Box 3 Taasen N-0805 Oslo - Norway

Tel.: +47 22 23 24 93 Fax: +47 22 23 64 52 epost@blakstad.no

## Sivilingeniør Ragnar Blakstad AS



www.blakstad.no

# VibraFLOOR for unmanned emptying of storage silos, halls, bulkships, containers, railroadwagons etc.



## Vibrating floor inside self-unloading ships

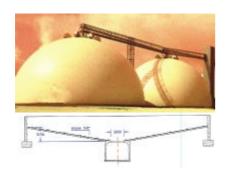
For grains, cement, sand and foodstuff pellets for fishfarming.

MRS Pioneer; a 20.000 tons self unloading bulk sugar vessel 168m long, 9.55m draught. Hold clean-up without human intervention, at 500 t/h. The vibrating floor has been able to cope with a 3.000tons of accidentally wet cargo.

The high net/gross tonnage ratio minimized the ship's weight, draught and propulsion power.

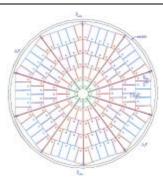


4 holds 22 x 22 m, slopes 12°. Height of loading 15m at center 232 modules, 75kW total power installed. Reclaim rate: 500 t/h



## Vibrating floor in DOMEsilos - floor diameters reaching ca. 80 meters.

Used for flyash, grains and cement etc. The vibrating sections can be adapted to one or several outlet points. The vibrating elements only starts when needed, and can be PLS-programmed.





Concrete base sloped for the Vibrafloor elements

## Vibrating floors inside circular and rectangular silos and steel bins

Used for cement, grain, rice, flyash, foodstuff pellets for fishfarming and many other powders and granulated materials.

10 silos Ø15 meters for soybeans on Taiwan.

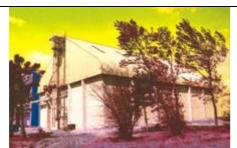
Increased seismic safety and lower investment cost as compared to hopper silos.

Automatic reclaim of residual piles at 120 t/h.



Vibrafloor elements with vibrator boxes visible on each floorpanel.

Power 3.8 kW per silo. Total cleanup without personnel inside of silos.



Automatic start/stop by 16 detectors Open side chain extractor.

# Silo full of paddy rice was flooded for months during winter 2003/2004. Vibrating modules were not affected.

Precast sandwich concrete wall silo 38x27 meters, Slope 7°.
66 factory premounted 4 m long modules. Power installed 16 kW.



1m wide semicircular aeration ducts. Potential reclaim capacity on paddy rice: 500t/h.





Large back doors allow dumping of the wood waste in the summertime.

### Vibrating floor in selfcleaning containers

35m3 container with wood waste, sawdust. Power installed: 800W per container.

The same piece of equipment is used to collect, haul and store wood waste, and automatically refuel the furnace without any intermediate unloading/reloading operation.

Fully automated by interlocking of the vibrators to product demand.

Significant reduction of the overall investment cost and operation cost.



No need for silo or reclaiming equipment.

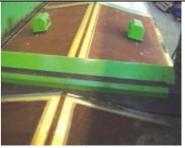
Total clean-up on a 6° slope.



Doors opens simultaneously on both sides of the wagon.

## Instantanious cleanup of railway cars

Wood chips, frozen stiff !! Wagons 13 x 2,8 m, capacity ea. 90 m3 Power installed 2.4 kW per wagon. Emptying of 90 m3 in 3 minutes. Near-to-instantaneous clean-up of wagons without human intervention or platform equipment. Ability to empty several cars simultaneously.



Roof-shaped floor, slopes 13° 8 factory premounted modules



The residual pile rests on a flexible special steel membrane on resilient supports.



The membrane shaked by high quality Silexport vibrators.



successive layers of product collapse and are gently carried down, until the floor is perfectly clean.

VIBRAFLOOR installations are designed to suit the characteristics of the stored product. It can be watertight, and cope with abrasion, corrosion, and vertical loads of 200 t/m2. ATEX, UL and food grade standards can be met, along with stringent cleanness criteria.