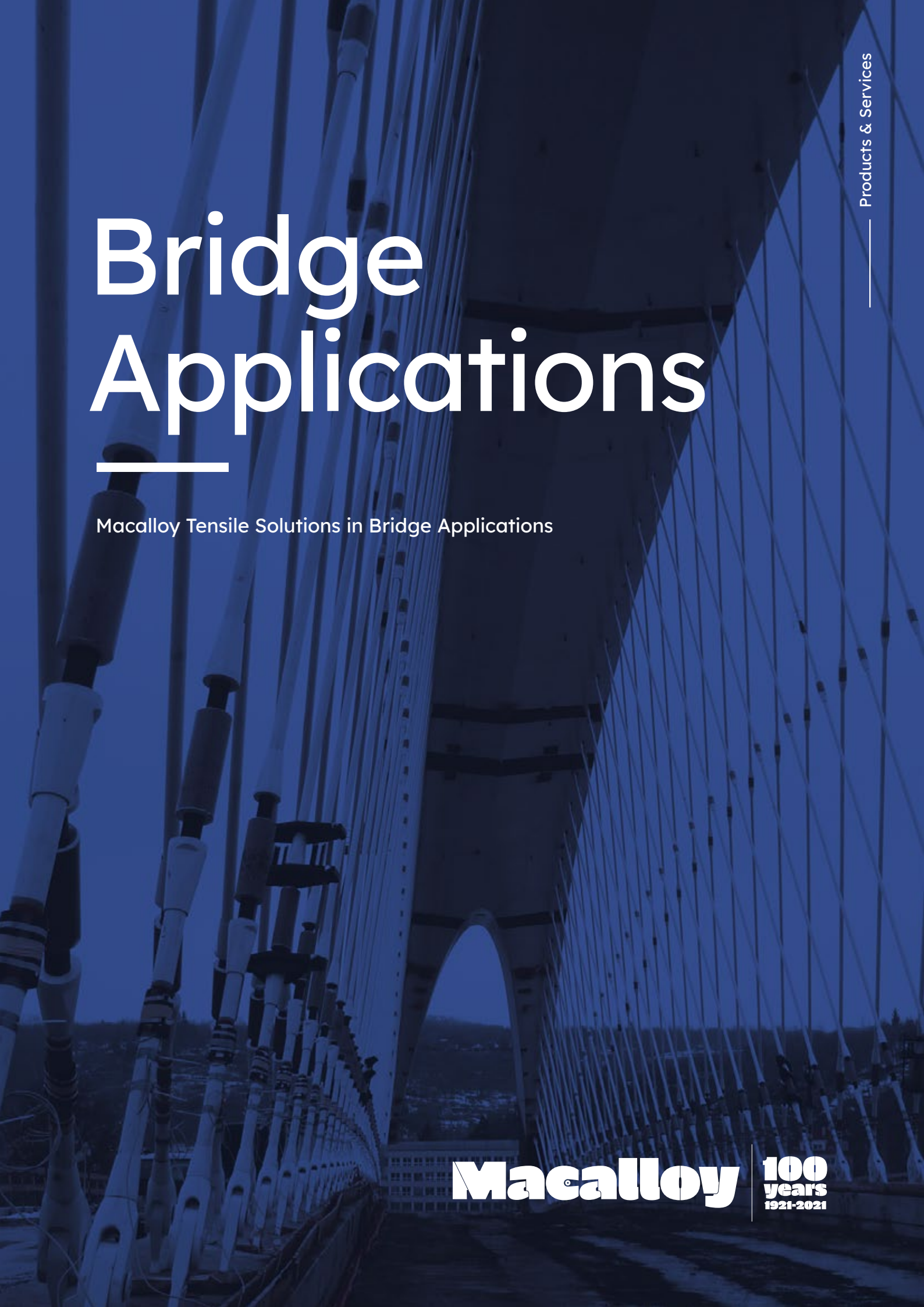


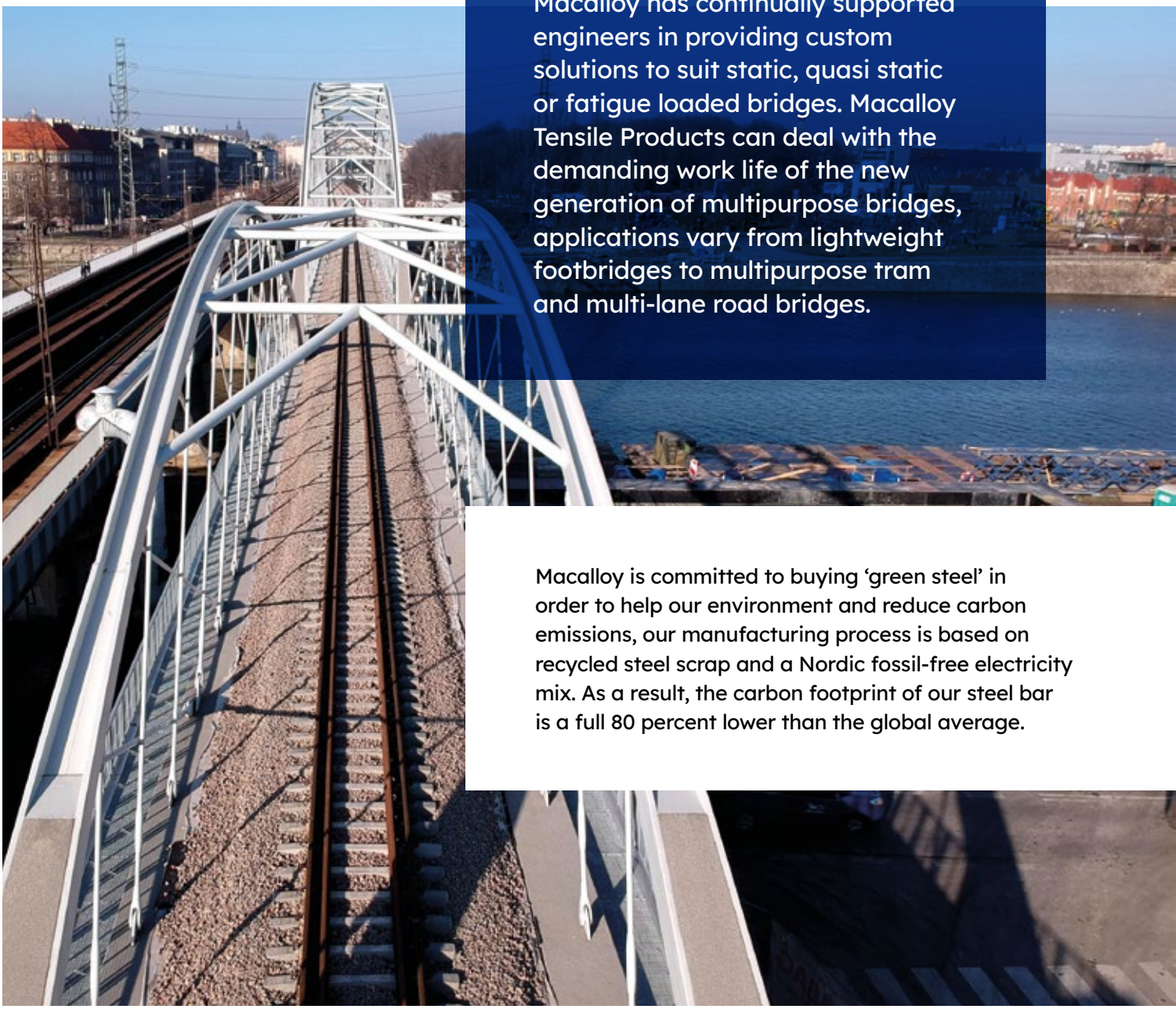
Products & Services

Bridge Applications

Macalloy Tensile Solutions in Bridge Applications

Macalloy 100 years 1921-2021

Over the years Macalloy Tensile Solutions have been at the forefront of architectural design and in particular the design of modern (supported/stay/bowstring) bridges.



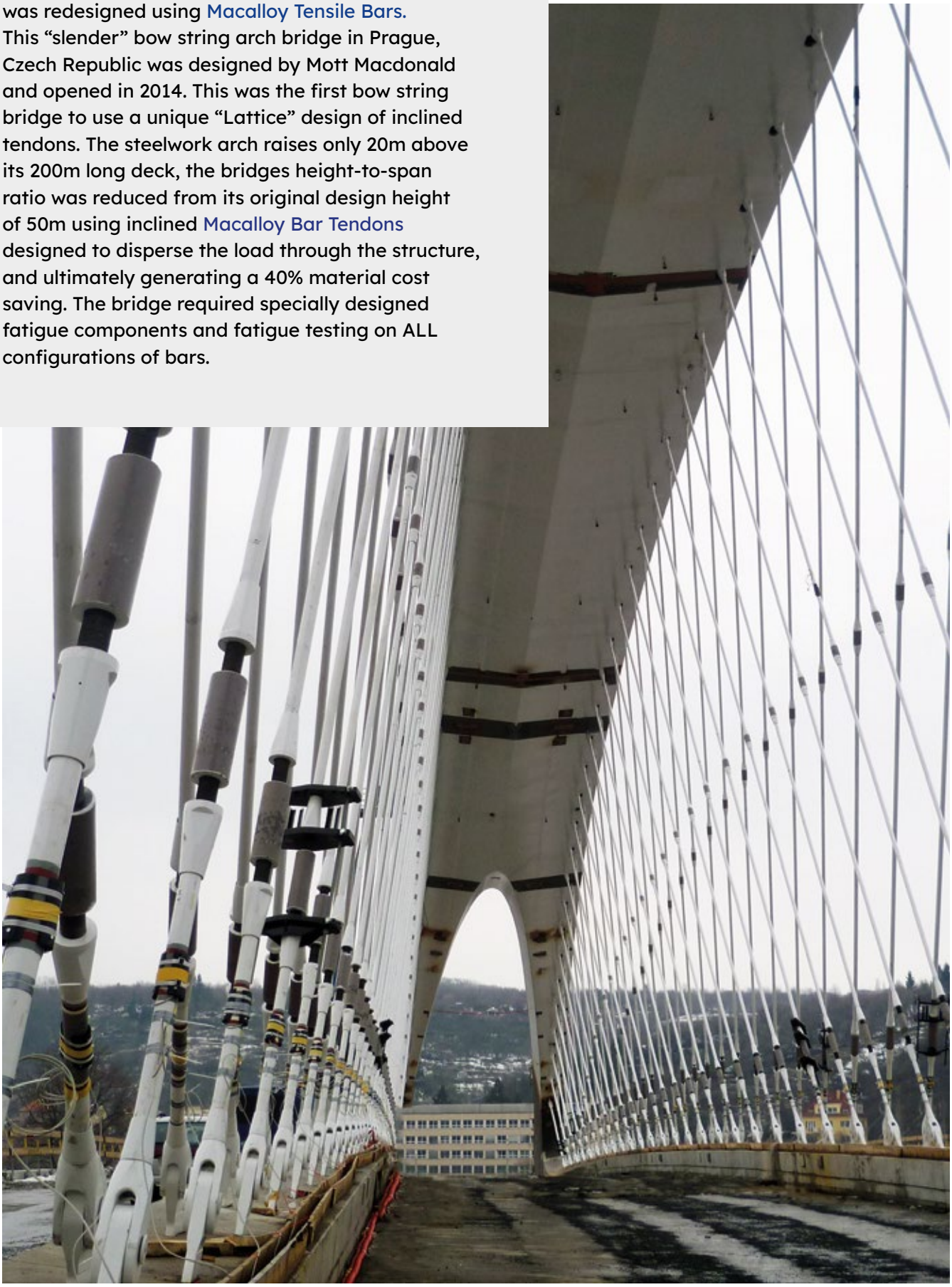
Macalloy has continually supported engineers in providing custom solutions to suit static, quasi static or fatigue loaded bridges. Macalloy Tensile Products can deal with the demanding work life of the new generation of multipurpose bridges, applications vary from lightweight footbridges to multipurpose tram and multi-lane road bridges.

Macalloy is committed to buying 'green steel' in order to help our environment and reduce carbon emissions, our manufacturing process is based on recycled steel scrap and a Nordic fossil-free electricity mix. As a result, the carbon footprint of our steel bar is a full 80 percent lower than the global average.

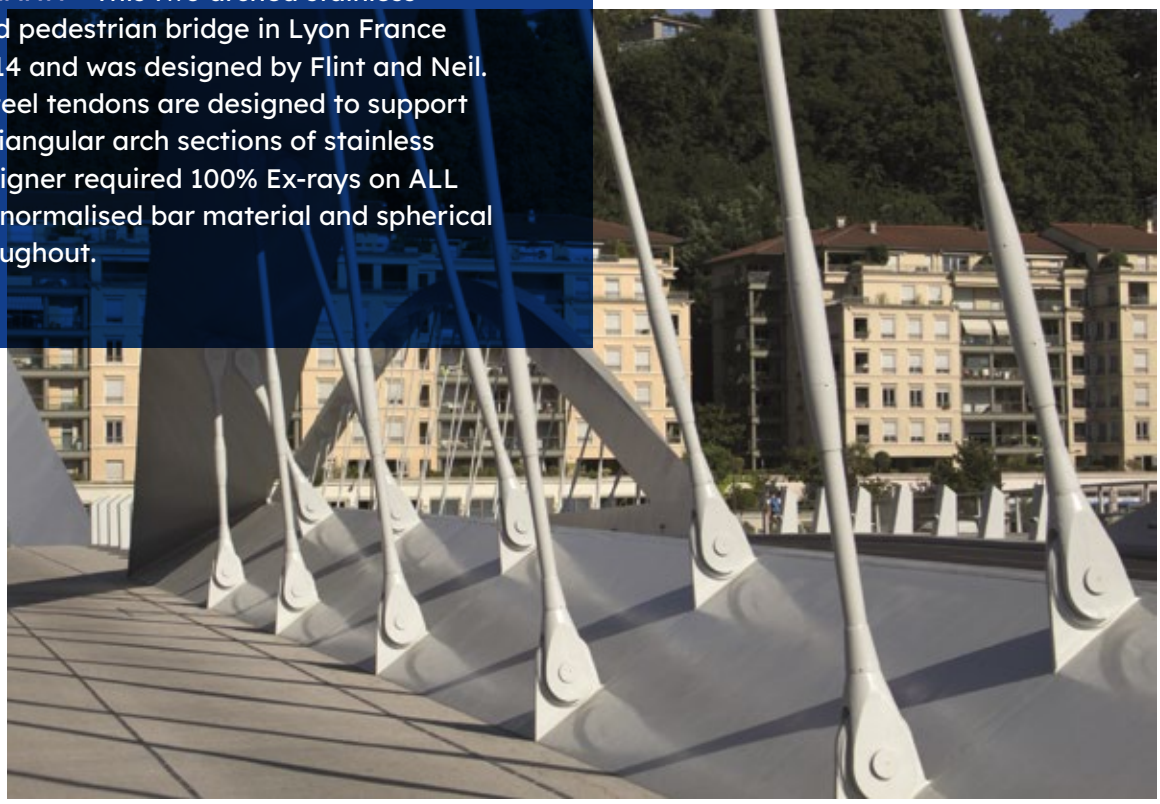
Benefits of the Macalloy Tensile Solutions in Bridge Applications:

- Macalloy have developed a "trademark" architectural aesthetic carbon and stainless fork connector.
- Due to the ease of installation of the Macalloy Tensile Bar system and the avoidance of any pre-stretching requirements, Macalloy Tie Rods provide an extremely cost-effective solution compared to cable alternatives, especially in arch bridges and lightweight stayed bridges. Similarly Tensile Bars offer a more rigid solution than cable ensuring reduced deformation of the bridge deck and ease of installation.
- Macalloy Tensile Solutions offer a purpose designed fatigue system from M42-M105 designed and tested in accordance with EN1993-1-9 to comply with detail category 84 [stress range 105Nmm^2 over 2 million cycles and a maximum load of 45% of ultimate tensile strength. Macalloy has already carried out an extensive number of fatigue tests on it's tie rods which are available on request. Capable of handling a 32% higher proportion of its tensile strength as a stress range than a cable designed to EN 1993-1-11.
- The Macalloy Technotensioner solution for "in line" tensioning pretensions loads in TENSILE BARS as well as load monitoring post installation. Macalloy has an extensive fleet of jacking equipment designed to meet most requirements and can design bespoke equipment for specialist applications. Macalloy Site Services team can offer stressing support, training, advice and supervision.
- Macalloy can also offer alternative load monitoring devices such as strain gauges and "Harmonics" to monitor the loads post installation.
- Macalloy has designed a range of spherical bearing products which eliminate "bending" moments and the risk of misalignment of tendons. Macalloy's spherical bearing solutions can accommodate misalignments of up to 5.9 degrees.
- Corrosion protection is available on Macalloy Tie Rods. Macalloy can offer protection through a variety of different coatings for various environments from Hot dipped galvanising through to C2/C5 paint, powder coating and stainless steel in a range of finishes.

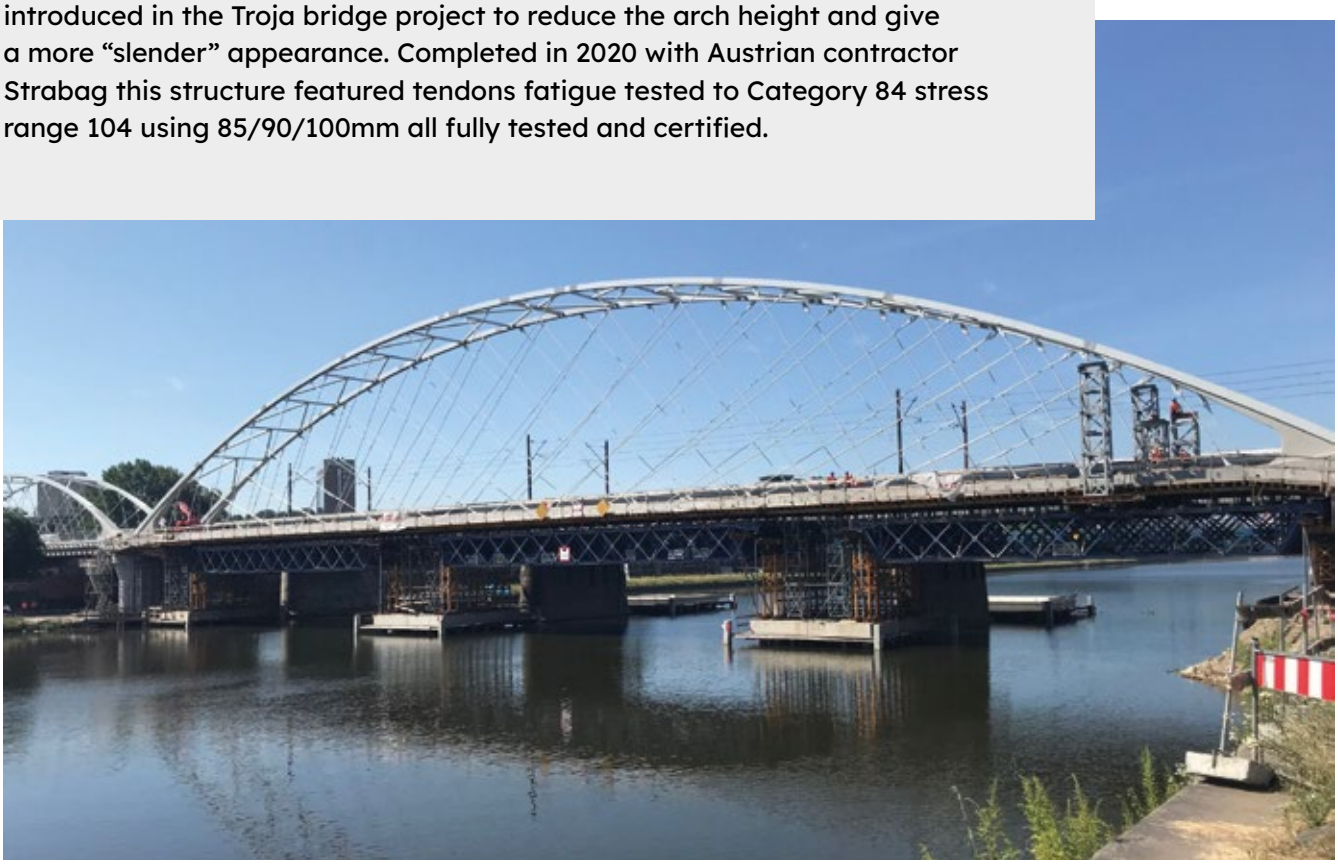
TROJA BRIDGE. Originally a cable stay bridge was redesigned using Macalloy Tensile Bars. This “slender” bow string arch bridge in Prague, Czech Republic was designed by Mott Macdonald and opened in 2014. This was the first bow string bridge to use a unique “Lattice” design of inclined tendons. The steelwork arch raises only 20m above its 200m long deck, the bridges height-to-span ratio was reduced from its original design height of 50m using inclined Macalloy Bar Tendons designed to disperse the load through the structure, and ultimately generating a 40% material cost saving. The bridge required specially designed fatigue components and fatigue testing on ALL configurations of bars.



PONT SCHUMANN – This two arched stainless steel road and pedestrian bridge in Lyon France opened in 2014 and was designed by Flint and Neil. The carbon steel tendons are designed to support the feature triangular arch sections of stainless steel. The designer required 100% Ex-rays on ALL components, normalised bar material and spherical bearings throughout.



KRAKOW BRIDGE – the new railway bridge over the Vistula River in Krakow in Poland. These three arched bridges utilise the unique ”lattice” design first introduced in the Troja bridge project to reduce the arch height and give a more “slender” appearance. Completed in 2020 with Austrian contractor Strabag this structure featured tendons fatigue tested to Category 84 stress range 104 using 85/90/100mm all fully tested and certified.



GOLDEN JUBILEE BRIDGES – this award winning BAR STAY bridge probably the most iconic bridge over the Thames was designed by Lifshultz Davidson and Sandilands and engineers WSP and completed in 2002 and renamed to commemorate the Queens 50th golden jubilee. This bridge consists of two pedestrian walkways suspended by Macalloy Bar tendons either side of the railway bridge. The two bridge decks are anchored to the various bridge abutments requiring a large number of engineered bespoke components including trunnion joints incorporating spherical seating to allow for a single design for different tendon inclinations.

ETA
DANMARK
ETA - 21/0053 Tension Rod Systems
BSEN ISO 9001: 2015

TINGSTAD
www.tingstad.no
+47 70 17 77 00

MADE IN SHEFFIELD

Macalloy 100 years 1921-2021

For futher information call +44 (0)1909 519200
email sales@macalloy.com or visit macalloy.com
Caxton Way, Dinnington, Sheffield, S25 3QE, U.K.