



Bridge deck refurbishment with a watertight InfraCore® Inside deck.

InfraCore® Inside is FiberCore Europe's proprietary technology to construct strong, lightweight and durable structures in fiber reinforced polymers (FRP, or composites). FRP is a proven technology, with significant advantages over steel, concrete and timber:

- Low-maintenance and long design life → beneficial Life Cycle Costs (LCC)
- Fully prefabricated → high quality and fast construction
- Lightweight → easy transport and simple foundations
- Ten times stronger than steel, more durable than wood and ten times lighter than concrete
- Safe and inflammable
- 50 year warranty

Since its market introduction in 2007 in the Netherlands, InfraCore® Inside has established itself as an accepted major new construction material for infrastructure. More than 250 projects have been realised in the Netherlands, UK, USA, China, Belgium, Italy and Surinam.

InfraCore® Inside bridge decks are installed on a new, existing or refurbished substructure. They provide a watertight, durable, lightweight and fatigue-resistant alternative to steel, concrete or timber decks. Our structures meet the loading requirements as set out in Eurocodes. The decks are finished with an epoxy-bonded wear surface.

### Advantages of InfraCore® Inside

The low self-weight of InfraCore® Inside bridge decks brings a number of interesting cost-saving advantages:

In **movable bridges** a lighter deck means that the support structure can be lighter, that the mass of the movable part is reduced, which in turn reduces the weight and size of the counterweight and the foundations that support all this.

In **refurbishments** the replacement with a lighter deck reduces the weight, allowing the supports to be retained while at the same time the loading allowance can be increased.

But not only does InfraCore® Inside bring a dilapidated deck back in shape, it is actually an **improvement**. The deck is closed, this way protecting the substructure from de-icing salts. Also, FRP cannot rot or corrode, and it is insensitive to fatigue. It has load-carrying capacity in two directions, thus ensuring alternative load paths.

### InfraCore® Inside bridge decks

Max. distributed loading	6000 kg/m <sup>2</sup>
Max. weight of vehicle	60 tonnes
Max. length	27 meter
Max. width per element	8 meter





*This heritage swing-bridge in Souburg was refurbished and fitted with InfraCore® Inside decks.*



*Installation of a 15x4m InfraCore® Inside deck.*



*Deck refurbishment: the original timber deck has caused the supporting steel structure to be in bad condition.*



*The steel structure has been repaired and conserved, followed by the installation of the first InfraCore® Inside deck segment.*

### Design

InfraCore® Inside is a standard technology but designed to order by FiberCore Europe's in-house engineering department. The design depends on the loading, allowable structural depth and spacing of the intermediate supports, as well as specific weight-restrictions. Specific detailing such as curbs and integrated ducts are also possible.

### Example: typical traffic bridge deck refurbishment or new-build bridge

Loading	Eurocode LM1 (60 tonnes vehicles, 30 tonnes axle loads + 9kN/m <sup>2</sup> )
Intermediate spacing of sub-structure	maximum 3m
Deflection limit	span/350, for spans of 3m
Structural depth	80mm
Weight	80kg/m <sup>2</sup>

### Construction

Deck segments are prefabricated and simple and fast to install, either from above or from below. Typical limits for fabrication are listed below, but segments can also be joined on-site to create even larger panels. Multiple bridge segments can be joined to create wider bridges than the dimensions indicated here. Bridges can also be realised in hybrid with other materials, such as an InfraCore® Inside deck on a primary structure in steel or concrete. This combines the best of both materials.

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