

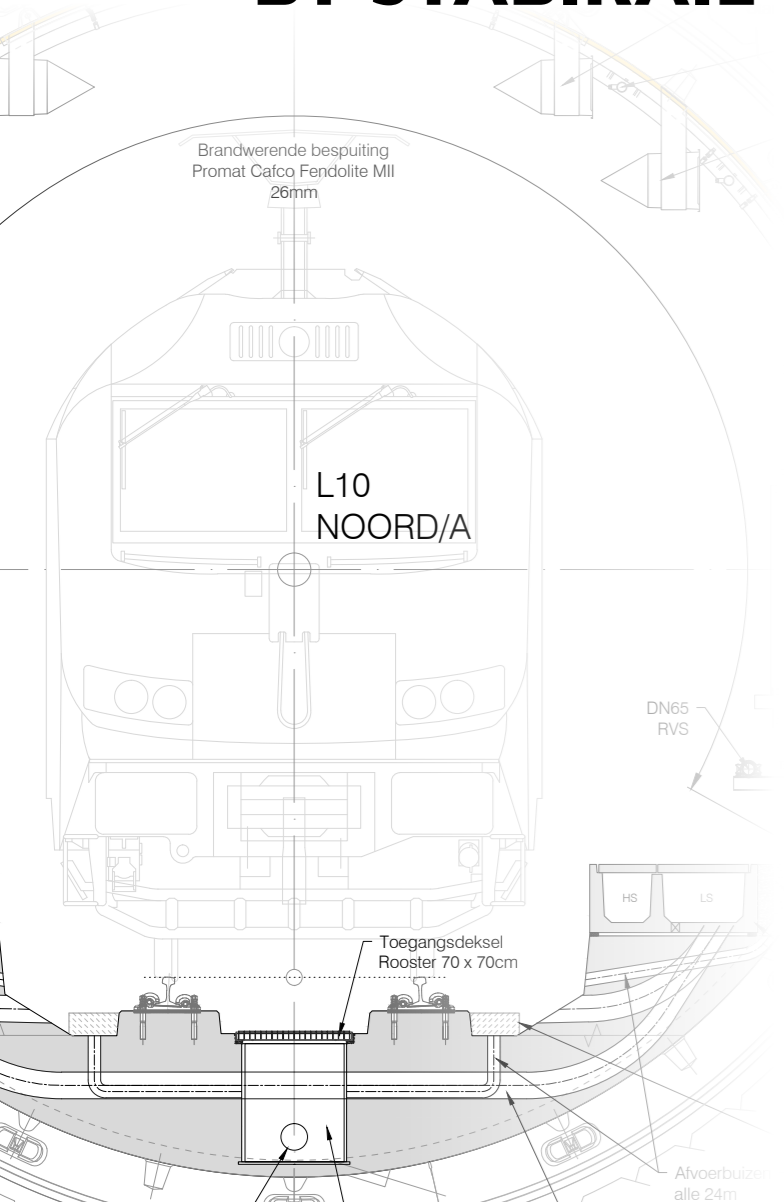
Zaventem,
Diabolo



Antwerp,
Central Station



ADVANTAGES OF SLAB TRACK BY STABIRAIL



- **Fast working method;**
This new technology has proven to be the most efficient solution.
- **2mm accuracy;**
The Stabirail system is operated by a 3D system, which allows for the highest accuracy.
- **Reduced vibration to the tunnel construction and buildings above;**
Vibrations caused by passing trains do not pass to the adjacent structures when riding over slab track.
- **Shallow construction height of the tunnel;**
Slab track systems require less construction height than the ballasted system. This is an advantage in tunnels where headroom is limited.
- **Reduced dead load;**
The reduced construction height means reduced dead load.
- **Higher speed operation;**
Higher running speeds are achievable due to a greater degree of stability of the track bed.
- **Very low maintenance requirements;**
There are numerous examples of slab track installations where little or no maintenance has been carried out for over 25 years.
- **Long design life;**
A concrete slab track is constructed with a design life of at least 60 years.
- **Low whole-life cost;**
Slab track systems have proven their whole life cost is lower than that of traditional ballasted track.


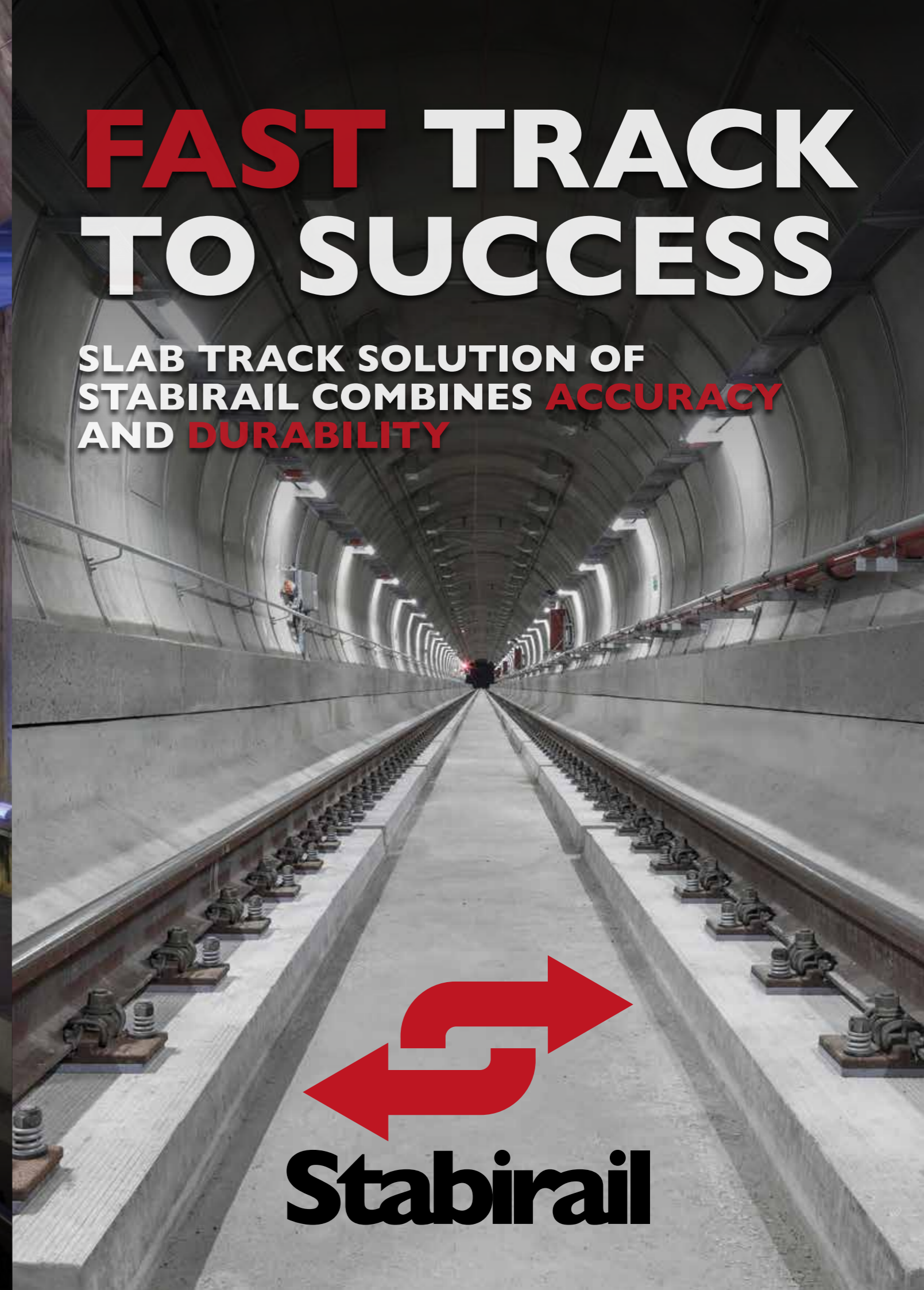


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Stabirail

FAST TRACK TO SUCCESS

SLAB TRACK SOLUTION OF
STABIRAIL COMBINES **ACCURACY**
AND **DURABILITY**



Stabirail

SLAB TRACK SOLUTION OF STABIRAIL COMBINES ACCURACY AND DURABILITY

Stabirail has designed and developed a new technology for slab track construction in tunnels and railway stations.

Slab track, also called ballastless track, is a new form of track construction which offers proven higher performance in service and a longer life than ballasted track.

This technology enables a faster and more efficient slab track construction. The long design life and minimal life cost is lower than that of traditional ballasted track.

The complete Stabirail equipment consists of:

- Concrete Milling Machine with filter press (waste water recycling);
- Diamond Drilling train;
- Anchoring train;
- Tanker (10,000 litres water and 2500 litres diesel);
- Lorry with water tank.

“SLAB TRACKS MAY PROVE TO BE THE DOMINANT DESIGN IN FUTURE HIGH-SPEED RAILWAYS.”

Georgios Michas,
Division of Highway and Railway Engineering

Working method

Stabirail has designed and developed a unique method for milling concrete blocks so that the rails can be assembled accurately and directly on the concrete.

In this method 3 machines are used consecutively, starting with the **Concrete Milling Machine**.

This new technology to mill concrete rail beds is designed to work with millimeter accuracy. It's a continuous process in which the entire concrete blocks are milled simultaneously. The entire machine is operated by a 3D system and is capable of working on parabolic transitional curves and transitional slopes.

The diamond discs are water cooled to prevent dust formation. The cooling water is provided by a 10,000-litre capacity tanker. After the sludge is separated, the cooling water is reused. This machine can operate completely autonomously.

Following the concrete milling machine, comes the **Drilling Train**. This train makes diamond core drilled holes in the concrete bed. These holes will afterwards be used to anchor the track. It operates fully autonomously because it is equipped with a generator and water tanks.

As the drilling is carried out with a water-cooled diamond drill, there is no dust formation.

The last train, the **Anchoring Train**, consists of two parts. First is the anchoring unit, the second one, the driving unit.

The driving unit includes a generator, water tank, air compressor and a hydraulic crane, so this machine can also operate autonomously.



References:

Year	Project	Location	Track length (km)	Number of rail anchors	Rail switches	Number of rail anchors
2004	Antwerp Central Station	Antwerp	8,3	53 484	5	2463
2009	Diabolo tunnel	Brussels (Zaventem)	9,5	60 620	10	7480
2013	Liefkenshoek-rail tunnel	Port of Antwerp	16,6	110 564	0	0
2014	Shuman-Josaphat tunnel	Brussels	4,2	27 168	5	2357

Efficiency (*):

Concrete Milling Machine	
At max. 10 mm to be milled	200 m/8 h - 600 m/24 h
At max. 20 mm to be milled	135 m/8 h - 400 m/24 h
Drilling Train	150 m/8 h - 450 m/24 h
Anchoring Train	300 m/8 h - 1 200 m/24 h

(* based on limestone concrete)

