



Steel: friend or foe in the face of the climate emergency?

Walter Swann

ArcelorMittal, Solihull, UK

François Hanus

ArcelorMittal, Esch-sur-Alzette, Luxembourg

Olivier Vasart

ArcelorMittal, Esch-sur-Alzette, Luxembourg

Alan Knight

ArcelorMittal, London, UK

Contact: walter.swann@arcelormittal.com

Abstract

Steel is the most recycled material in the world and a key contributor to the circular economy, but today's primary steelmaking methods result in high embodied carbon. In the face of the climate emergency, designers have been tasked with driving down the upfront emissions of the built environment. Naturally the embodied carbon characteristics of all materials have been put under the microscope and those with high impacts are being demonised, primary steel is one of those. So how does a designer balance the immediate needs of the climate emergency with the future needs of society? When confronted with a material like steel with practically perfect circularity characteristics but high embodied impacts how do designers balance the needs of today with those of tomorrow? What if steel could be made with zero carbon emissions? Coupled with its high potential for re-use and its high recycling rates is steel a friend and ally in the face of the climate emergency rather than a foe?

Keywords: climate emergency; embodied carbon, steel, Steligence

1 Introduction

In the face of the climate emergency steel is under attack. Despite being the most recycled material in the world and a key contributor to the circular economy, to some steel is a high embodied carbon

material that must be designed out in order to limit atmospheric CO₂ emissions now.

Perhaps this view does not take account of the very significant steps that the steel industry is taking to decarbonise, or how steel can facilitate carbon neutral solutions. Ghent itself is at the heart of a suite of steel making technologies that are being