

CIRCO



Bio Bound Circular and bio-based concrete

'In the end, you need to include the whole chain in order to achieve success. Meet up, share your knowledge and do not be afraid to fail: practice makes perfect!'

- Jaap Schotanus, Bio Bound
Participant in the CIRCO Track



Challenge

Silvergrass (*Miscanthus*) is cultivated near Schiphol to keep geese away from the runway. Buyers used the grass as stable litter and animal feed, until one of the farmers started wondering whether higher-quality applications could be found. This farmer got into touch with Jaap Schotanus, who worked in the concrete sector and who had wanted to innovate for a while. When he suggested the use of *Miscanthus* as concrete fibre, Bio Bound was founded as a producer and supplier of circular, bio-based concrete products for the public space. Sample products include street furniture, tiles and stairways, kerbstones, as well as footpaths and cycle tracks.

Circular design strategy

Bio Bound manufactures high-quality concrete products for the public space. The composition of the concrete means that the environmental impact of Bio Bound products is twice as low as for traditional concrete products, which claim is substantiated by two accredited life-cycle assessments. Its products comprise a mix of a sophisticated concrete type and residues including granulated concrete rubble as well as silvergrass. This species of grass is beneficial because it grows rapidly and absorbs a lot of CO₂, storing it in the concrete for an extended period.

Circular business model

The price of the concrete is around 10–15% higher than 'normal' concrete due to the reuse of residues and the cost of handling, among other things. Many of these expenses can be recovered via transport. As Bio Bound is lighter than ordinary concrete, lorries can transport more units and fewer transports are required. Another advantage is that slabs for cycle tracks or other products can be applied on a soft peat dam without being supported by piles. This process saved no less than € 15 million at a cycle track in the province of North Holland. The company has also launched the Bio Bound Take Back System, in which old concrete can be returned free of charge, or even refunded in the near future.

Result & follow-up

Bio Bound products are already used on a large scale, such as at the sustainable business park Schiphol Trade Park and for various cycle tracks. Since an increasing number of parties are aware of the environmental benefits, Bio Bound has meanwhile progressed beyond the start-up phase. Norms and standards are part of the next phase, in which an independent institute will certify the products. Bio Bound is also participating in a research project to develop a circular concrete production process. As a result, Bio Bound is