



CASE STUDY

GALVANIZING – REDUCING CARBON THROUGH THE AVOIDANCE OF MAINTENANCE

Galvanizing’s ability to optimise the durability of steel structures and components has important environmental, economic and social advantages.

There are high economic and environmental costs associated with the repeated painting of steel structures. These burdens can be significantly reduced by an initial investment in long-term protection. The long-term durability provided by galvanizing is achieved with a low environmental burden, especially when compared to the energy value of the steel it is protecting, meaning that galvanizing reduces the embodied carbon of construction.

A recent environmental lifetime study highlighted marked differences between two established corrosion prevention systems for

steel structures. The hot dip galvanizing system had a lower environmental impact for a steel structure with a long service life, than a traditional paint system. Long service life and freedom from maintenance, the well known advantages of hot dip galvanizing, are the basis for these environmental benefits. In this example, as shown in the table, a saving of 57,100 tonnes of CO₂ was achieved over the 60-year life of the car park.

Service Life (years)	Hot Dip Galvanized Steel Structure (kg CO ₂ equivalent)	Painted Steel Structure (kg CO ₂ equivalent)	Saving by hot dip galvanizing (kg CO ₂ equivalent)
60	41,500	98,600	57,100
40	41,500	71,600	30,100
20	41,500	60,500	19,000

Extracted from Galvanized Steel and Sustainable Construction: Solutions for a Circular Economy, publ. EGGA (2021) and reproduced with permission of EGGA Galvanizers Association. For further information: www.galvanizing.org.uk/circular-economy