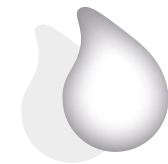




**SAURYA**

Value Driven Safety



## *Slide Skirt*

**Tackle the problem of  
rainwater getting into tank  
floors, right at the source**



### **Tackle the problem of rainwater getting into tank floors, right at the source**

The **Slide Skirt** is a revolution among floor protection features for storage tanks. Because the **Slide Skirt** largely consists of standardised prefabricated segments that can be assembled or dismantled without any 'hot work', a high degree of applicability and efficiency is assured.

#### **Slide Skirt** systems:

- Approved moisture penetration limitation measure: 20-point determination of soil immission score, no deduction for sagging of the mound shoulder or foundation (-20 points).
- Highly cost-effective measure.
- Fitted using a cold work procedure, on-stream.
- Extends the lifespan of the tank floor.
- Tanks can still be inspected at any time.
- Tank can still be jacked up.
- An option for all tanks.
- Can be fitted within a few days.
- Fitting work is carried out by professionals who are VCA (contractors' safety checklist) and ISO certified.
- Tried and tested system, used by some of the leading tank storage companies.



## Background

The Netherlands Soil Protection Guideline for industrial activities (Dutch: NRB) has included specific guidelines for atmospheric steel tanks with flat bottoms located above ground, aiming to maintain the zero-emission requirement to the ground surface through the tank bottom. This specific 'Soil Protection Guideline for atmospheric storage tanks above ground' (Dutch: BoBo) focuses on existing storage tanks and new storage tanks that are to be built and is restricted to soil protection measures and facilities that concentrate on the tank bottom.

Specific functional requirements have been formulated in the 'Bobo' relating to the soil protection measures that need to be taken and the facilities for this. They distinguish between 'effect-oriented' and 'source-oriented' measures and facilities. In this context, source-oriented simply means 'preventing tank floor leakage'.

What this boils down to in practice for steel-bottomed tanks is corrosion prevention. A source-oriented approach is much preferred to an effect-oriented approach, from the safety and environmental perspectives, although a combination of the two will result in the smallest possible risk to the soil.

One of the source-oriented facilities that are highly regarded within the BoBo guideline are moisture penetration protection measures (Dutch: VBV). The purpose of VBVs is mostly to prevent moisture (rainwater, condensation or groundwater) from penetrating underneath the tank bottom.

The **Slide Skirt** systems have an additional advantage in that they can still be applied in cases where there is already edge subsidence in the shoulder of the mound, so that a negative BoBo 'maintenance score' will not have to be registered as long as the tank is not leaning over and the groundwater level is not too high.



### Reasons for using Slide Skirt

The **Slide Skirt** is the perfect moisture penetration protection system: it easily meets the functional requirements and offers economic benefits if the applicability, ease of installation and maintenance costs are considered in addition to the soil protection effect, as well as the fact that the floor/wall joint, the annular zone and the mound shoulder can be inspected and checked.

### The Slide Skirt principle

The **Slide Skirt** is made of high-quality, polyester-reinforced PVC fabric that is fitted around the tank using extruded aluminium profiles.

First, an ideal horizontal line is determined on the first ring of the tank wall, along which a specially prepared aluminium rail will be fixed later on. This rail consists of identical interchangeable segments, plus specific fitting pieces for the points where attachments and tank accessories could be an obstruction. The junction with the tank wall, to which a preservative has been applied, is rainproof and drip-proof. It is made by sealing the joint with high-quality mastic.

The aluminium profile parts have regularly spaced 'feeder openings', which make it possible to feed in the **Slide Skirt** segment profiles. The segments are prefabricated, with dimensions that depend on the tank diameter and allowable skirt height (ideal line). The **Slide Skirt** segments are finished all the way round with a high-frequency welded profile cord to make sure that tearing and fraying are not possible. A double profile joint with a PVC or aluminium profile is used where the PVC fabric sections have to be connected together, which also guarantees it is rainproof and drip-tight.



### **Slide Skirt's characteristics**

The key point that distinguishes **Slide Skirt** from other VBVs is that this system can be fitted to existing tanks without having to shut down the tank concerned and without having to draw up extensive 'hot work' procedures and protocols. Assembly can therefore be done on stream as 'cold work': no cutting work is needed, there is no rise in temperatures, no open flames and no electric or pneumatic tools.

The fitting time on location is kept to a minimum, as roughly 90% of the system is delivered prefabricated. In fact, fitting does not depend on the weather; precipitation and/or low ambient temperatures will hardly affect the quality of the attachments and the fitting time at all. A maintenance check will be carried out the first year after the system has been applied to confirm that the fittings are watertight and sound.

### **Risk-based inspection**

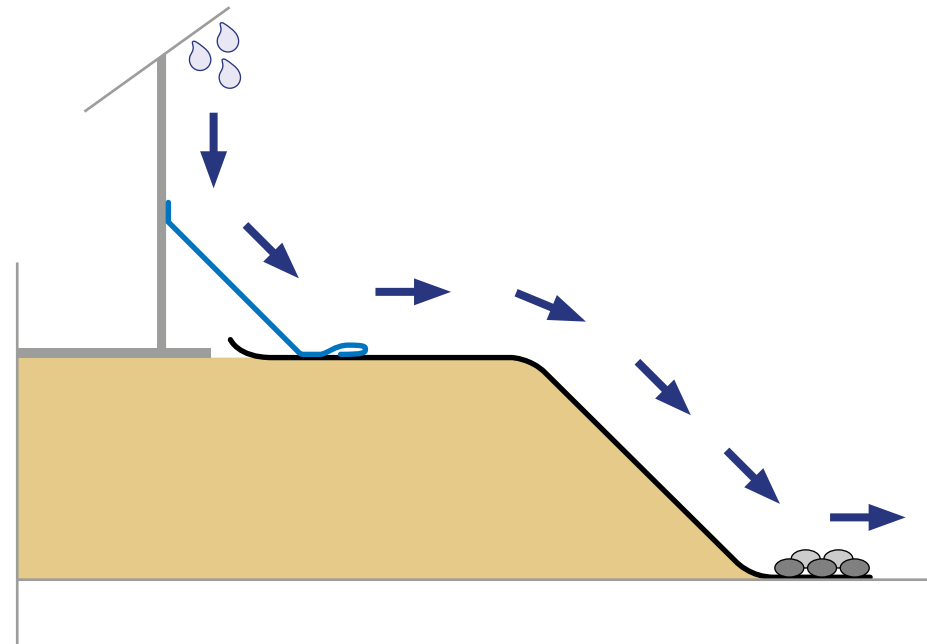
The current trend of switching from inspections at regular intervals to condition-based and risk-based inspection methods (RBI) has created an important precondition - the possibility of carrying out on-stream inspections. On-stream inspections are required for checking and monitoring degradation rates and the resulting inspection intervals, which are calculated as part of the risk-based inspection.

The greatest benefit of the **Slide Skirt** is that it can be dismantled easily, ensuring that the entire circumference of the tank can be inspected and checked at all times. On-stream inspection of the floor-wall junction, including the first segment of the tank wall and annular zone of the tank floor, is still possible - even after the **Slide Skirt** has been installed.



#### Technical specifications

- Rail skirt profiles: Single: anodised aluminium or grey PVC  
Double: grey PVC
- Fabric material: Woven fabric: polyester 9/9  
Coating: PVC, high gloss or matt finish  
Weight: fine quality  $\pm 670$  g, panama  $\pm 900$  g  
Tensile strength: fine 300/300 kg/5 cm<sup>2</sup>, panama 400/420 kg/5 cm<sup>2</sup>  
Tear resistance  $\pm 60$  kg, double-tongue method  
Temp. resistance: from -30°C to +70°C  
Weather resistance: excellent





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