



Finish. First.



Solutions for Turnout Protection
against Sand and Snow



Snow drift on a bridge in Denmark.



Sand drift in a dutch harbour.

TurbFly®

TurbFly saves energy and provides maintenance benefits

Installing TurbFly can 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.

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

Protection Model Brush (>1500 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 1500 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

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!

Approved for speeds in excess of 280 km/h

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

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

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

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

Long service life and low maintenance

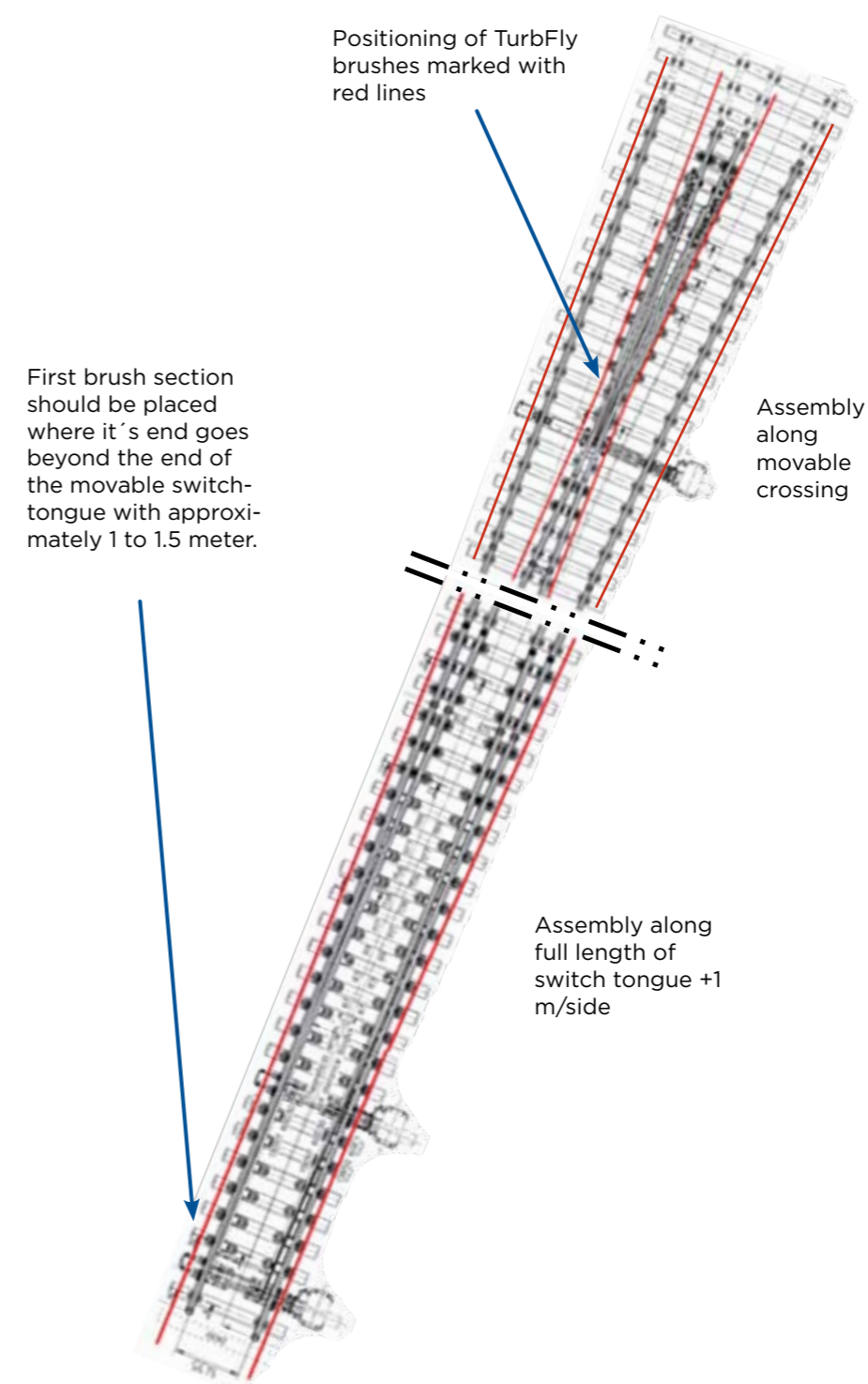
The first test installations have been in place for more than a decade and are still fully functional. Only minimal maintenance has been required in all these years.

Easy to fit

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

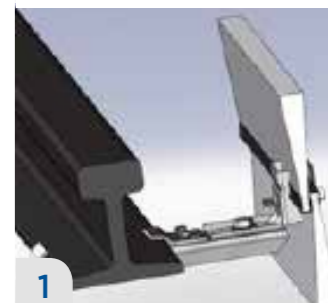
SNOW AND SAND PROTECTION SYSTEM

Simple, economic, effective & improving operations



Railfoot attachments:

1. Railfoot bracket and metal brush backing.
2. Railfoot bracket with fullplastic brush backing (for third rail applications).

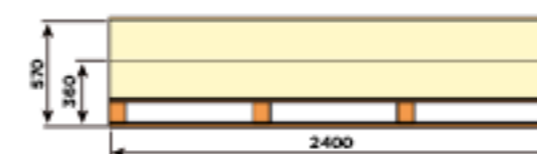


Upward and downward assembled brushes create protection along the track.



Find more technical info and instructions at:
www.turbflyprotec.com

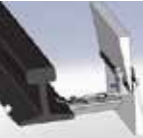
Delivery packaging 800x2400x350 mm (1 set / pallet), Item no 59325 and 59325RF are delivered in packaging with dimensions 800x2400x570 mm.

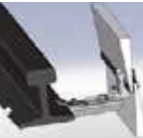



MATERIALS LIST

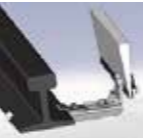
Complete sets

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

	Complete sets (snow / ice)									
	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		
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	59340RF	8+8					24	
EV-300-1:9 EV-12-1:12/1:13/1:15 BSI-185-1:9-360		11,7	59310RF	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	59312RF	12+12					36	
EV-500-1:12 EV-600-1:15 EV-600/365-1:12 BSI-500-1:14		16,4	59315RF	14+14					42	
EV-600-1:13 EV-760-1:14 / 1:15		18,8	59320RF	16+16					48	
EV-1200-1:18,5 EV-20,667-1:18,5		21,1	59330RF	18+18					54	
EVR-300-1:9		18,8	59370RF	16+16					38	5
EVR-760-1:14 / 1:15		28,2	59380RF	24+24					62	5
EVR-2500-1:26,5/1:27,5		42,3	59325RF	36+36					98	5
EKV-190-1:9 (crossing)		17,2	59390RF	10+10			8+8		46	
DKV-190-1:9 (crossing)		21,9	59392RF	14+14			8+8		58	

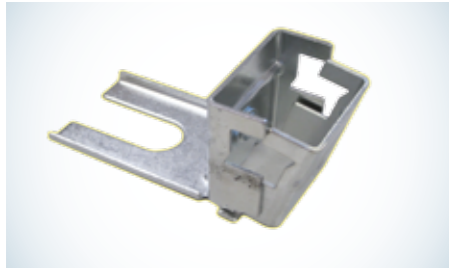
	Complete sets (Vossloh Easyswitch)									
	Switch Model	Total brush length (m)	Osborn Item no	Brush (white+black) length in mm					Fixing point	Fixing U-bar
				2350	2000	1850	1350	1000		
EV-208-1:9		9,4	59340ERF	8+8			2+2		28	
EV-300-1:9		11,7	59310ERF	8+8			4+4		32	
EV-500-1:12 EV-580-1:13 / 1:15		16,4	59315ERF	10+10		2+2	4+4		44	
EV-760-1:14 / 1:15		18,8	59320ERF	14+14	2+2		2+2		52	
EV-1200-1:18,5		21,1	59330ERF	14+14	2+2	2+2	2+2		58	
EVR-300-1:9		18,8	59370ERF	12+12		2+2	6+6		44	5
EVR-760-1:14 / 1:15		28,2	59380ERF	18+18	2+2	2+2	4+4		64	5
EVR-2500-1:26,5 / 1:27,5		42,3	59325ERF	30+30	2+2	2+2	4+4		76	5

	Complete sets (full plastic brush)									
	Switch Model	Total brush length (m)	Osborn Item no	Brush (white+black) length in mm					Fixing point	Fixing U-bar
				1150						
EV-225/190-1:9 EV-225/480-1:12 EV-11-1:9		9,4	59540RF	16+16					48	
EV-300-1:9 EV-12-1:12/1:13/1:15		11,7	59510RF	20+20					60	
EV-500-1:12 EV-600-1:15 EV-600/365-1:12		16,4	59515RF	28+28					84	
EV-600-1:13 EV-760-1:14 / 1:15		18,8	59520RF	32+32					96	

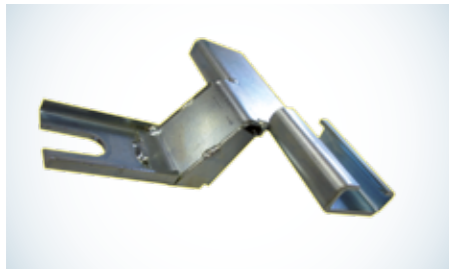
	Complete sets (sand - no brush downward facing)									
	Switch Model	Total brush length (m)	Osborn Item no	Brush (white+black) length in mm					Fixing point	Fixing U-bar
				2350	2000	1850	1350	1000		
EV-225/190-1:9 EV-225/480-1:12 EV-11-1:9 BSI-130-1:7 BSI-250-1:9,5 BSI-446/160-1:9,5		9,4	59340SRF	8					24	
EV-300-1:9 EV-12-1:12/1:13/1:15 BSI-185-1:9-360		11,7	59310SRF	10					30	
BSI-300-1:9 BSI-300-1:12 BSI-300-1:9-483/185 BSI-350-1:11-207/130		14,1	59312SRF	12					36	
EV-500-1:12 EV-600-1:15 EV-600/365-1:12 BSI-500-1:14		16,4	59315SRF	14					42	
EV-600-1:13 EV-760-1:14 / 1:15		18,8	59320SRF	16					48	
EV-1200-1:18,5 EV-20,667-1:18,5		21,1	59330SRF	18					54	
EVR-300-1:9		18,8	59370SRF	16					38	5
EVR-760-1:14 / 1:15		28,2	59380SRF	24					62	5
EVR-2500-1:26,5/1:27,5		42,3	59325SRF	36					98	5
EKV-190-1:9 (crossing)		17,2	59390SRF	10			8		46	
DKV-190-1:9 (crossing)		21,9	59392SRF	14			8		58	



Fixing point assembly



Fastener galvanized (59235)



Fastener plastic brush (59245)



Joint fitting (59250)



End fitting (59255)

Spare parts (supplied pcs / pcs, complete units)		
Item description	Osborn Item no	Qty / unit
Brush (white), length 3020 mm	59220	1
Brush (black), length 3020 mm	59210	1
Brush (white), length 2350 mm	59221	1
Brush (black), length 2350 mm	59211	1
Brush (white), length 2000 mm	269978-05	1
Brush (black), length 2000 mm	269978-06	1
Brush (white), length 1850 mm	269979-06	1
Brush (black), length 1850 mm	269979-07	1
Brush (white), length 1350 mm	269977-92	1
Brush (black), length 1350 mm	269977-93	1
Brush (white), length 1200 mm	269976-04	1
Brush (black), length 1200 mm	269976-03	1
Brush (white), length 1000 mm	269720-48	1
Brush (black), length 1000 mm	269720-47	1
Brush (white), length 600 mm	59222	1
Brush (black), length 600 mm	59212	1
Brush (blue), PLASTIC, length 1150 mm	59241	1
Brush (white), PLASTIC length 1150 mm	59242	1
Fastener plastic brush	59245	1
Fastener galvanized (compl. w. screw + washer)	59235-1	1
End fitting (compl. w. screw)	59255-1	1
Joint fitting (compl. w. screw)	59250-1	1
Rail foot bracket, complete	59275-1	1
Crossing underbar, complete 1100 mm	59260-1	1
Crossing underbar, complete 1200 mm	59261-1	1



Rail foot bracket, complete (59275-1)



Crossing u-bar, complete (59260-1)

QR-Code

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



Deep snow in Norwegian mountains.



Snow sweeping still possible with assembled Turbfly brushes.

ADDITIONAL PRODUCTS

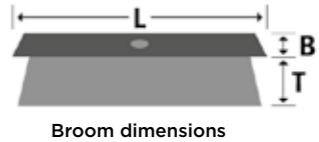
Brooms for rail industry						
Item description	Osborn Item no	T	L	B	Rows	Pcs
Broom, robust type with flat wire 1,10 x 0,25	0001-100016	75	300	60	6	10
Broom, robust type with flat wire 1,10 x 0,45	0001-101036	75	350	70	6	10
Broom, flat wire for point cleaning 1,80 x 0,45	0003-314033	150	150	150	3	10
Wooden broom stick, D28 x 1400	0003-999027		1400			5



Broom, robust type



Broom, for point cleaning



Broom dimensions



Find more technical info and instructions at:
www.turbflyprotec.com

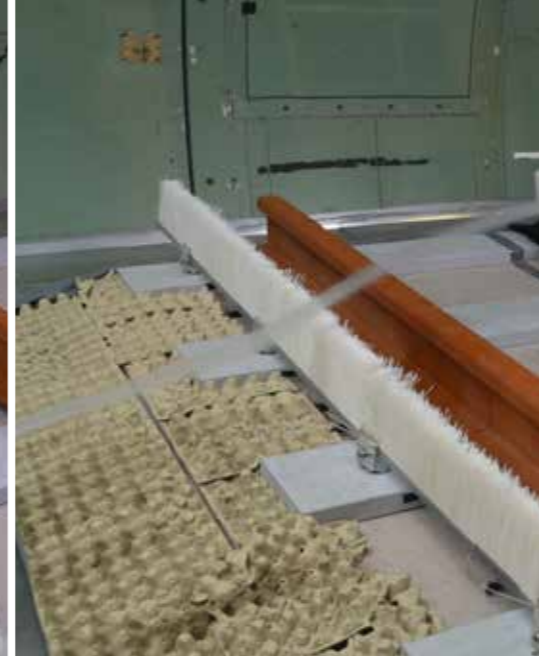




Maintained energy in lamellar steam above "bubble".



"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, November 2014

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

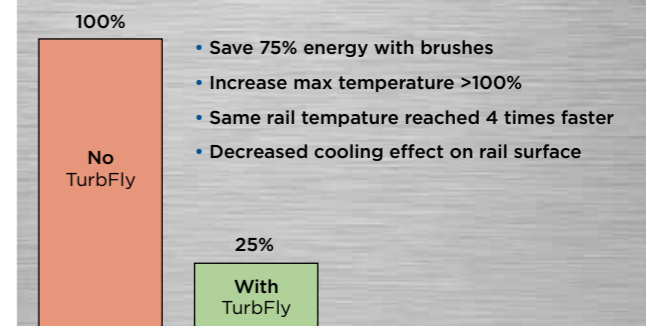
Generate savings on energy and maintenance cost

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.

Energy consumption:



QR-Code

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



www.youtube.com/osbornsolutions

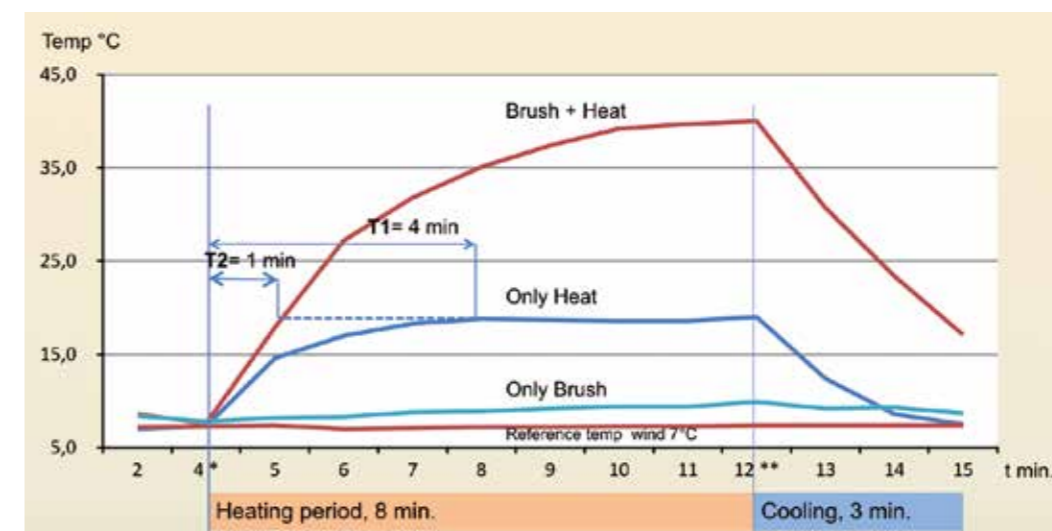
No brush - wind facing directly toward rail:



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 SnowProtec® 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 SnowProtec® 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



Vossloh and Osborn work in cooperation with marketing for this unique patented product.



A typical desert location where TurbFly could be effective - UAE Etihad.

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

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