# JASH "SCREENMAT" STEP SCREEN

***Jash "Screenmat" Step screen is developed in technical collaboration with Hollung, AS Norway. As of 2014, over 600 "Screenmat" screens are in use in India and neighboring countries.***

## APPLICATION:

"Screenmat" is a compact mechanically cleaned fine screening equipment used to prevent fine sized floating wastes from travelling further into the water and waste water treatment plants. "Screenmat" screen is designed to screen out almost all the fine floating wastes such as plastic bags, pouches, sachets, paper wastes, cloths, condoms, weeds and various other fine fibrous wastes coming with wastewater or effluents.

## CONSTRUCTION:

"Screenmat" Fine screen comprise of equally spaced bars / lamella of 2 mm (0.08") thickness covering the width of the screen and extending to the top up to the discharge point located above the platform. The lamella assembly comprises of a fixed set of lamella and a movable set of lamella installed at an inclination of 40°. Depending upon the size, this screen is driven by either a geared motor mounted directly on the screen or hydraulically through a power pack.

## WORKING:

Upon receiving the signal the set of movable lamellas lift the waste deposited over the screen width and deposits them a step above on the set of fixed lamellas. After depositing the waste on to the fixed lamellas, the movable lamellas goes back to its lower home position to start a new operating cycle. This way the waste keeps moving upwards in steps till it reaches the discharge point.

The "Screenmat" Fine screen is an advancement over the conventional step screen technology and eliminates the limitation present in conventional step screens.

As against the conventional step screens having horizontal land and vertical step of same dimension, these screens are provided with small inverse step and a longer inclined resting land. Provision of longer inclined resting land allows the incoming waste material to stay / rest on it and gradually form a mat of waste.

◄ Special step profile - small inverse step and longer inclined resting land

The inverse step prevents this mat from sliding down and also helps in pushing the mat of screening steadily upwards out of the flow, remaining complete and unbroken throughout the process. This unbroken continuous mat prevents the screenings from passing through even when the mat is being conveyed upwards and as a result, the "Screenmat" fine screens offer a very high capture rate in comparison to all other conventional step screens.

◄ Unbroken continuous mat acting as a fine filter

Since the "Screenmat" fine screens rely on the mat of waste formed over the screen to achieve a very high cleaning efficiency, the spacing / distance between the lamella / bars is no longer the only decisive factor in determining the degree of primary treatment. Hence once a mat is formed, then "Screenmat"is able to remove waste even finer than the spacing provided between the lamella.

Screenmat ZS / ZM with Geared Motor:
Min. Channel width 275 mm (11”)

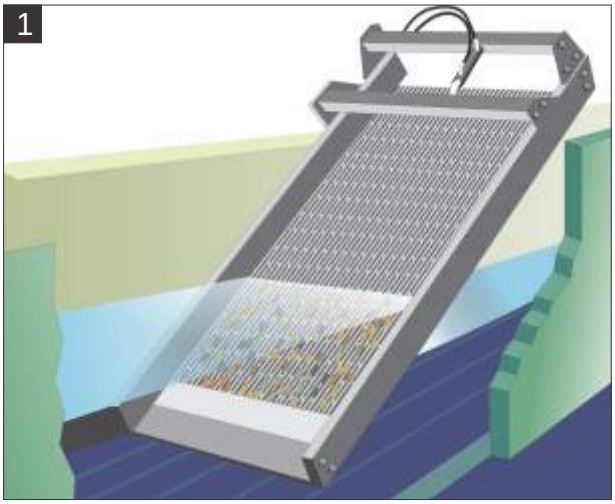
Screenmat ZA with Single Cylinder: Min. Channel width 500 mm (20”)

Screenmat ZA with Twin Cylinder: Min. Channel Width 1200 mm (48”) / as per load coming on screen

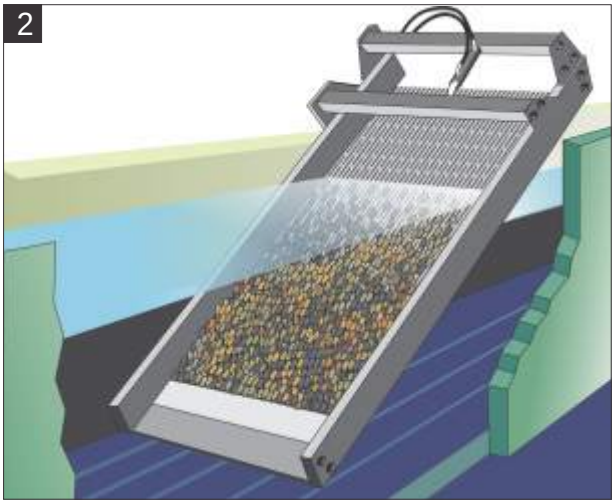
## " SCREENMAT "- WHERE THE MAT OF WASTE ACTS AS A SCREEN

To achieve maximum efficiency of screening, the screen should always be allowed to operate automatically through level sensors. The operating principle to be followed for most applications is as under.

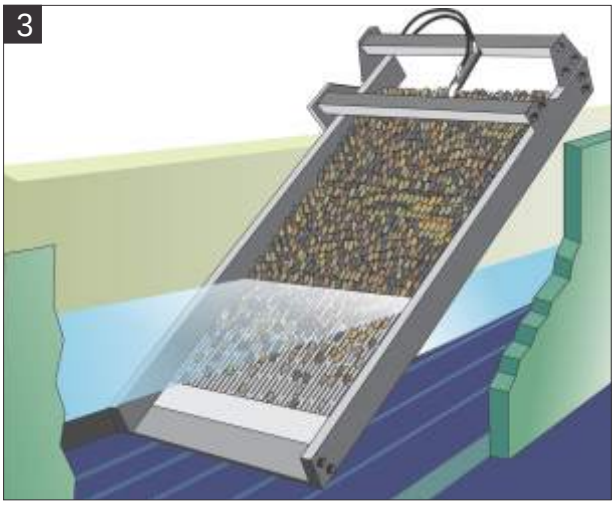
**STEP 1:** As the water flows through the screen, the floating waste material / screenings get trapped and start depositing on the submerged portion of the screen.This deposition of screening results into a gradual formation of a mat of waste upon the screen surface.




**STEP 2:** As the density of the mat on the screen increases the amount of water passing through the screen decreases thereby resulting into increase in the water level on the upstream side of the screen. Once a predetermined upstream higher level is reached, a level sensor will activate the screen motion due to which the set of movable lamellas lifts outwards and start moving upwards. As they move upwards they take along with them the complete mat of waste resting on the screen. Upon reaching the predetermined higher level the movable lamellas retract below the fixed set of lamellas thereby depositing the unbroken mat of waste on to the set of fixed lamellas. The movable lamellas then reach their initial downward position and lift back to rest parallel to the fixed set of lamellas. This completes one movement cycle and in one of such movement cycle the mat of wastes shifts upward by about 100 mm (4").




**STEP 3:** As the mat of wastes starts moving upwards out of the water the area of screen exposed to incoming water will have lower density of mat on it. Because of this the amount of water passing through the screen increases and as a result of this the water level on the upstream side of screen starts reducing. When a predetermined lower level is reached the level sensor will deactivate the screen motion and stop the screen operation. So after few movement cycles the screen stops operating as the water level in front of screen has come down to predetermined lower level. The screen operation will restart again after the mat density increases and water level rises to the predetermined upper level.




Hence the rate of flow of incoming water and the quantum of floating waste in the incoming water will govern the quantity of movement cycles between the starting and stopping of the screen. This ensures that the level of treatment is satisfactorily maintained at varying rates of flow.

## SALIENT FEATURES:

- Superior lamella profile in comparison to other step screens
- High capture rate - Capable of capturing waste of size even smaller than the spacing.
- High capacity - Lamella thickness being lesser this screen can handle 50% more flow than the raking screens.
- No entrapment of solid - Lesser thickness of lamella provides it flexibility thereby ensuring that entrapped solids can pass through without damaging the lamella.
- Low power consumption - Frequency of screen operation is controlled by rise and fall of water level in front of screen. Because of this "Screenmat" operates only between 700 to 1100 hrs annually on an average where flow pattern is not uniform round the clock.
- Low maintenance - No major maintenance is required as travel of the movable lamella is very short.
- Minimum maintenance down time - Most of the parts can be replaced in installed condition in a short time
- Factory assembled and pre-shipment tested product - "Screenmat" screens are essentially factory assembled and movement tested in plant to ensure effectivity of movements and proper assembly of all the components.

## SPECIFICATION:

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| Bar spacing | 2 mm to 6 mm (0.08" to 0.24"), larger spacing on request |
| Channel width | 300 mm to 2,000 mm (12" to 80") |
| Channel depth | 600 mm to 2,200 mm (24" to 88"), larger depth on request |
| Lamella thickness | 2 mm (0.08") |
| Material of construction | Stainless steel 304, 316, other material on request |

2 Nos.Screenmat Installed at 36 MLD Indrapuram STP, Gaziabad, India