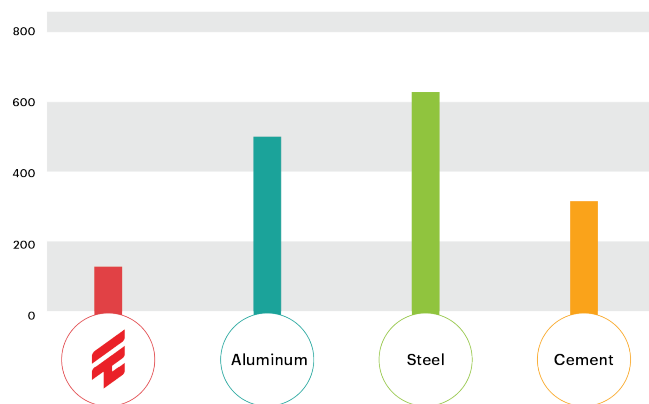




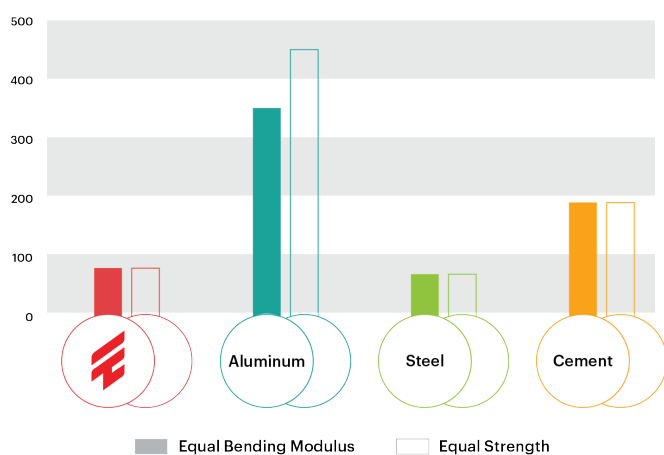
### Air Pollution, E 10<sup>6</sup> m<sup>3</sup>



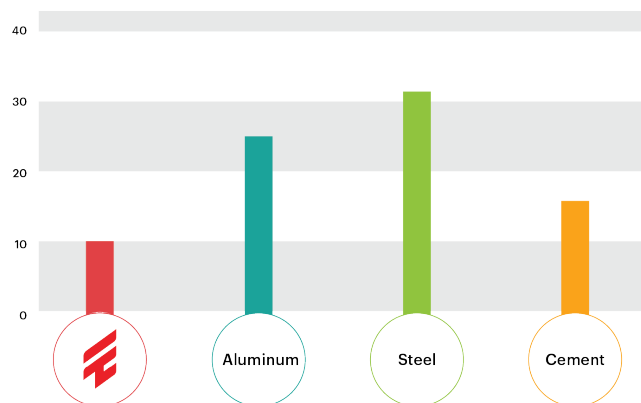
### Water Pollution, m<sup>3</sup>



### CO<sub>2</sub> Emissions from the same performance, %



### Energy Consumption, 10<sup>4</sup> MJ





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