



Let us help You save time, money, and downtime with our patented Snow and Sand protection for turnouts



Snow drift on a bridge in Denmark.



Sand drift in a dutch harbour.

# SNOW AND SAND PROTECTION SYSTEM

Simple, economic, effective & improving operations

## TurbFly®

### TurbFly saves energy and provides maintenance benefits

Installing TurbFly will help you to minimise maintenance and save energy. So deciding to install TurbFly is an environmental investment which can save on operating costs, increase accessibility and enhance safety for your track facilities.

### TurbFly (>3500 installations done)

The patented solution supplied previously under the SnowProtec® brand name has upward-facing brushes which ensure, together with points heating, that points operate without problem even in strong winds and heavy snow. This system has been supplied for more than 3500 different installations throughout Europe, most of them in Scandinavia. The downward facing black brushes provide a seal against sleepers and ballast in order to provide the correct windbreak effect by means of the upward-facing white brushes. The upward-facing brush

### Approved for speeds in excess of 360 km/h

TurbFly is the only protection system capable of withstanding the stresses caused by high-speed traffic.

### No removal required

TurbFly remains in place all year round, and it does not need to be removed for rail inspections or snow sweeping with a brush machine. When relaying or

### Long service life and low maintenance

The first test installations have been in place since 2003 and are still fully functional. Only minimal maintenance has been required in all these years.

This product works as well in the yard as it does on low-speed or high-speed tracks (HSL).

creates shelter, but with a certain amount of turbulence behind it, and a venturi effect lifts the snow away and prevents it landing in sensitive areas on the points.

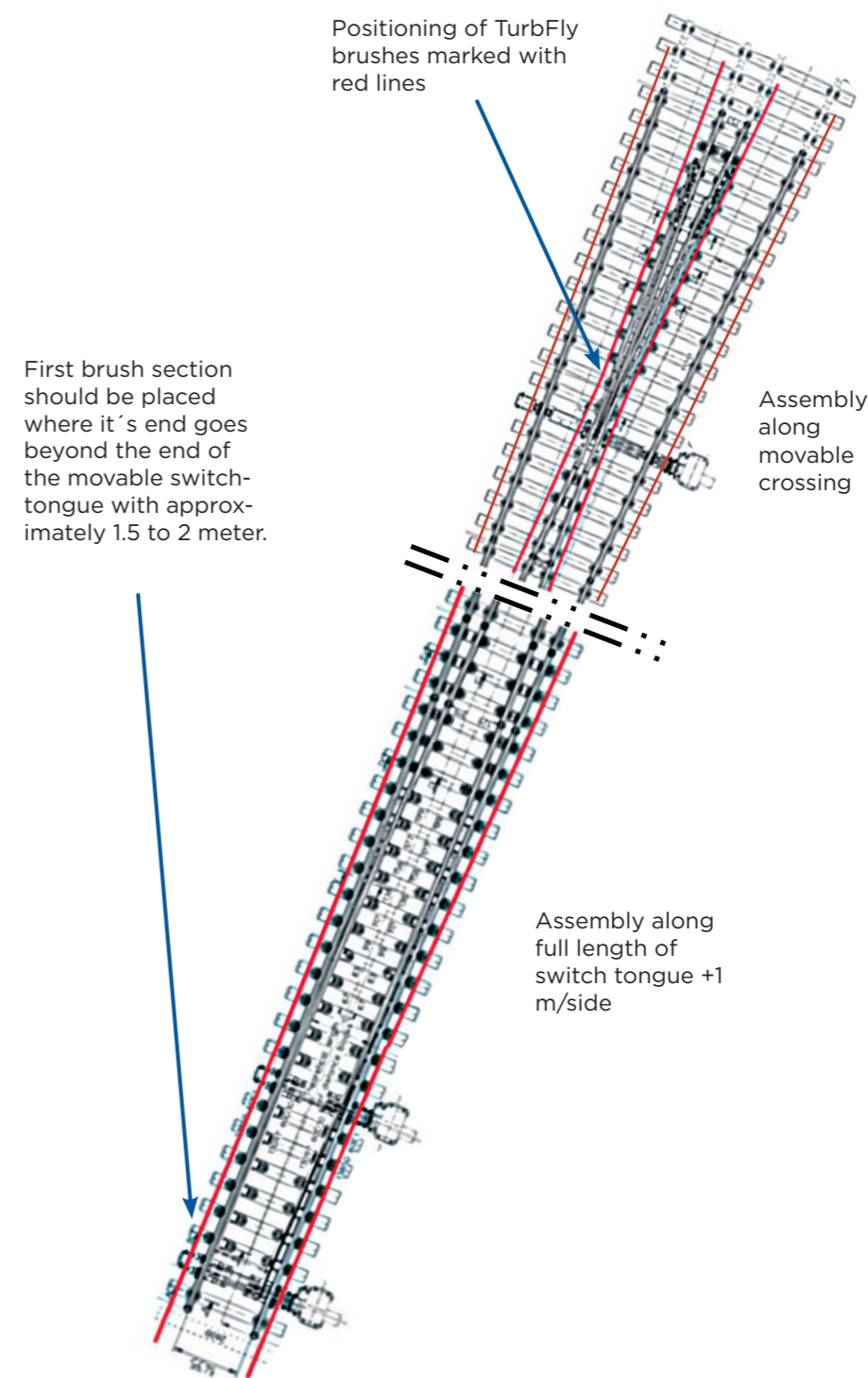
This system was originally developed in Sweden by Osborn and the Swedish Transport Administration, who worked in close cooperation between 2002 and 2003. The first test brushes were installed in January 2003, and those same original brushes are still in use!

This system is every bit as effective in the yard and station areas as it is out on tracks.

compressing ballast, the protection is removed with ease and can then be put back in place just as easily.

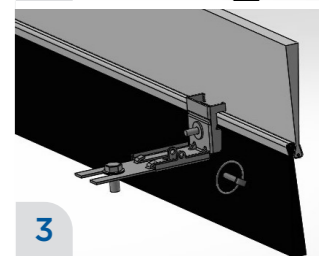
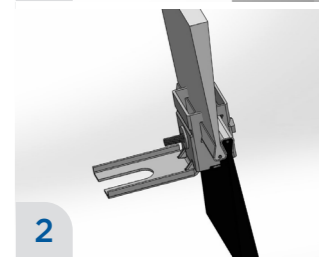
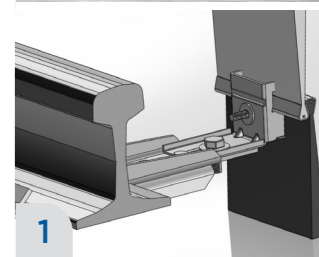
### Easy to fit

It just takes up to 2 hours to fit these brushes along the moving sole plate.



#### Attachments:

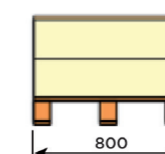
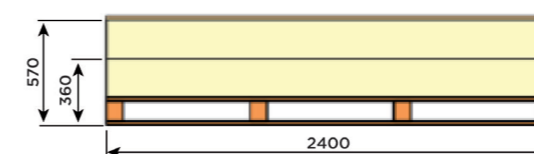
1. With railfoot attachment
2. With tie attachment
3. With quick lock attachment



Upward and downward assembled brushes create protection along the track.

Find more technical info and instructions at: [www.osborn.se](http://www.osborn.se)

Delivery packaging 800x2400x350 mm (1 set / pallet).



We have many more sets that fit the most common turnouts, regardless of supplier. Below is a small selection of available sets. We also make customized sets if needed.

Assembly components supplied for different rail profiles, for example: BV50, SJ50, S54, 60E, 60EI, UIC60, SBB1, P65, R65.

Switch Model	Total brush length (m)	Osborn Item no	Brush (white+black) length in mm					Fixing point	Fixing U-bar
			2350	2000	1850	1350	1000		
			Complete sets (snow / ice)						
EV-225/190-1:9 EV-225/480-1:12 EV-11-1:9 BSI-130-1:7 BSI-250-1:9,5 BSI-446/160-1:9,5	9,4	1933907340	8+8					24	
EV-300-1:9 EV-12-1:12/1:13/1:15 BSI-185-1:9-360	11,7	1913907310	10+10					30	
BSI-300-1:9 BSI-300-1:12 BSI-300-1:9-483/185 BSI-350-1:11-207/130	14,1	1903906300	12+12					36	
EV-500-1:12 EV-600-1:15 EV-600/365-1:12 BSI-500-1:14	16,4	1913907315	14+14					42	
EV-600-1:13 EV-760-1:14 / 1:15	18,8	1913907320	16+16					48	
EV-1200-1:18,5 EV-20,667-1:18,5	21,1	1933907330	18+18					54	
EVR-300-1:9	18,8	1903907370	16+16					38	5
EVR-760-1:14 / 1:15	28,2	1903907380	24+24					62	5
EVR-2500-1:26,5/1:27,5	42,3	1913907325	36+36					98	5
EKV-190-1:9 (crossing)	17,2	60059390RF	10+10				8+8	46	



Deep snow in Norwegian mountains.



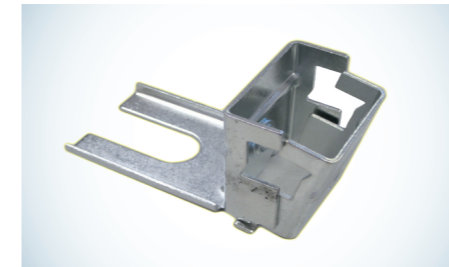
Snow sweeping still possible with assembled Turbfly brushes.



Fixing point assembly



Rail foot bracket, complete (1903959275)



Fastener galvanized (1903959235)

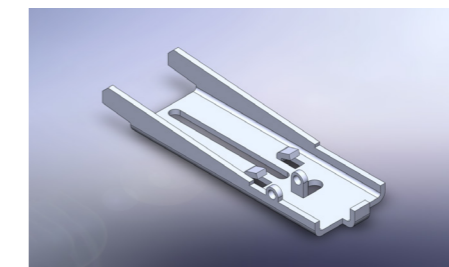


Joint fitting (1903906677)

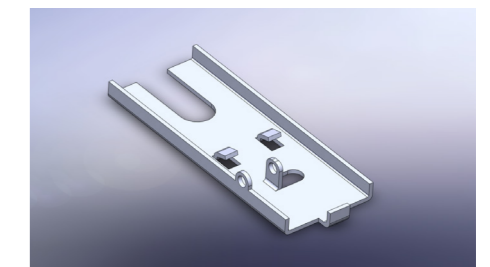


End fitting (1903906684)

Spare parts (supplied pcs / pcs, complete units)		
Item description	Osborn Item no	Qty / unit
Brush (white), length 3020 mm	6000059220	1
Brush (black), length 3020 mm	6000059210	1
Brush (white), length 2350 mm	1843907809	1
Brush (black), length 2350 mm	1813907859	1
Brush (white), length 2000 mm	1803907809	1
Brush (black), length 2000 mm	1973907859	1
Brush (white), length 1850 mm	1833907809	1
Brush (black), length 1850 mm	1803907859	1
Brush (white), length 1350 mm	1973907809	1
Brush (black), length 1350 mm	1943907859	1
Brush (white), length 1200 mm	6269976-04	1
Brush (black), length 1200 mm	6269976-03	1
Brush (white), length 1000 mm	1943907809	1
Brush (black), length 1000 mm	1913907859	1
Brush (white), length 600 mm	6000059222	1
Brush (black), length 600 mm	6000059212	1
Fastener galvanized (compl. w. screw + washer)	1903959235	1
End fitting (compl. w. screw)	1903906684	1
Joint fitting (compl. w. screw)	1903906677	1
Rail foot bracket, complete	1903959275	1



Rail foot bracket Quick lock

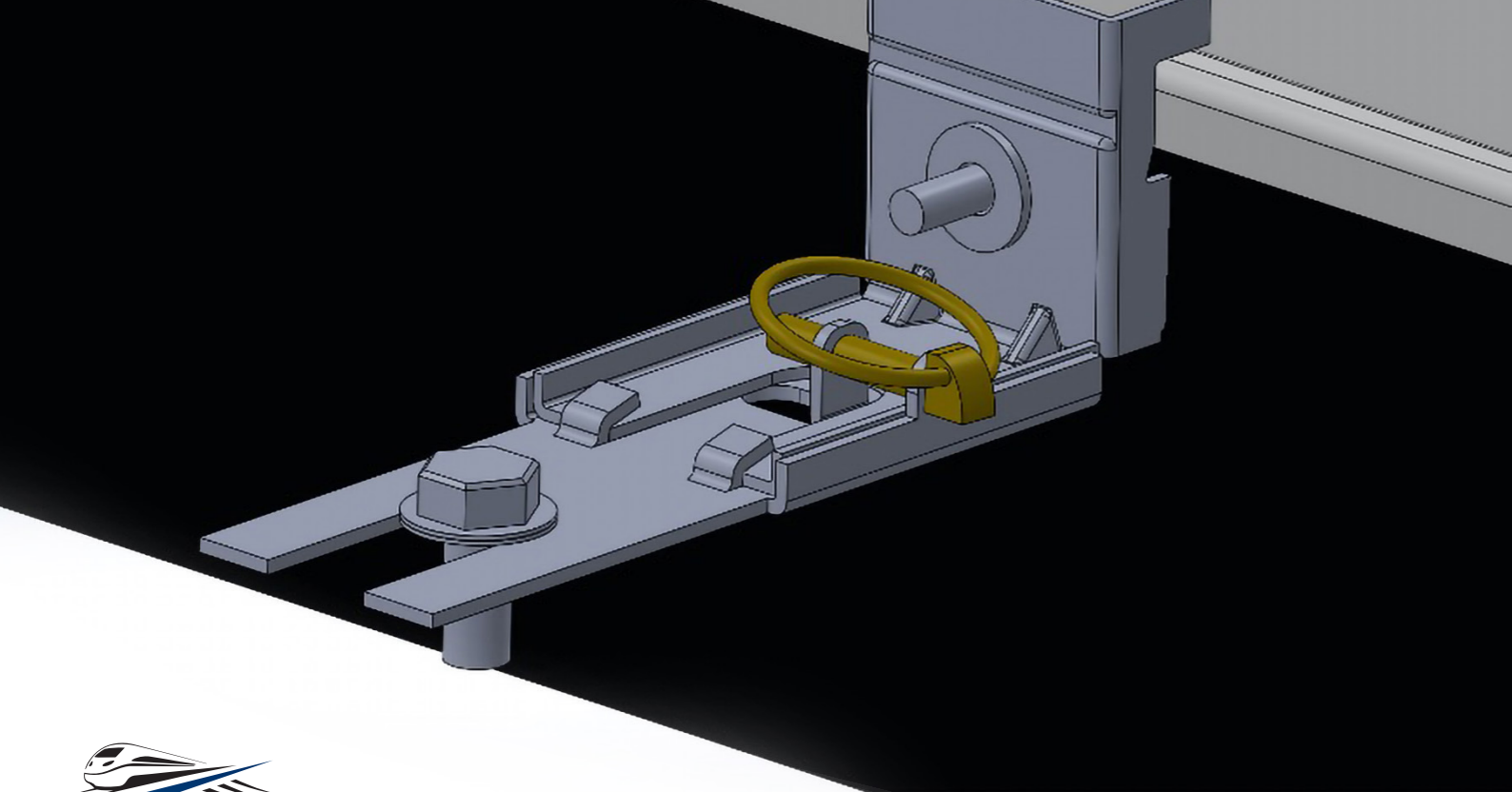


Tie bracket Quick lock

#### QR-Code

Scan QR-code to watch our movie on how to assemble the complete set.





## NEW QUICKLOCK FOR TURBFLY®

### New Quick-lock fastener

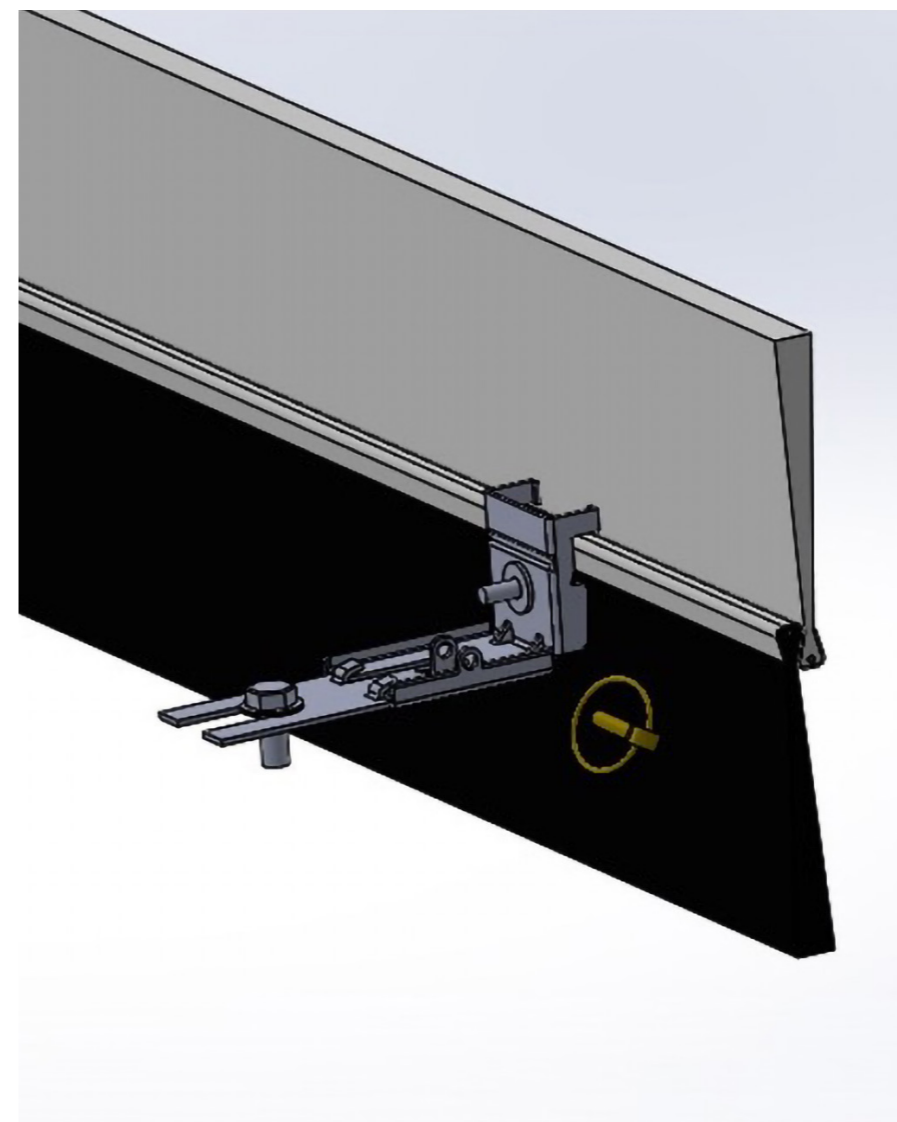
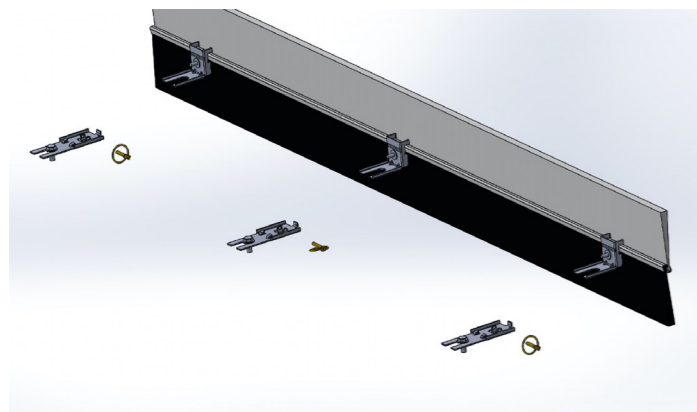
After several years of field testing where we have tested, developed and refined our new quick fasteners, called Quick-lock, we are proud to introduce this to our patented TurbFly system. The Quick-lock are designed to simplify disassembly and reassembly when working on and around the rails.

They also makes general installation work less time consuming. And during service or maintenance work,

the snow guards can be easily be dismantled and reassembled by only one person.

The brackets can be applied in all TurbFly sets that have mounting brackets for sleepers.

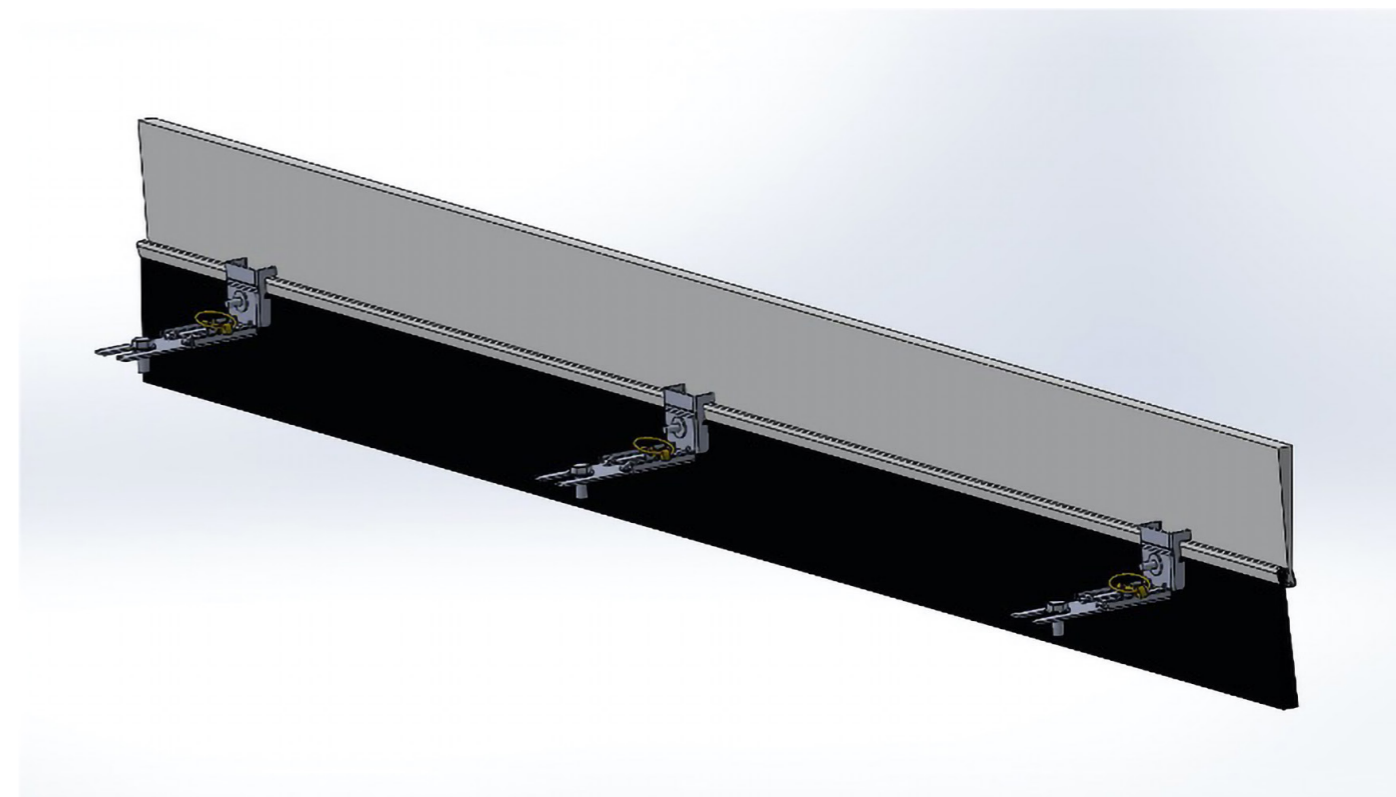
A bracket that is adapted to the rail foot assembly is also under development and will soon be available.



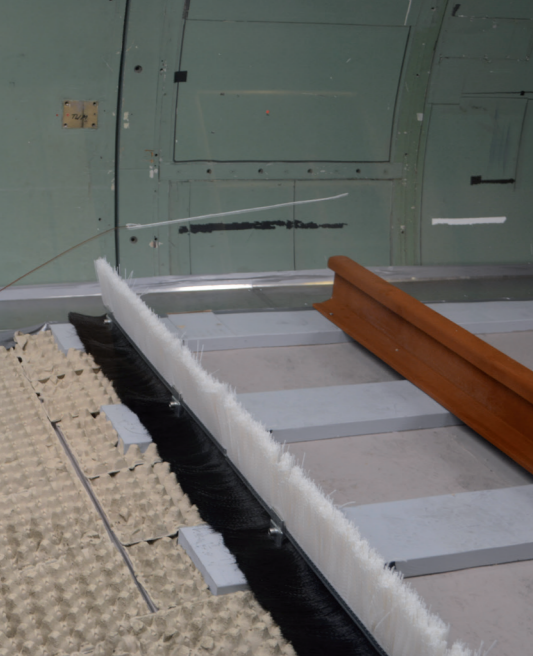
### Quick-lock safety pins:

Once you have hooked the snow brushes bracket to the Quick lock holder you'll easily secure it with the quick locking pin.

Find more technical info and instructions at: [www.osborn.se](http://www.osborn.se)



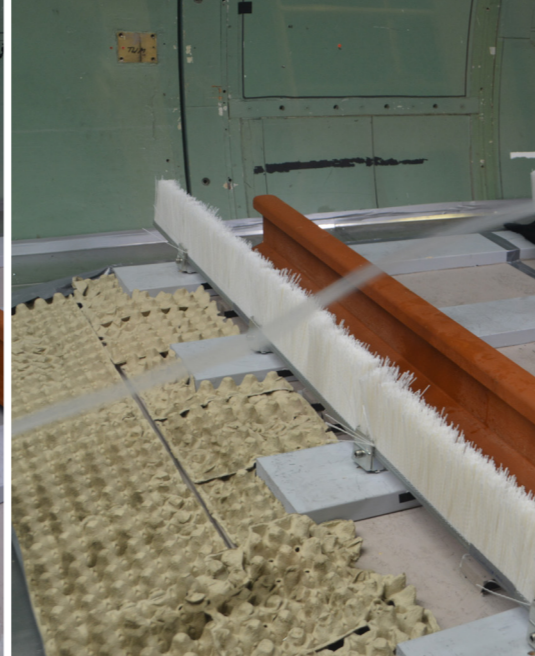
Final installation.



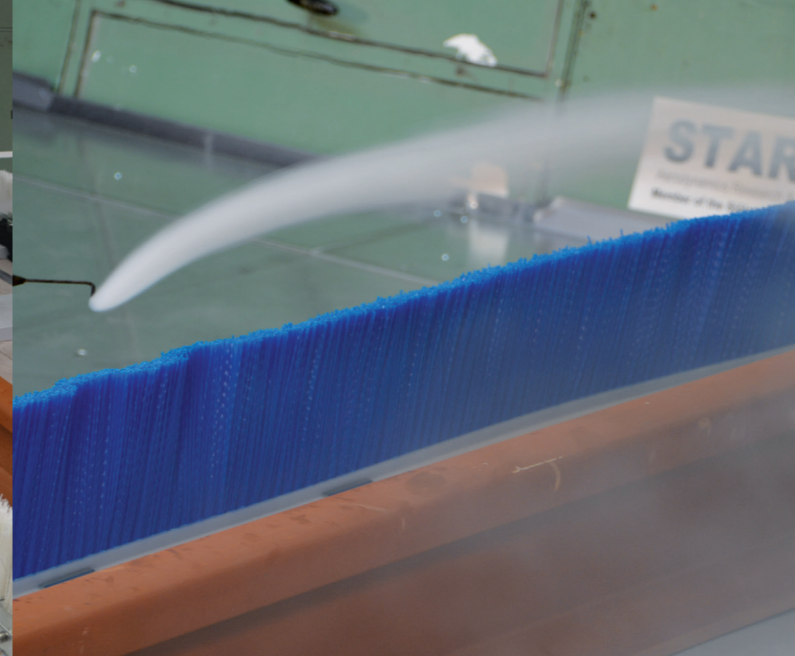
Maintained energy in lamellar steam above "bubble".



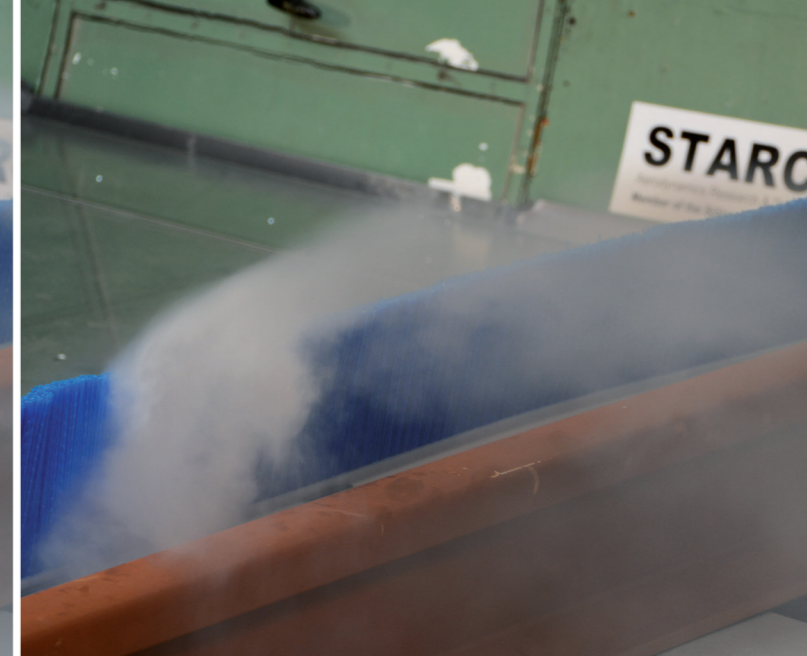
"Shelter" within the bubble (no wind pressure).



Optimised flow for sand application - no lower brush.



Wind flow is clearly lifted.



Some wind passes through the brush.



### Report from wind tunnel test, Stockholm

The tests were carried out at various wind speeds, from 5 m/s to 20 m/s, and also with different wind angles, approaching from various sources and directions. This has allowed us to verify that the brushes work very well, even with oblique angles of approach and wind not attacking directly from the side. The brush creates a zone of turbulent "shelter" with a considerably lower wind speed behind the brush (pictures to the left), the wind flow is lifted considerably while maintaining the air speed and lamellar flow, which means that snow and sand are carried further on and follow the unbroken, lifted air flow. With brushes positioned and installed correctly, the air flow is lifted sufficiently to actually pass the total

track width completely. A very clear "bubble" is formed over the entire rail section, protecting it and preventing unwanted material remaining in the zone between or just beyond the rails.

We can use a thin yarn on a "magic wand" to show how the entire bubble created by the brush generally creates shelter, i.e. very low energy content in the wind, but with a higher atmospheric pressure than up in the lamellar flow. This effect is what causes the air flow to lift and pass the track. There is an enormous difference with and without brushes.

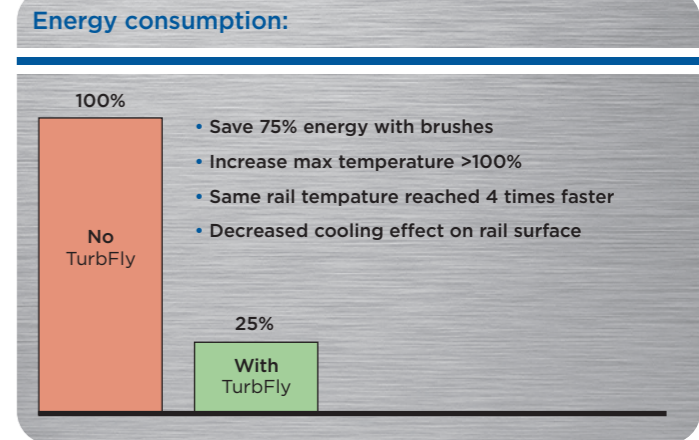
## VERIFIED AERODYNAMIC TECHNOLOGY

Generate savings on energy and maintenance cost

### Energy saving (winter applications)

The amount of energy saved with these brushes has proven to be significant. During the wind tunnel trial, we showed that the protective "bubble" creates an opportunity to save up to 75% energy for an installation exposed to wind. The savings are inversely proportional to the wind speed, i.e. lots of wind means major savings, while little or no wind means fewer savings.

Wind pressure against the rails is minimised by means of the brush function, allowing applied heat to remain in the area for which it is intended. The test shows that significant savings can also be achieved in installations where moist air creates problems with ice. In other words, snow is not always the problem.



#### QR-Code

Scan QR-code to watch our wind tunnel movie and learn more from the TurbFly effect.



[www.youtube.com/osbornsolutions](http://www.youtube.com/osbornsolutions)

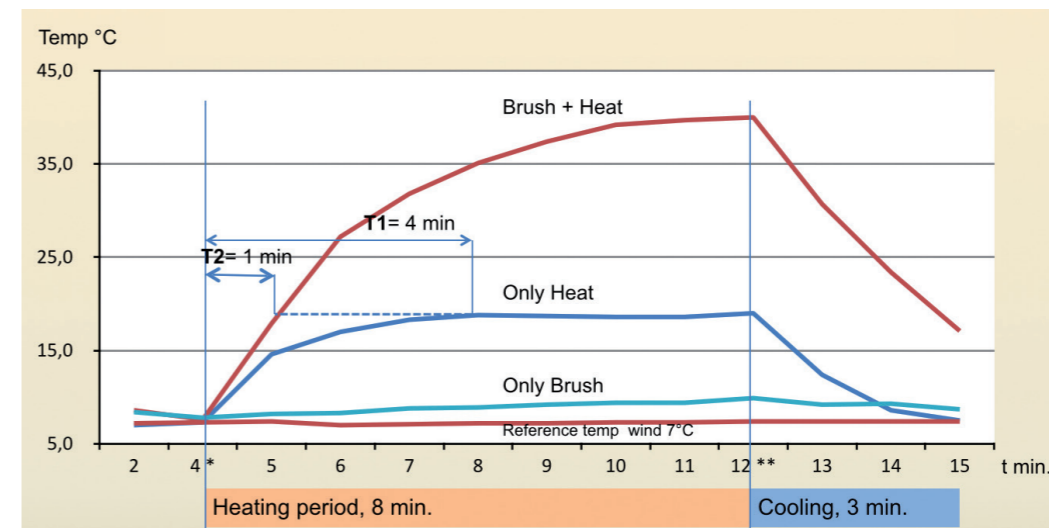
No brush - wind facing directly toward rail:



With brush - wind clearly lift and airstream pass the whole track:

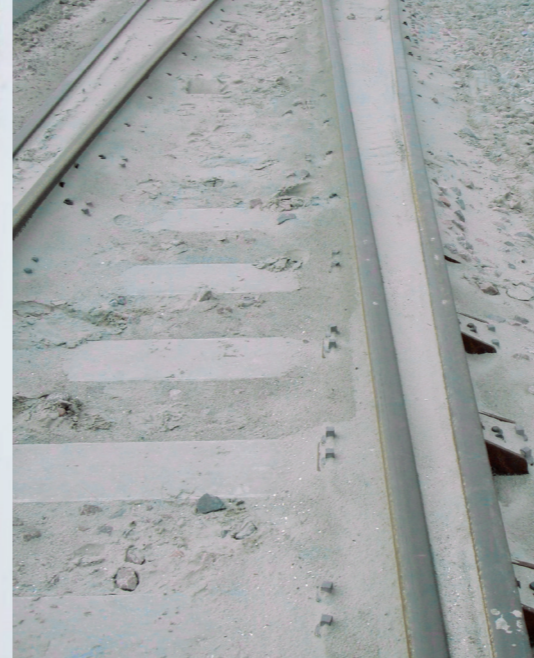


Comparison heat development / cooling path





Brush and heater creates the snow free zone.



Without TurbFly = problem



Without TurbFly = problem



TurbFly is the solution for sand problems.

## USER REPORT FROM THE FIELD

### Winter applications

#### Report from the test sites

“The new snow protection has increased reliability and made it easier to clear snow!”

“I am pleasantly surprised and very pleased,” says Raimo Kajén, track engineer at the Swedish Rail Administration in Gävle. He has been working with brush-type snow protection since the first test brushes were installed in 2003. “I was a little sceptical about the technology initially, but after all these years of using the brushes in practice I can really see all the obvious benefits.”

Raimo explains that he has previous experience of cover-type snow protection. These make the most of points heating and so accelerate the melting of the snow, but they do not provide much protection from drifting snow. Quite the opposite, in fact – the problem with drifting snow is made even worse because of the plates positioned along the track. Snow Protection Model Brush has considerably reduced the problems with drifting snow, which also means that the points have not needed to be swept clear of snow as frequently.

“We are saving time and money,” says Raimo. He also relates how the installation of the new protection has been straightforward and easy. The brushes are supplied in sections which are easily screwed in position.

And once they are in place, there is no need to remove them for inspection or snow sweeping. The brushes remain in place all year round, and there has been no servicing requirement to speak of. “We have had to resecure a couple of brushes which worked slightly loose, but all in all very little maintenance has been required.” Reliability is the most important aspect, of course, and Raimo can confirm that this has been improved significantly with Snow Protection Model Brush. “We have seen fewer stoppages at points where brushes are used as snow protection.”

Raimo Kajén, maintenance manager, Infranord AB

## USER REPORT FROM THE FIELD

### Sand applications

#### Report from the test sites

“The new sand protection has increased reliability and minimised maintenance requirements!”

“We had major problems with drifting sand and ice formation in cold weather, too, at our construction project for a customer. We came into contact with Snow Protec® thanks to our parent company’s cooperation with Osborn, and so we were the first to try out these brushes as a solution to the major problems our customer was experiencing with drifting sand.

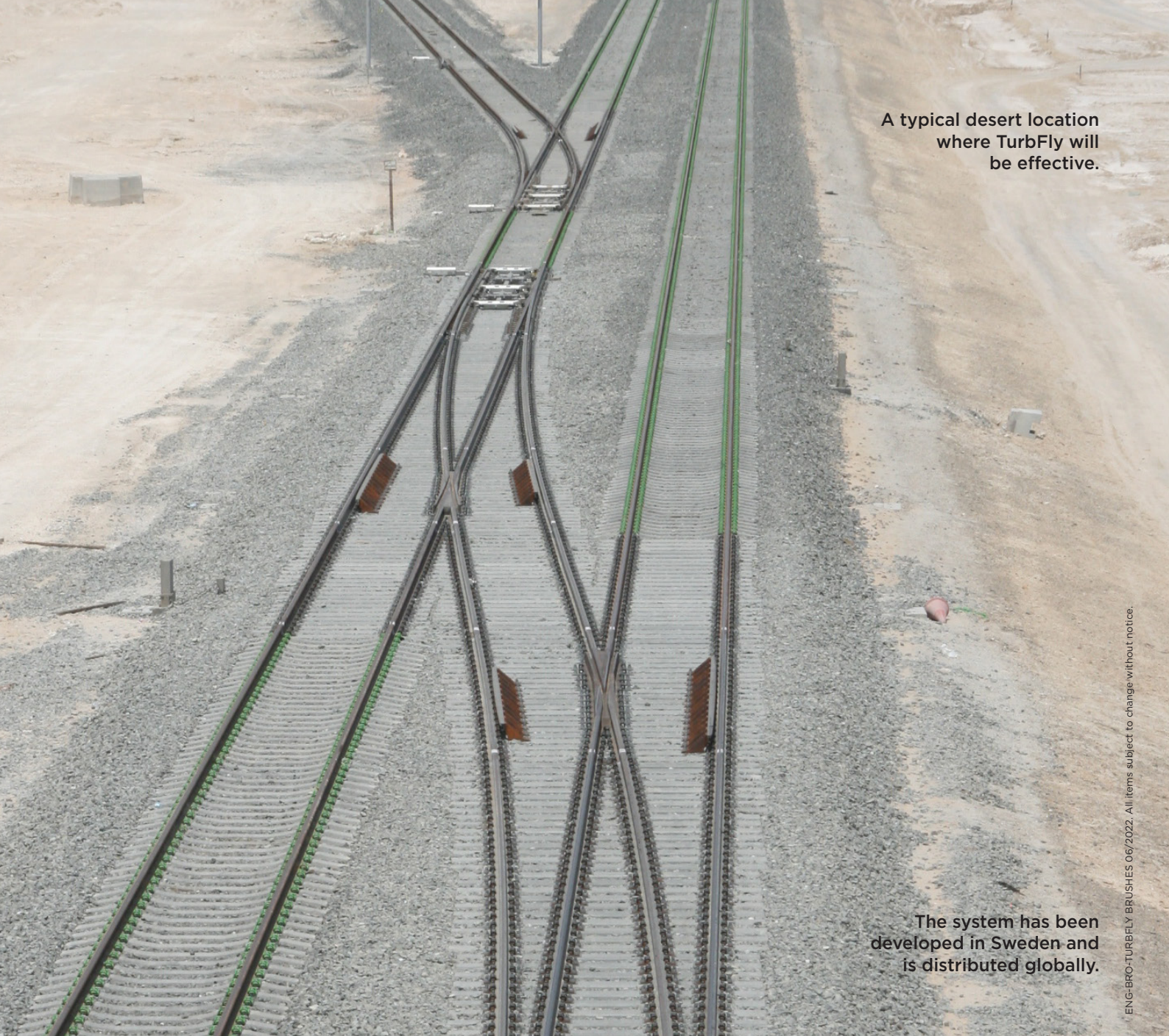
Before the brushes were installed at the designated test points, the points were cleared of sand at least once a fortnight – sand which accumulated and completely impeded the function of the points. We tried various kinds of protective cover, but with no success – the sand still managed to get in. We cleaned the points using a sand vacuum, and by hand as well. We also had problems with the points drives filling up with sand, so preventing them working.

After the brush system was installed, we have not had to clean the points for more than six months. The sand flies over the points instead of settling in them and stopping them working. Osborn also helped us to create brush seals in order to seal openings for mechanical components in our drives. These seals, combined with Snow Protec® brushes (which have now changed their name to TurbFly®) have led to an enormous reduction in the maintenance and inspection of the problem area, and we can devote our time to other things. The points keep themselves clean with the help of the brushes and the wind.”

Ruud Kuyper, Chief Engineer, Vossloh Cogifer Kloos BV



Osborn works closely with leading suppliers of switches throughout the world to deliver the best snow and sand protection.



A typical desert location where TurbFly will be effective.

The system has been developed in Sweden and is distributed globally.

ENG-BRO-TURBFLY BRUSHES 06/2022. All items subject to change without notice.



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