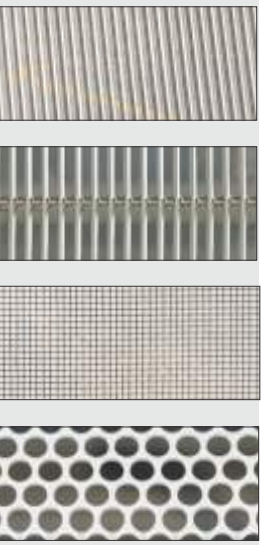
JASH ENGINEERING LTD.
INDIA

Comprehensive Screening Solutions



Mahr Maschinenbau GmbH
Austria

Mahr Maschinenbau, Austria with its history of over 87 years and Jash, India with its tradition of continuous evolution over the last 65 years have now become one to offer the most comprehensive range of screening equipment to the industry. This coming together ensures that the wide experience and innovative development skills of Mahr Maschinenbau combines with the extensive manufacturing strength of Jash to meet the varied needs of their customers in the most cost efficient manner. We together look forward to the continued patronage of our customers.

MM2MM™ Multirake Screens at Pillar Point STP, Hongkong

MM2MM™ Multirake Screens at Central Pumping Station, Hongkong

Step Screen for PT. Indo-Bharat Rayon, Indonesia

Content

Step Screen for Rama News Print Paper Plant, India

Rotary Drum Screen for STP New Delhi, India

Rotobrush Screen with Grit Removal Mechanism, France

ABOUT JASH

Jash Engineering Ltd. is an ISO 9001-2008 certified company manufacturing a wide range of equipment for water and waste water industry. Established in year 1948, today Jash offers the most diversified product portfolio for the water industry comprising of water control gates, fine & coarse screening equipment, knife gate valves, water hammer control valves, energy dissipating valves, archimedean screw pumps, hydropower screw generator and treatment plant process equipment like degritters, clarifiers, clarifloculators, aerators, mixers, DAF units and decanters.

With its 3 manufacturing plants based around the city of Indore in central India and 1 manufacturing facility at Chennai in south India, Jash has over 450,000 sq feet of manufacturing area under cranes. Jash has constantly invested to ensure that it has one of the most modern and extensive facilities amongst the water and waste water equipment manufacturers worldwide.

Jash employs over 100 engineers and 600 workers at its various facilities and offices located in India, USA and Austria. Jash had annual sales of over USD 18 Million in year 2013 and plans to exceed USD 50 Million in sales by year 2018 through growth and acquisitions.

Jash exports its products to over 25 countries including USA, Canada, Britain, France, Germany, Belgium, Norway, Sweden, Kazakhstan, Turkey, Kuwait, Saudi Arabia, Jordan, Oman, Bahrain, UAE, Singapore, Malaysia, Thailand, Indonesia, Vietnam, Hong Kong, Philippines and others.

Jash offers its range of products under various brands such as Jash, Jash Schuette, Jash Weco, Jash Sureseal , Jash FSM, Jash Mahr Maschinenbau™, Jash Stealth, Jash Rehart and Shivpad. Today Jash is acknowledged as an industry leader for most of its product offering and is known as a company that is able to innovate and introduce various new technologies in the market.

JASH SCREENING SOLUTIONS: Application specific options with proven technology

Jash entered the Screening business in year 2000 with the introduction of "Screenmat" Fine Step screens produced in technical collaboration with Hollung, Norway. Till then the entire Indian market was ruled by economical carbon steel coarse screens of 20 mm (0.8'') spacing and Jash was the first Indian company to introduce fine screens of 6 mm (0.24") spacing with entire screens made of stainless steel material. The superior performance of "Screenmat" screens ensured that within a short span of 3 years it became the most specified screen for sewage treatment plants in India.

After the success of "Screenmat" fine screens, Jash in collaboration with Hollung, Norway introduced "Inclirake" Coarse screens for sewage pumping station applications in the year 2003. After the acceptance of stainless steel fine and coarse screens, the Indian market started demanding different alternatives and to address this demand Jash introduced the indigenously developed "Rotoclean" Wedge wire / punched opening drum screens in the year 2008. During the same year Jash developed the "Rotobrush" screen with punched holes for very fine screening applications.

In the year 2009, Jash entered into an understanding with Perrier Sorem, France to co-manufacture Suspended trash rake screens for removal of floating waste from large intake structures.

Jash then acquired Shivpad, a company based in Chennai in southern India in the year 2011. Shivpad has over 20 years experience in manufacture of Multi-raking coarse screens and various other types of screens for waste water industry.

Jash entered into an understanding with FSM Frankenberger, Germany in the year 2012 to offer their range of Filterband screens and Travelling band screens in the Indian market. With a view to offer fine screening in deep pumping stations, Jash entered into a technical collaboration with Mahr Maschinenbau GmbH, Austria in the year 2012. With this association with Mahr Maschinenbau GmbH, Austria, Jash is able to offer its latest generation "MM2MM"™ screen as well as perforated screens in the market.

As a result of these tie-ups and developments, "Jash" along with its subsidiary "Shivpad" offers the largest variety of screening solutions from a single source. Jash along with Shivpad today have leadership position in the Indian market with the largest installation base of over 1200 screens and both the companies together produce over 200 mechanized screens of various types annually for the Asian and International market.

Unit 1: Cast Products Plant, Sanwer Road, Indore

Unit 2: Fabricated Products Plant, Bardari, Indore

Unit 3: Exports Plant, SEZ, Pithampur

MAHR MASCHINENBAU GMBH, VIENNA, AUSTRIA :

World leaders in multi-raking screen technology

Screen installed in 1927 and still operative

Mahr Maschinenbau GmbH, Austria, was established in the year 1927 by Mr. Matthaeus Mahr. The first screen built by the company in the year 1927 was installed at a pumping station of the City of Vienna and is still in operative condition after so many years.

In the year 1985 Mr. Gernot Mahr developed the first multi-raking screen in the world with 6 mm (0.24") spacing having unique features like replaceable bars, forward - reverse motion for jam removal, variable speed to meet flooding condition etc. The high reliability of this screen and its superior performance led to Mahr brand becoming synonym with ultimate multi-screening technology on the world market. Hence many companies approached Mahr Maschinenbau Gmbh, Austria for its screening technology and this resulted in the establishment of the joint-venture companies Mahr Maschinenbau UK in the United Kingdom and S.A.Mahr Equipment in South Africa and to the transfer of technology from Mahr Maschinenbau to Headworks Inc., USA, in the year 2002.

The Mahr screening technology of these years had limitations, the performance of screens having bar-spacings lesser than 6 mm (0.24"), especially for applications in water- and waste-water-treatment-plants, could not be guaranteed. To overcome these limitations, Mr. Gernot Mahr carried out further improvements on his older technology and this ultimately led to the development of the multi-raking "MM2MM"™ screen technology in the year 2007. This "MM2MM"™ screen technology allows bar spacing as fine as 2 mm (0.08") and is covered by various patents. This new "MM2MM"™ screen technology was transferred to FSM, Germnay in year 2007 for the German market and in year 2012 to Jash Engineering Ltd., India for the Asian market. To manufacture the "MM2MM"™ screens, Jash set up a modern facility costing over USD 5 million with equipment and infrastructure comparable with the best in the world. Using this facility, Jash has already produced over 30 nos "MM2MM"™ screens in the first full year of production under expert guidance of Mahr engineers.

Screens Installed in 1978 at Vienna Pumping Station

To verify the effectiveness of a "MM2MM"™ screen with 2 mm (0.08") bar-spacing, Jash Engineering Ltd manufactured a screen which was shipped to Thompson RPM for testing at the National Screen Evaluation facility at Chester Le Street Sewage Treatment Works of Northumbrian Water in the UK in December 2013. As per the test, the average screenings capture ratio observed was 73% and the screen appeared to remove all gross solids (i.e. solids greater than 2 mm (0.08") in any two dimensions) from the flow.

2 mm (0.08") spacing MM2MM™ screen under testing at National Screen Evaluation Facility, UK

The lowest and the highest screening capture ratio observed was 67% and 83% respectively and these results compares favorably with those observed for Perforated Screens and Travelling Band Screens. The conclusion of this testing is that in many applications a "MM2MM"™ multi-raking screen with 2 mm (0.08") spacing can be used to replace other types of screens (wedge wire / perforated / mesh type) without the added complications like blinding of the screenfield, immense washwater requirement or wear and tear associated with brushings for these other types of screens.

The successful collaboration, integration and understanding between Jash & Mahr Maschinenbau led to Jash acquiring Mahr Maschinenbau GmbH, Austria and E&M, Hongkong in Sept 2014. Both these companies are now 100% owned subsidiaries of Jash Engineering Ltd., India and will continue to offer these products from their base in Austria as well as from India, as per market requirement. Mr Gernot Mahr will continue to be the Managing Director of Mahr Maschinenbau, Austria and with his core team will still continue with the pioneering activities related to design and development of better and efficient screening technologies and will also assist Jash in propagating the expansion and spread of Mahr Maschinenbau and E&M, Hongkong in the world market.

6 Nos. Multirake Screens with 3 to 6 mm (0.12" to 0.24") spacing at Vienna Main Sewage Treatment Plant

Large Screens Assembly Bay

Small Screens Assembly Bay

SCREEN MANUFACTURING FACILITIES

Jash manufactures these products in its new state of art fabricated products plant which is the biggest and most modern plant for such products in this industry.

This plant, having a built up area of over 155,000 sq feet, is designed to handle products weighing up to 30 tonnes and annually manufacture fabricated products totally weighing over 3000 tonnes.

The plant has dedicated segregated area of 50,000 sq feet for Stainless steel production and 100,000 sq feet for Carbon steel production in line with best international manufacturing practice.

The plant employs latest technology to inspect, cut, bend, weld, pickle, shot blast and paint various components.

Profiled metal cutting is done using CNC water jet cutting. Hydraulic shear and press brake are used for normal cutting & bending. All welding activity is done using certified welders and processes. Post manufacturing activities like shot blasting and bath pickling is done under environmentally safe conditions. The final product assembly is done in isolated areas to carry out assembly in a clean environment.

This state of art manufacturing infrastructure along with proven European technology enables Jash to offer reliable and high quality products at affordable price for the world market. With almost all the critical manufacturing facilities in-house, this plant gives flexibility to meet customized needs of the clients and urgent deliveries whenever required.

Water Jet Cutting Machine

Shearing & Bending Machine

Shot Blasting Chamber 6 x 6 x 24 m (20' x 20' x 80')

Positive Material Identification Instrument

Bath Pickling 2.5 x 2 x 7.5 m (8' x 7' x 25')

JASH TRASH RACK

APPLICATION:

Trash rack is a manually cleaned coarse screening equipment used to prevent large sized undefined floating wastes from entering into the intake structure. These are generally installed outside the intake structure.

CONSTRUCTION:

Trash rack comprises of flat bars spaced apart in horizontal & vertical direction encompassed within a sturdy frame structure to form a unit that can be inserted in to a vertical guide channel. The vertical guide channel extends up to the top of the platform so as to guide the upward movement of the trash rack to the platform level for manual cleaning. Trash rack can also be additionally provided with wire mesh so as to trap medium sized wastes.

The height of trash rack is kept such that it covers the specified water depth. In cases where the height of water is very high then provision of a single piece trash rack becomes difficult due to its size, weight and handling restrictions. In such cases multi-piece trash racks are used instead of using a single piece trash rack. Multi-piece trash rack comprises of number of racks of smaller heights stacked / racked over one another to cover the full depth of water.

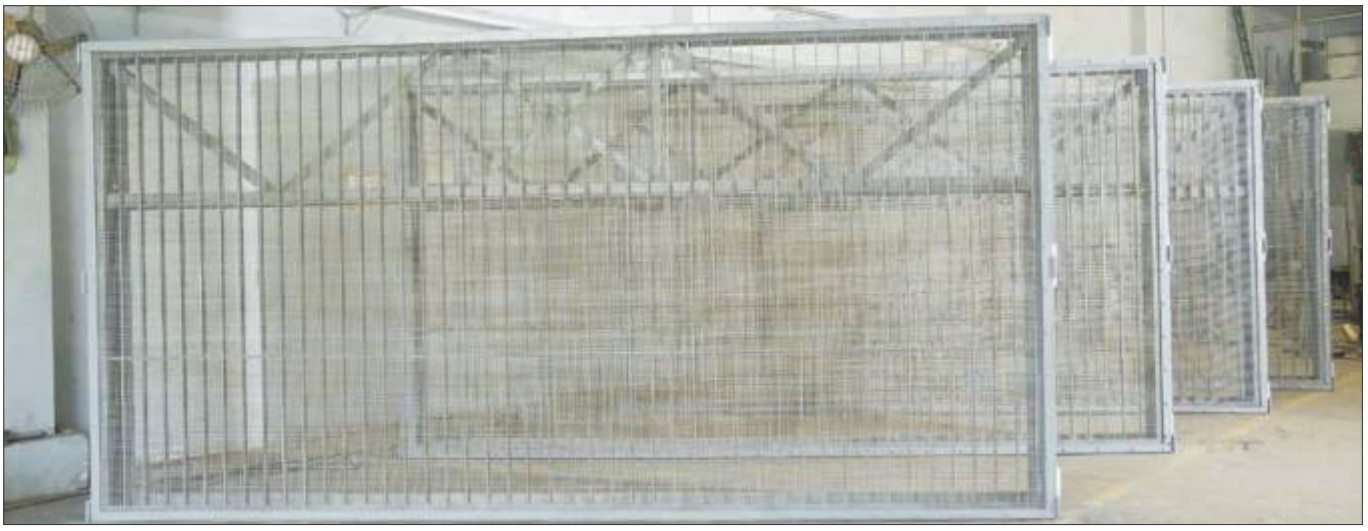
WORKING:

Single piece or multi piece trash rack have to be lifted up to the platform using a crane or suitable lifting device and then cleaned manually to remove the trash sticking to it. Before removal of trash rack from its position for cleaning, stop logs should be lowered to shut off the flow to pump chamber. After cleaning, the trash rack is lowered back into its guide and then the stop logs are removed to allow only screened water to flow into the pumping station.

Aluminum Trash Rack for Asthana Water Supply & Sewerage Project Kazakhstan

SPECIFICATION:

Bar spacing	50 mm (2”) and above
Single piece width	Maximum up to 6,000 mm (240”)
Single piece height	Maximum up to 4,000 mm (160”)
Material of construction	Carbon steel / Stainless steel 304, 316, other materials on request



Carbon Steel Trash Rack with SS Eire Mesh for 2 x 500 MW TPS Mahagenco, Bhusawal

JASH J - TYPE TRASH SCREEN

APPLICATION:

J-Type Trash screen is a manually cleaned coarse screening equipment used to prevent large and medium sized undefined floating wastes from entering into the intake structure of a pumping station.

CONSTRUCTION:

J-Type Trash screen comprises of flat bars spaced apart in horizontal direction and encompassed within a sturdy frame structure to form a unit that can be inserted in a vertical guide channel. The screen structure is provided with a perforated basket at its bottom and guide rollers on both the sides. The vertical guide channel extends up to the top of the platform so as to guide the upward movement of the J-Type trash screen to the platform level for manual cleaning. The height of J-Type Trash screen is kept such that it covers the specified water depth.

WORKING:

The J-Type trash screen moves within the vertical guide channel using rollers and has to be lifted up to the platform using a crane or suitable lifting device and then cleaned manually to remove the trash collected on it. Before removal of J-Type trash screen from its position for cleaning, stop logs or sluice gates should be lowered to shut off the flow to pump chamber. Alternatively two screens can be installed in series so that when one of the screen is brought out of the channel for cleaning then another can be lowered inside the channel to ensure that no unscreened water passes through.

'J' Type Trash Screen for Kukrail SPS, Lucknow, India

SPECIFICATION:

Bar spacing	20 mm (0.8") and above
Single piece width	Maximum up to 4,000 mm (160")
Single piece height	Maximum up to 5,000 mm (200")
Material of construction	Carbon steel / Stainless steel 304, 316, other materials on request

Trash Basket with Drain Holes

Guide Roller Arrangement

JASH SUSPENDED TRASH RAKE SCREEN

APPLICATION:

Suspended trash rake screen is mechanically cleaned coarse screening equipment used to prevent large sized undefined floating wastes from entering into the intake structure of a pumping station. Manual cleaning of trash rack is a time consuming and laborious activity and can be avoided by using Mechanized suspended trash rake screen that can automatically clean screen areas as large as 300 sq. meters (990 sq. feet) within 2 hours.

CONSTRUCTION:

Suspended trash rake screen comprises of equally spaced screen bars starting from the invert of opening and extending up to the top of water level at an inclination of 80º and covering the entire width of intake structure. A grab, suspended above the platform on a carriage which travels on a track running parallel to the screen, is then used to clean the screen.

WORKING:

The grab travels down from its home position in open condition with bottom portion getting engaged with the bars and then moves down the bars pushing the waste till the bottom. The grab closes upon reaching the bottom and traps the waste into its enclosure. Thereafter it starts traveling upwards towards the carriage and once the grab is out of the water, the carriage travels laterally on the track to discharge the grabbed waste in to a disposal bin. The carriage with its grab laterally shifts on the screen after each cycle and in this manner cleans the entire screen width.

The operating mechanism remains un-submerged and is accessible on platform for operation and maintenance checks. As a result, no isolation equipment (gate / stop logs) is required to be installed before these types of screens.

SALIENT FEATURES:

- Fully automatic - No manual labor involved.
- Ease in maintenance - Operating mechanism (Grab) remains un-submerged and easily accessible on platform.
- No need of isolation gates / stop logs.
- High efficiency- Can clean area as large as 300 sq. meters (990 sq. feet) within 2 hours.
- Possibilities of using 2 numbers grab to achieve faster cleaning.

SPECIFICATION:

Bar spacing	50 mm (2”) and above
Channel depth	2,000 mm to 10,000 mm (80” to 400”)
Channel width	1,000 mm to 40,000 mm (40” to 1600”)
Material of construction	Carbon steel / Stainless steel 304, 316, other materials on request

Suspended Grab Basket

Movable Carriage with Grab

Carriage Maintenance Station with Control Panel

40 m (132') wide Suspended Grab Screen at 60 Cumecs Capacity Haji Ali Storm Water Project, Mumbai, India

JASH "MULTI - RAKE" SCREEN

APPLICATION:

"Jash Multi Rake" screen is a mechanically cleaned medium / coarse screening equipment used to prevent medium / coarse sized floating wastes from travelling to the pumps located into the wet well / pump chamber of the water and waste water pumping station or to prevent medium / coarse sized floating wastes from travelling further into the water and waste water treatment plants. These screens are ideal for use in pumping stations having channel widths as high as 2 meters (7') and channel depth of up to 10 meters (33').

CONSTRUCTION:

"Jash Multi Rake" screen comprises of equally spaced flat bars / tear drop covering the width of the screen and extending to the top of water level at an inclination of 75 - 80º. The bars are followed by a dead plate extending up to the discharge point located above the platform. Multiple rakes are then used to rake the waste trapped on the bars and transfer it to the operating platform.

WORKING:

Upon receiving the signal, the rake located on the upstream side of the screen starts moving carrying the wastes upward. When the rake reaches to the discharge point, the wiper wipes the waste from the rake and discharges the waste on to the inbuilt chute. The waste coming from the chute can either be collected in to the collection bin or on to the conveyor installed across the screen

SALIENT FEATURES:

- Superior bar profile - bars are in tear drop section resulting in to low head loss.
- Good wear resistant and low friction comb - made of special plastic material (UHMWPE) with stainless steel plate base.
- Superior sprockets and chains - stainless steel sprockets and stainless steel chains with Delrin / stainless steel rollers ensure long life.
- Overload protection - equipped with torque switch.
- Minimum welding - avoids distortion during manufacturing there by offering high functional reliability.
- Factory assembled and pre-shipment tested- ensures effectivity of movement.
- Easy and faster erection - the screen to be just lowered in to ready made channel for installation.

SPECIFICATION:

Bar spacing	10 mm to 50 mm (0.4" to 2"), larger spacing on request
Channel width	750 mm to 2,000 mm (30" to 80")
Channel depth	1,000 mm to 10,000 mm (40" to 400")
Material of construction	Stainless steel 304, 316, other materials on request

Stainless Steel Chain with Delrin Rollers

Over Torque Tripping Device

Special Bar Profile with UHMWPE Replaceable Rake

"Jash Multi Rake" Screen for 6 MLD Selam STP, Tamilnadu, India

JASH MAHR MASCHINENBAU ™ "MM2MM"™ MULTIRAKE SCREEN

Jash Mahr Maschinenbau™ "MM2MM"™ Multirake screen is manufactured in technical collaboration with Mahr Maschinenbau, GmbH, Austria, a company with a history of over 87 years. As of 2014, over 300 screens using "MM2MM"™ technology are in use in over 8 countries worldwide.

APPLICATION:

"MM2MM"™ Multi rake screen is a mechanically cleaned fine / coarse screening equipment used to prevent fine / medium sized floating wastes from travelling to the pumps located into the wet well / pump chamber of the water and waste water pumping station or to prevent fine sized floating wastes from travelling further into the water and waste water treatment plants. "MM2MM"™ Fine multi-raking screens with 2 mm to 4 mm (0.08" - 0.16") spacing are also used to reduce the load on very fine Traveling water screens or Perforated screens used in MBR based treatment plants. These screens are ideal for use in pumping stations having channel widths as high as 4.5 meters (15') and channel depth of up to 60 meters (198').

CONSTRUCTION:

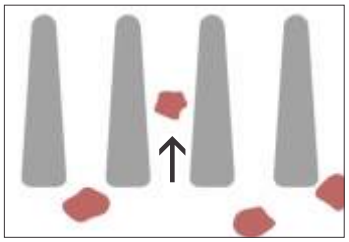
"MM2MM"™ Multirake screen comprise of equally spaced taper bars covering the width of the screen and extending to the top of water level at an inclination of 75 - 80º. The bars are followed by a debris plate extending up to the discharge point located above the platform. Multiple rakes are then used to rake the waste trapped on the bars and transfer it to the operating platform. The screen design is based on stress calculations to withstand three times the maximum water pressure.

WORKING:

Upon receiving the signal, the rake on the upstream side of the screen starts moving carrying the wastes upward. When the rake reaches to the discharge point, the wiper wipes the waste from the rake and discharges the waste on to the inbuilt chute. The waste coming from the chute can either be collected in to the collection bin or on to the conveyor installed across the screen. The rakes are spaced apart and can be set to achieve cleaning interval of less than ten second. The overload device can be programmed to jump the drive into a faster cleaning interval when the differential water level gets too high. The jam removal feature provided in the screen enables the rake to travel automatically for short reverse and then forward direction for a pre-determined number of cycles so as to try and remove an obstruction.

SALIENT FEATURES:

- High reliability due to rugged construction- able to withstand minimum 3 times the maximum water depth specified.
- Engineering superiority - " MM2MM"™ screen design can be used for fine as well as coarse screening application.
- Very narrow bar spacing - screens with bar spacing as low as 2 mm (0.08") can be supplied.
- Superior bar profile - bars are in taper section resulting in to very low head loss.
- Replaceable bars - bars when damaged can be individually replaced in installed condition.
- Future convertibility - replaceable bars enable easy conversion of screen from higher spacing to lower spacing at a later date.
- Very strong rake - made of water jet cut plate of 16 mm (0.64") thickness.
- Jam removing feature - in event of any blockage, rake can travel automatically for short reverse-forward-reverse direction for pre-determined number of cycles.
- Variable speed-upon sensing flooding situation, rake can automatically operate up to 2 times the normal speed to remove accumulated waste faster.



Tapered Bar Profile

Individual Replaceable Bars

Strong Profiled Rake

"MM2MM"™ Multirake Screen for Kukrail SPS, Lucknow, India

- Superior sprockets and chains - heavy duty sprockets and chains made of stainless steel and chain pins made of hardened stainless steel material of special grade.
- Very effective overload device - backed up by an electromechanical overload device.
- Special grade ceramic bushes - provided in lower sprockets to ensure very long operative life.
- Insensitive to grit and stone.
- Minimum welding - avoids distortion during manufacturing there by offering high functional reliability.
- Continuous welding - eliminates possibility of fissure corrosion.
- Very heavy construction - eliminates need of anchoring to the side walls or top of the channel thereby facilitating easy removal of the screen from the channel in future for any major maintenance.
- Hygienic enclosure above platform.
- Factory assembled and pre-shipment tested- ensures effectivity of movement.
- Easy and faster erection - the screen to be just lowered in to ready made channel for installation.

Special Sprocket and Chain

Electromechanical Overload Device

SPECIFICATION:

Bar spacing	Minimum 2 mm (0.08")
Channel width	up to 4,500 mm (15')
Channel depth	up to 60,000 mm (198'), larger depth on request
Material of construction	Stainless steel 304, 316, other materials on request

"MM2MM"™ Multirake Screen for DJB Interceptor SPS, Rithala, New Delhi, India

"MM2MM"™ Multirake Screen with Top Enclosure

"MM2MM"™ Multirake Screen Installed at Zuikerbosch WTP

Inset: Weeds and Algae removed per day

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”)

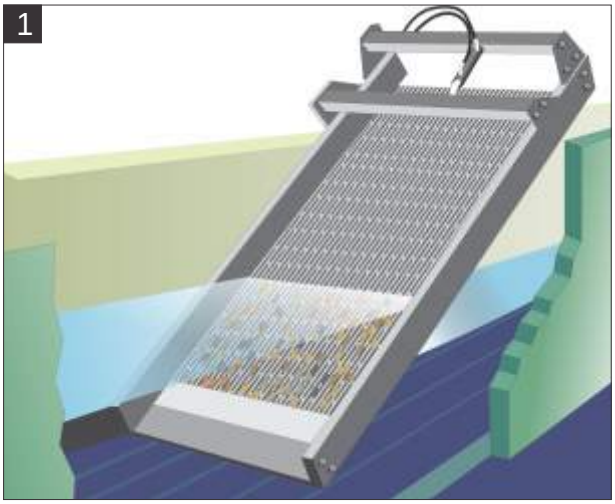
Screenmat ZA with Single Cylinder: Min. Channel width 500 mm (20”)

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

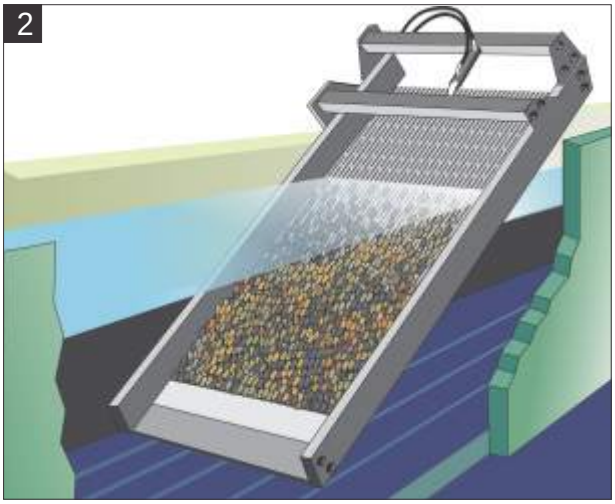
" SCREENMAT "- WHERE THE MAT OF WASTE ACTS AS A SCREEN

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.

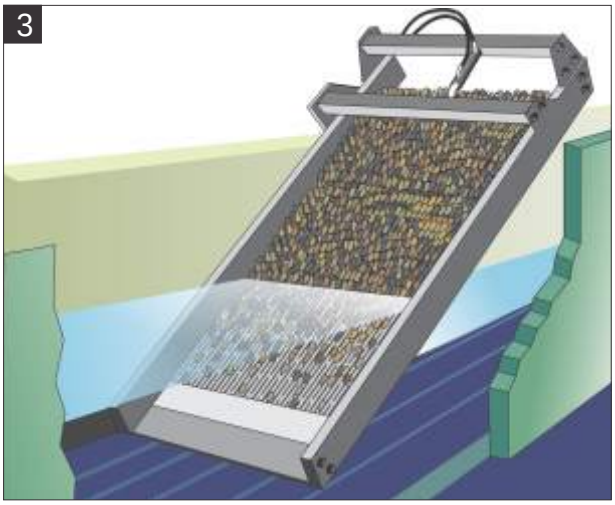
STEP 1: As the water flows through the screen, the floating waste material / screenings get trapped and start depositing on the submerged portion of the screen.This deposition of screening results into a gradual formation of a mat of waste upon the screen surface.



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:

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

JASH "ROTOCLEAN" ROTARY DRUM SCREEN

APPLICATION:

"Rotoclean" is a mechanically cleaned fine screening equipment used to prevent fine sized floating wastes from travelling further into waste water treatment plants. "Rotoclean" 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:

"Rotoclean" screen comprise of equally spaced wedge wire bars located radially and braced together by lateral reinforcement tie bars / punched sheet to form a drum. The screen is installed at an inclination of 35º with the open end of drum facing the water. The screen is provided with a waste collection trough located at its center and the trough is provided with a screw conveyor to transfer the waste to the discharge point.

WORKING:

Wastewater enters through the open end of the drum and the floating waste bigger than the bar spacing is retained on the inner surface of the drum while the screened water flows out from the sides and bottom of the drum. The rotating drum brings the captured waste to the top and a water jet mounted along the outer length of the drum pushes the waste on to the collection trough. The screw conveyor located in the trough is provided with an integral washing zone where a high pressure water jet washes the waste to remove any fecal soluble matter coming with wastes. A compaction zone is also provided to dewater the waste by squeezing before final discharge. This reduces the volume of waste to be transported as well as allows for more hygienic disposal of waste.

SALIENT FEATURES:

- Compact design-low space requirement - "Jash-Rotoclean" has many features built in to one system. Apart from the screening, the features of transportation, washing and compaction are integrated in to one resulting in to low requirement of expensive space.
- Easy installation - "Jash-Rotoclean" is supplied in completely assembled condition and dry tested from the plant and hence very low possibility of improper installation. Even single person can carry out complete installation and commissioning within 2 days.
- Low head loss - The installation of the drum at an inclination of 35° provides more screening area. This results in to low head losses.
- Lower risk of overflow - Since the drum is open only from side, the screenings always stays inside the drum only and do not overflow the channel even if the pollution load is high.
- Lower weight of screenings - Due to dewatering up to 40% dry residuals the screenings weight gets reduced by approximately 50% thus minimizing disposal costs.
- Very hygienic - Since the screenings are washed before finally discharged, the odor nuisance is very low.
- Low maintenance - "Jash-Rotoclean" has virtually no lubrication points. Only regular inspection and control is required to be done. Moreover the whole screen can be tilted and tipped out of the channel with suitable lifting mechanism for occasional cleaning.

SPECIFICATION:

Wire spacing / Perforation diameter	1 mm to 6 mm (0.04" to 0.24") / 2 mm to 6 mm (0.08" to 0.24")
Drum diameter	600 mm to 2,000 mm (24" to 80")
Suitable for channel width	800 mm to 2,200 mm (32" to 88")
Suitable for channel depth	600 mm to 2,000 mm, (24" to 80") larger depth on request
Material of construction	Stainless steel 304, 316, other materials on request

"Rotoclean" Drum Screen for Pattaya STP, Thailand

Waste Collection Trough

Cleaning Brushes

Spray Nozzles

JASH MAHR MASCHINENBAU™ "PER-SCALATOR" FILTER BAND SCREEN

JASH Mahr Maschinenbau 'Per-scalator' Filter band Screen are manufactured in technical collaboration with Mahr Maschinenbau GmbH, Austria, a company with history of over 87 years.

APPLICATION:

JASH Mahr Maschinenbau 'Per-scalator' screens are mechanically operated self cleaning fine screening equipment used to prevent fine sized floating wastes from travelling further into the water and waste water treatment plants, especially, in waste water treatment plants based on MBR application.

CONSTRUCTION:

'Per-scalator' screens comprise of screen frame of rugged construction, filter elements, discharge chute, set of high pressure nozzles, a pair of chain and high efficiency drive unit. The screen can also be provided with a rotating brush as an option.The filter elements are made of step-type perforated plates covering the entire width of the screen field and are linked to a continuous chain thus forming an endless band.

WORKING:

The waste coming with the water while gets retained on the face of the perforated filter, the water passes through. As the endless band of filter elements escalates upward, they carry the deposited waste along with it till the waste reaches to the top of screen. At the turning point where the filter element is about to start its downward journey, wastes are dislodged from the filer elements by a series of high pressure water jets. The waste along with the used water falls on to the in-built chute. From the chute the waste can either be collected in to a launder or screw conveyor for separation of waste and wash water and for further disposal.

SALIENT FEATURES:

- High reliability due to rugged construction - ensures continuity of operation even at higher than specified water depths.
- Unique shape of filer elements - step type perforated plate profile can carry large sized solids and avoids formation of sausage. This is superior to provision of protruding tines.
- Superior water spray system - use of 2 high pressure nozzle spray system. Primary system above discharge level ejecting entrapped screenings and secondary wash system bringing any remaining residue through drain pipe back in to upstream of the channel. Rotating brush has the tendency of wearing fast and then clogging the perforation resulting in to reduced efficiency of the screen. Taking cognizance of this problem we do not recommend usage of brush for all cases.
- Superior sprockets and chains - heavy duty sprockets and chains made of stainless steel and chain pin made of hardened stainless steel material of special grade.
- Special grade ceramic bushes - provided in lower sprockets to ensure very long operative life.
- Minimum welding - avoids distortion during manufacturing there by offering high functional reliability. Where welding is involved, it is continuous and preventing fissure corrosion.
- Self-carrying design - its own weight is sufficient to keep the screen securely in position.
- Factory assembled and pre shipment tested - ensures effectivity of movement.
- Easy and faster erection - the screen to be just lowered in to ready made channel for installation.
- Very high cleaning effect due to round opening.
- Grease presence in the wastewater poses no problem.
- Hygienically encapsulated covers can be provided on request.

SPECIFICATION:

Perforation diameter	2 mm to 10 mm (0.08" to 0.4"), other sizes on request
Suitable for channel width	600 mm to 3,000 mm (24" to 120")
Suitable for channel depth	up to 11,000 mm (440")
Material of construction	Stainless steel 304, 316, other materials on request

"Per-Scalator" Screen with 4 mm Peforation

JASH TRAVELLING BAND SCREEN

Jash Travelling band screens are offered in association with FSM Frankenberger GmbH, Germany for supply to markets in India & neighboring countries.

APPLICATION:

Travelling band screen is a mechanically cleaned fine screening equipment used to prevent medium to fine sized floating wastes from travelling to the pumps located into the wet well / pump chamber of a water and waste water pumping station or to prevent fine sized floating wastes from travelling further into the water and waste water treatment plants.

CONSTRUCTION:

Travelling band screen comprises of perforated plates or woven wire mesh connected to two matched strands of roller chain and forming a continuous band of panels. The screen element and screen frame are sealed at the sides to prevent solids from circumventing the filter. For mesh smaller than 3 mm (0.12") the horizontal space between the adjoining panels is positively sealed to prevent solids escaping through the gap as would be the case if this gap is not sealed. The design of filter element and its mounting enables quick and individual replacement for ease in maintenance.

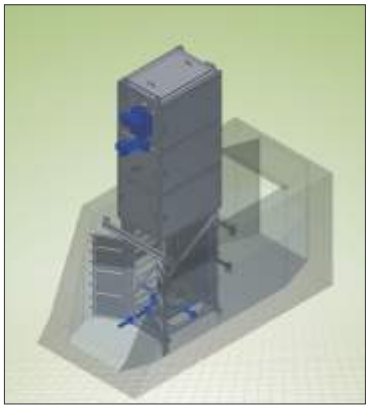
WORKING:

The continuous band of panels traps the suspended waste while the filtered water passes through. The waste / debris laden panels travels out of the flow and reach to the discharge point at the top of the platform. The waste is then removed / cleaned from the panels by water spray bar located at the upper deflection point and this cleaning process can be optionally assisted by a rotating brush depending on the screening load. The waste removed from the panels is deposited on to a conveyor or in a trough for further disposal. In this type of screens, screenings cannot be carried over to the cleaned water side because the covered panels remain all the time on the uncleand water side.

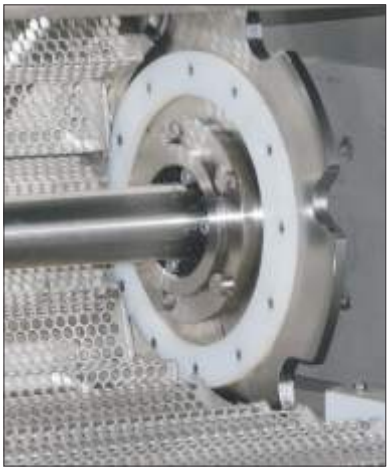
Travelling band screen is offered in two designs as under :

CENTER FLOW SCREEN

In case of center flow design the screen is installed vertically in the channel in a way that the unscreened water enters the screen inlet located in the middle of the screen frame and is effectively screened as it flows from the inside to the outside through both sides of the screen filter elements. In center flow design the front opening in the middle of the screen frame is open and the rear opening is closed.



Special Profiled Filter Panels



Upper Sprocket Assembly

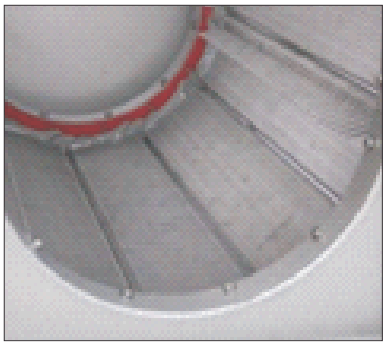
Roller Chain Connection

Dual Row of Spray Nozzels

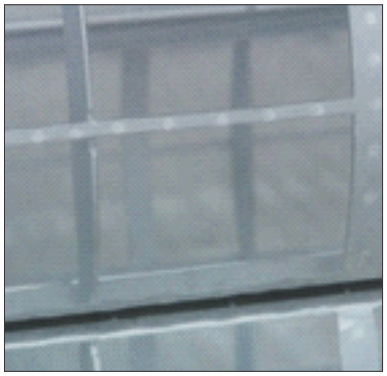
Center flow screen for sea water intake for Tuticorin Power Project, India

DUAL FLOW SCREEN

In case of dual flow design the screen is installed vertically in the channel in a way that the unscreened water enters the screen through the filter elements located on the two sides and flows out from the opening provided at the center of the screen frame. In dual flow design the front opening in the middle of the screen frame is closed and the rear opening is open.



Mesh Panels with Tines



1 mm (0.04") Mesh Panels with Sealing

Roller Chain Connection

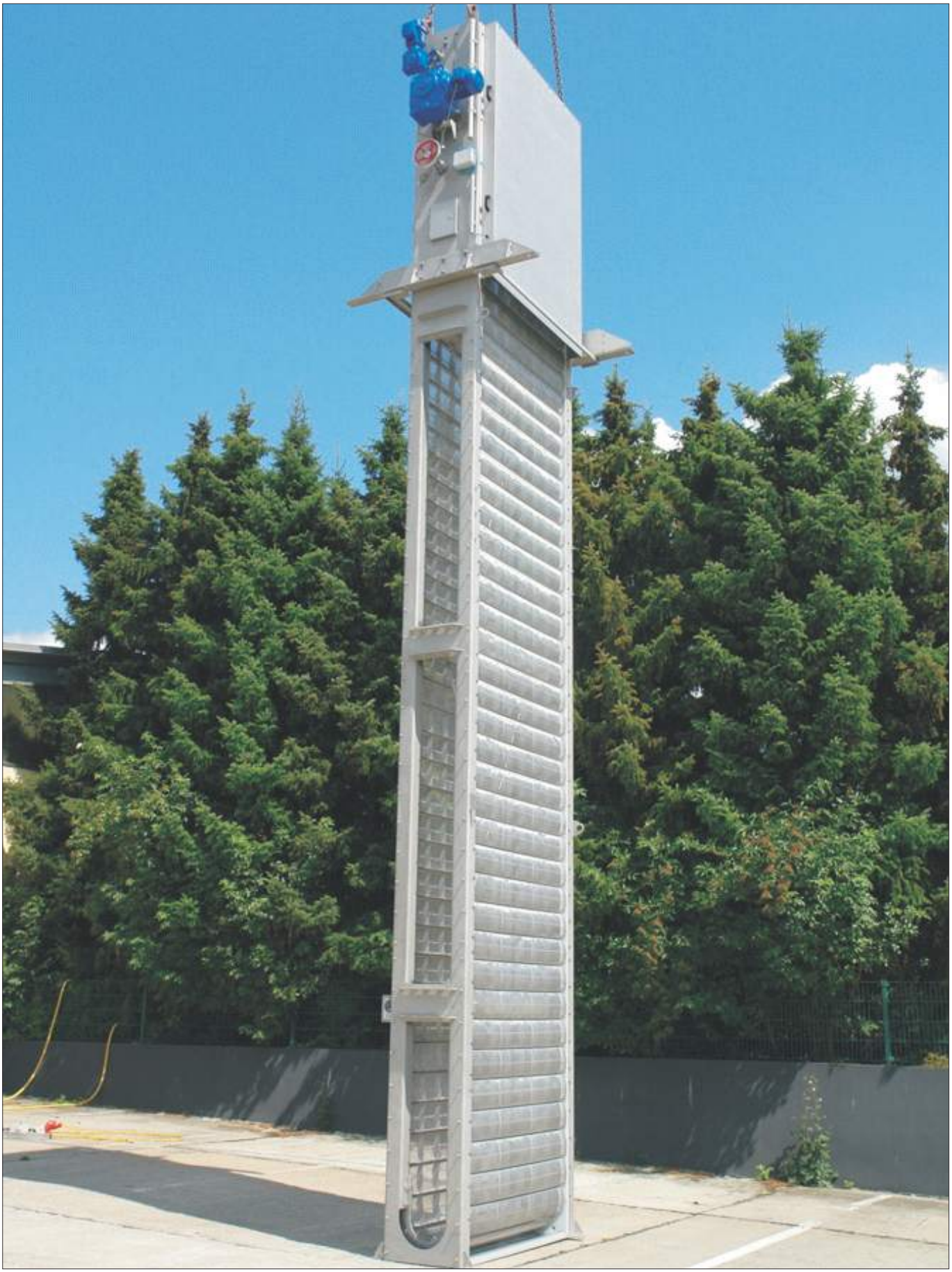
Brush with Drive

SALIENT FEATURES: For Center flow and Dual flow screens

- High reliability due to rugged construction- ensures continuity of operation even at higher than specified water depths.
- Different designs of the filter panels available for perforated type as well as mesh type.
- Filter elements and screen frame sealed at the sides to prevent solids from circumventing the filters.
- Filter elements can be individually and quickly replaced for ease in maintenance.
- Filter elements optimally cleaned by spray bars and optionally by a brush.
- Superior sprockets and chains - heavy duty sprockets and chains made of stainless steel and chain pins made of hardened stainless steel material of special grade.
- Screen is without sprocket wheels and bearings under the water level (in the channel)
- Designed to handle grit without malfunction.
- Easily adapted to suit changed operating condition.
- Factory assembled and pre-shipment tested- ensures effectivity of movement.
- Easy and faster erection - the screen to be just lowered in to ready made channel for installation.

SPECIFICATION: For Center flow and Dual flow screens

Filter element mesh size	0.5 mm to 3 mm (0.02" to 0.12"), other sizes on request
Filter element perforation size	1 mm to 12 mm (0.04" to 0.48"), other sizes on request
Filter element width	300 mm to 5,000 mm (12" to 200")
Shaft center distance (for Channel depth)	up to 15,000 mm (600"), larger depth on request
Mounting angle	90 degree
Material of construction	Stainless steel 304 316, Duplex, Super Duplex, other materials on request



Dual Flow Screen with 1 mm (0.04”) Mesh

JASH "ROTOBRUSH" SCREEN

APPLICATION :

"Rotobrush" is a mechanically cleaned very fine screening equipment used to prevent fine sized floating wastes from travelling further into waste water treatment plants based on MBR or similar technology so as to prevent damage to the membranes. These are also ideal for effluent treatment plants of Food processing, Textile, Pharmaceuticals, Chemicals, Sugar, Breweries etc.

CONSTRUCTION & WORKING :

"Rotobrush" screen comprises of a semi circular sieve made of plate with punched holes or equally spaced wedge wire bars and a rotating paddle to remove the screenings. The wastewater is fed through an inlet pipe from the side of the screen by pumping or by gravity. The waste bigger than the hole size or spacing between bars is retained on the inner surface of the sieve and the screened water flows downwards. The captured waste is then swept out by a rotating paddle and pushed out of the screen by a sweeping arm on to a bin or a trough or a conveyor for disposal.

SALIENT FEATURES :

- Easy installation - "Jash Rotobrush" has a box type construction just to be placed on top of channel.
- Very low power consumption - A single motor of 0.37 kW.

SPECIFICATION :

Wedge wire sieve size	0.5 mm to 1 mm (0.02" to 0.04")
Sieve punched hole size	2 mm (0.08"), other sizes on request
Throughout capacity	up to 100 m3/hr with 2 mm (0.08") round hole and 50 m3/hr with 0.5 mm (0.02") wedge wire slot
Material of construction	Stainless steel 304, 316, other materials on request

JASH "HYPERBOLE" STATIC SCREEN

APPLICATION:

"Hyperbole" is a manually cleaned very fine screening equipment used to prevent fine sized floating wastes from travelling further into waste water treatment plants based on MBR or similar technology so as to prevent damage to the membranes. These are also ideal for effluent treatment plants of Food processing, Textile, Pharmaceuticals, Chemicals, Sugar, Breweries etc."Hyperbole" screens are static screens and do not require any power.

CONSTRUCTION & WORKING:

The wastewater is fed from back of screen through an inlet pipe in to the weir crest by way of pumping. The overflow water from weir crest gets evenly distributed on front side of the screen with the help of flow control baffle plate. The waste of size bigger than the slot width is retained on the screen and filtered water passes through to the outlet chamber at the bottom portion of the screen. The solid waste that is retained on the screen rolls down due to combination of water force and the screen profile and can be collected / manually removed from the lower portion of the screen.

SALIENT FEATURES:

- Easy installation - "Jash Hyperbole" has a box type construction just to be placed in its place and pipe connected.
- Low operating cost - Being a static screen no moving parts, no power requirement, and no spares.

SPECIFICATION :

Slot width	0.5 mm to 2 mm (0.02" to 0.08")
Throughout capacity	50 m3/hr to 75 m3/hr
Material of construction	Stainless steel 304, 316, other materials on request

JASH SCREENING CONVEYING EQUIPMENTS

JASH FLAT BELT CONVEYOR

Flat belt conveyor is ideal for long distance transportation of waste removed by screens installed in a non-enclosed area and deliver it to the point of disposal. These are installed behind the screens such that the waste coming from the discharge chute falls on to the belt for further travel to discharge point. The belt conveyors start and stop at preset times as set in the control panel

The conveyor base structure is made of robust steel structure and the belts are made of 600 mm / 700 mm (24" / 28") wide 3 ply nylon fabric with neoprene rubber base. Depending upon requirement the belt can be provided with a cover to prevent spillage of dry waste due to wind.

JASH SCREW CONVEYOR

Screw conveyor is ideal for non hazardous transportation of waste removed by the screens installed in an enclosed area with possibility of connection to an odour control system. It is installed behind the screen such that the waste coming from the discharge chute falls into the inlet portion of the conveyor and is then gradually transported further via a shaftless screw conveyor to the point of discharge.

The trough is made of stainless steel and is lined with special abrasion resistant plastic material to reduce friction when the shaftless screw is moving in the trough. The shaftless screw is made of alloy steel or stainless steel as specified.

Screw Conveyor with inlet for 3 Nos. Screens for Rithala STP, New Delhi, India

Shaftless Screw in UHMWPE Lined Trough

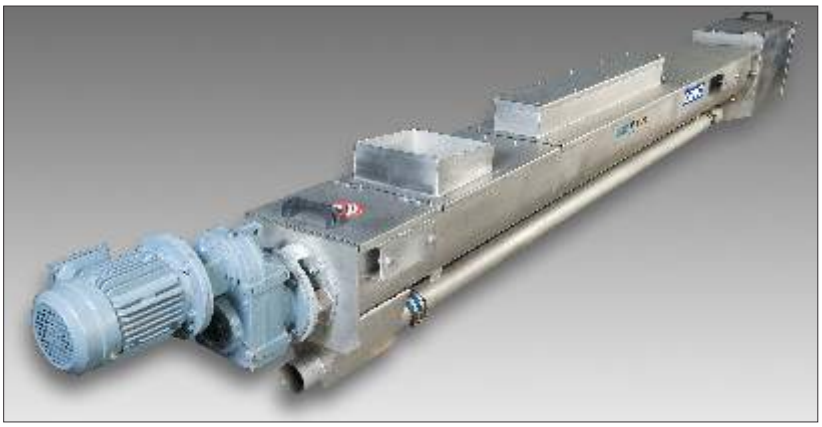
JASH SCREW CONVEYOR WITH WASH COMPACTOR

Screw conveyor with wash compactor is ideal for non hazardous transportation of waste removed by the screens installed in enclosed area with possibility of washing and compacting the waste with a view to achieve odor reduction, recovery of carbon content that comes along with the screened waste and reduction in volume of waste resulting in to reduced transportation costs and smaller land fill area.

It is installed behind the screen such that the waste coming from the discharge chute falls into the inlet portion of the washer compactor and is then gradually transported via a shaftless screw conveyor. The waste material is first taken to a washing zone where high pressure water jets are used to remove fecal waste that may have come along with the screened waste. The wash water is sent back to the waste water stream and the washed waste is then subsequently compacted within a compaction zone so as to reduce the water content and the volume of waste. This compacted waste comes out of the discharge hatch and is then transported for further disposal.

SPECIFICATION:

Capacity	0.75 to 13 m3/hr
Overall length	up to 8000 mm (320”) in multiples of 1000 mm (40”)
Angle of inclination	3-5 Degrees
De-watering performance	up to 60% DR
Volume and weight reduction	up to 80%
Material of construction of trough	Stainless steel 304/316 lined with polyethylene, other materials on request
Material of construction of shaft less screw	Alloy steel / Stainless steel



Screw Conveyor with Washer and Compactor

Drain Zone

Compaction Zone

2 Nos. Screw conveyor with washer compactor along with automated diverter for Degremont 15 MGD STP at DGN, New Delhi, India

JASH STOPLOGS

APPLICATION :

Stoplogs are generally used in those applications where closure or isolation of waterway opening within a short time is not required and where isolation requirement is very infrequent and higher leakage can be accepted. Stoplogs are mostly installed in open channel installation where height of water is less than the total height of the stoplogs.

The height of stoplog is kept such that it covers the specified water depth. In cases where there is weight restriction in handling then provision of a single piece stoplog may becomes difficult. In such cases multi-piece stoplogs are used instead of using a single piece stoplog. Multi-piece stoplogs comprise of number of logs of smaller heights stacked over one another to cover the full depth of water. Larger sized stoplogs, single piece or multi-piece can also be provided with equalizing valve so as to enable lifting them in balanced water head condition.

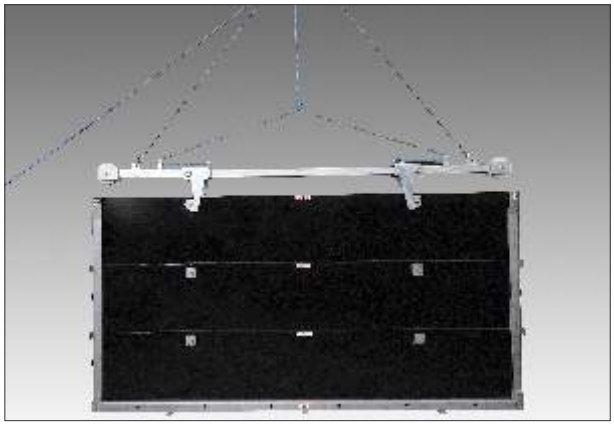
A stoplog is suitable for insertion in multiple frames installed at different locations provided the stoplog and the frames are having the same width. This results into reduced capital costs but increases the operative cost due to multiple handling and transportation from one location to another. Also large aisle ways have to provided for to & fro movement of stoplogs from various location of installation to the place of storage. The decision about the quantity of stoplogs required for given number of frames of same width has to be taken based on the need of simultaneous isolation of same size opening.

Jash offers stoplog in carbon steel, stainless steel, aluminum, Fibre reinforced plastic and Composite material of construction. Jash offers stoplogs in widths upto 6 meters (20') having individual heights upto 3 meters (10').

Aluminum extruded sectional stoplogs for VA Tech Wabag, Oman Project.

Stainless steel sectional stoplogs with movable storage rack and lifting beam for Changi Water Reclamation project, Singapore.

Carbon steel stoplogs with equvilizing valve for 2x500 MW Power Plant for Mahagenco, Bhusawal TPS, India.



FRP sectional stoplogs with lifting beam for Florida, USA Project

JASH SLUICE / SLIDE GATES & OPEN CHANNEL GATES

APPLICATION :

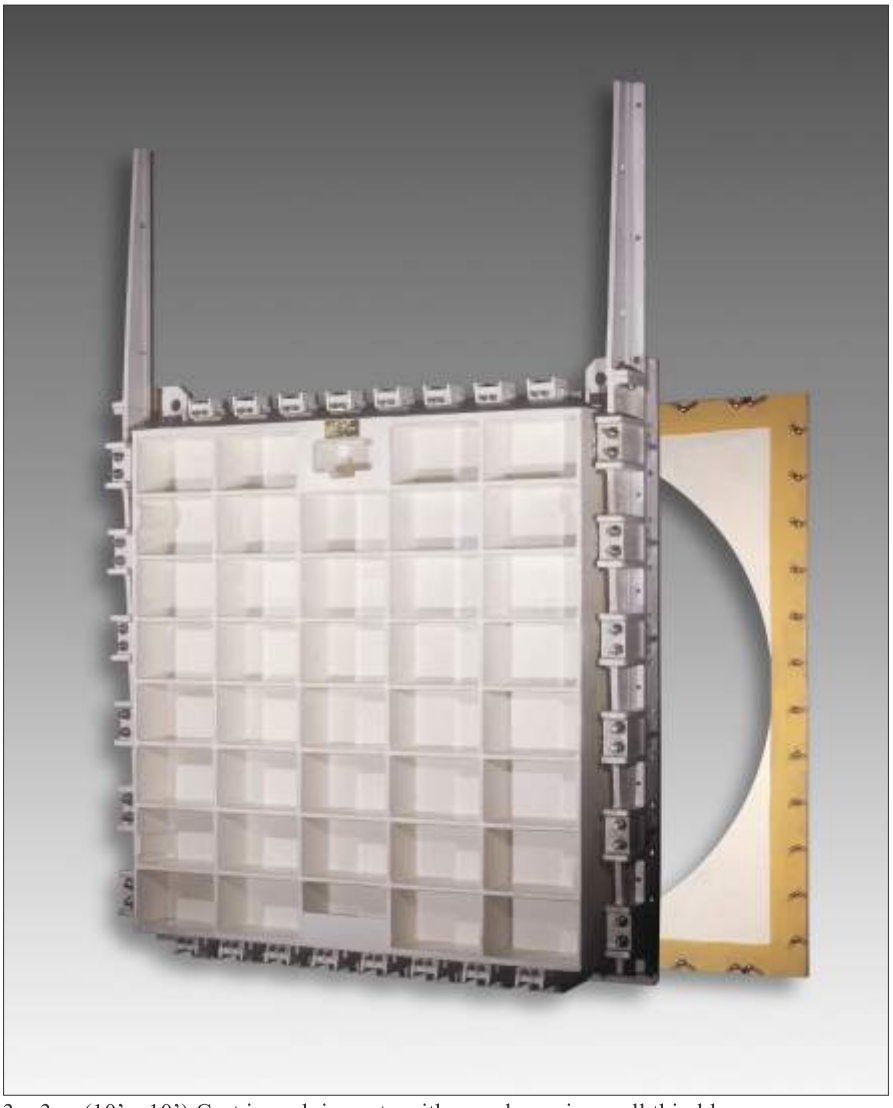
Sluice gates and Open channel gates are generally used in those application where better leakage control is required and where frequent closure or isolation of waterway opening is required to be done in a short time using minimum manpower. Sluice gates offer four sides water sealing whereas open channel gates offer water sealing on three sides ie two sides and bottom without any water sealing arrangement on top side.

Sluice gates and open channel gates are provided with their individual gate operating arrangement and so can be installed in compact places without the need for large aisle ways as required in case of stoplog for to & fro movement of stoplogs from location of installation to the place of storage. Depending upon requirement the gate can be operated manually, electrically, pneumatically or hydraulically.

Jash offers sluice gates and open channel gates in cast iron, alloy cast iron, ductile iron, carbon steel, stainless steel, duplex, super duplex, aluminum, HDPE, fibre reinforced plastic and composite material of construction. Depending upon the material of construction opted for, Jash can offer gates in widths upto 4 meters (13') and having individual heights upto 5 meters (16').

Jash offers these gates as per American Water Works Association : AWWA C-560, C-561, C-562 & C-563 specifications, British Standard : BS 7775 specification and Bureau of Indian Standards : IS-13349 specification.

For more details pertaining to various types of gates offered by Jash, request for "Water Control Gates" catalogue.



3 x 3 m (10' x 10') Cast iron sluice gate with round opening wall thimble

Stainless steel Open channel gate

Aluminum Open channel gate

JASH SCHUETTE & JASH WECO KNIFE GATE VALVES

Jash Schuette valves are manufactured under collaboration with Schuette Group, Germany & Jash Weco valves are manufactured under collaboration with Weco Armaturen, Germany.

APPLICATION :

Knife gate valves are generally used for isolation application in pipelines conveying liquids having solid contents. As these valves can cut through settled solids and achieve full closure they are ideal replacement for Sluice valves in Sewage pumping station and treatment plants.

Knife gate valves can be offered with or without bonnet and for unidirectional or bidirectional isolation application as required. Knife gate valves can be offered with site replaceable sealing arrangement and the sealing arrangement can be resilient seated or metal seated as per the preference of the client.

Knife gate valves are provided with individual valve operating arrangement which depending upon requirement can comprise of manual, electrical, pneumatic or hydraulic operating arrangement.

Jash offers Knife gate valves in cast iron, ductile iron, carbon steel, stainless steel, duplex and super duplex material of construction. Jash offers these valves as per AWWA C-520 specifications.

Jash-Weco MONO-A and MONO-T series valves are bonneted valves suitable for flange mounting as per ANSI B16.5 as well as DIN PN10. These valves are offered in sizes DN 80 (3”), 100 (4”), 150 (6”), 200 (8”), 250 (10”), 300 (12”), 400 (16”), 500 (20”), 600 (24”). Jash-Schuette ZFI & ZFT series valves are offered in sizes DN80 to DN3000 mm (3” to 120”) size.

For more details pertaining to these valves request for “Knife gate valves” catalogue.

Stainless Steel MONO-T DN 300 (12”) valve

Ductile Iron MONO-A DN 400 (16”) valve

Super duplex ZFT DN 1600 (64”) valve with extended spindle for VA Tech Wabag Desalination project. Chennai, India

Stainless Steel ZFT-STD DN 1500 (60”) valve

"SHIVPAD" PROCESS EQUIPMENTS

Shivpad offers diversified process equipment comprising of Screens, Detritors, Clarifiers, Thickeners, Digester mixers, Trickling filters, Surface aerators, Decanters, Lime classifiers and various other tailor made equipment to suit process application and clients need.

Shivpad Engineers Pvt. Ltd., is based in Chennai, India and was established in year 1990 to manufacture a wide range of process equipment for water, waste water and sewage treatment plants. Shivpad was acquired by Jash in 2012 and is now a wholly owned subsidiary of Jash Engineering Ltd., India.

Since its inception Shivpad has successfully installed process equipment to more than 200 major projects in India and to projects in Singapore, Malaysia, Qatar, Sri Lanka, Muscat, Brunei, Vietnam, Thailand, Indonesia, Fiji and Dubai. Shivpad products are known to be highly reliable and long lasting and repeat orders from most of the clients is a testimony of Shivpad quality and after sales service support.

For more details pertaining to various products offered by Shivpad, request for "Shivpad Process Equipment" catalogue.

Detritor Mechanism with FRP Hood- STP at Brunei

Peripheral Driven Traction Clarifier at Doha STP, Qatar

Slow Speed Floating Aerators at Ipoh STP, Malaysia

Slow Speed Fixed Aerators at Banglore STP, India

45m (148') Diameter Clarifloculator at Cochin Refinery, India

48m (158') Diameter Trickling Filter at Baroda STP, India

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