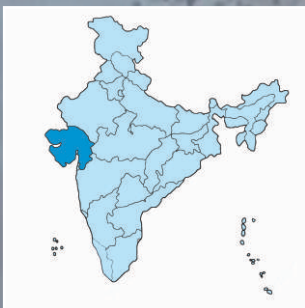


Port Dredging

*a Make in India Initiative for
Dredger “U B Pavitra” @ Veraval Port*





Veraval & Veraval Port

Veraval is a fair weather lighterage port, situated in the south-west coast of Gujarat state.

The city was established in the thirteenth century by Rao Veravalji Vadher & was a part of the Junagadh Kingdom & is positioned at about 6 kilometers from the world renowned **Somnath Temple** in Saurashtra.



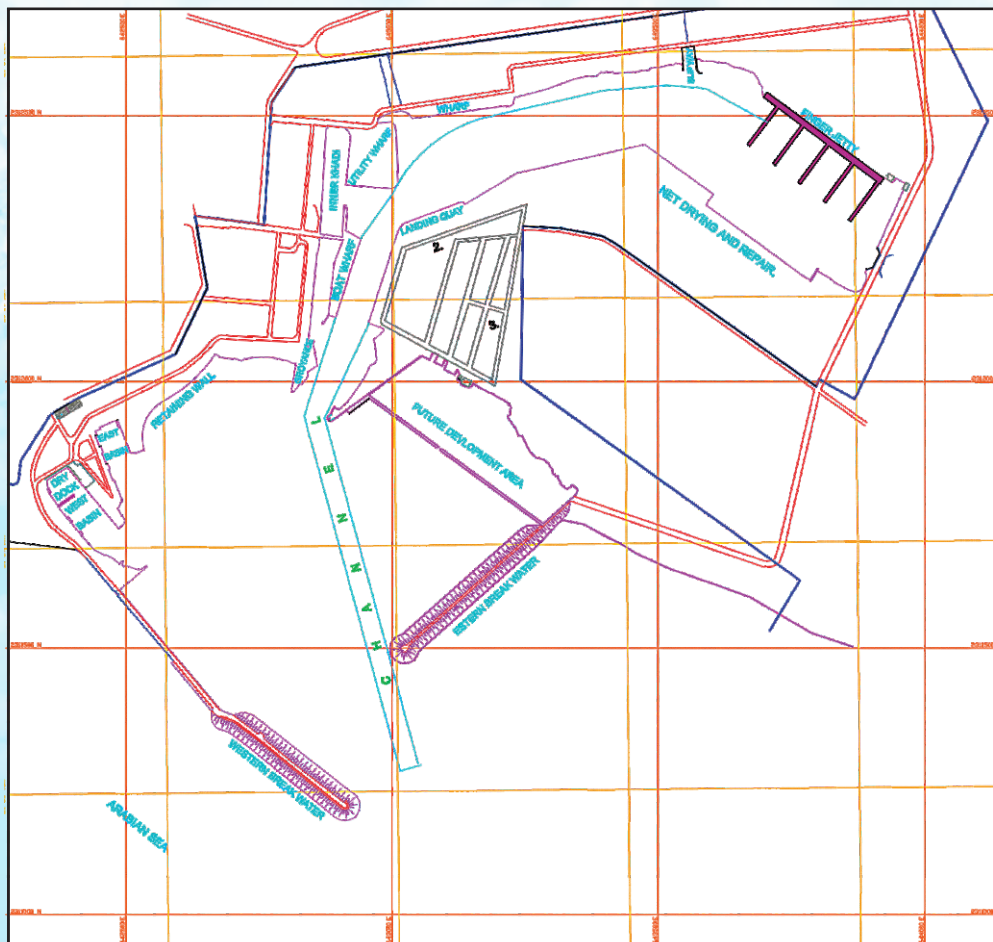
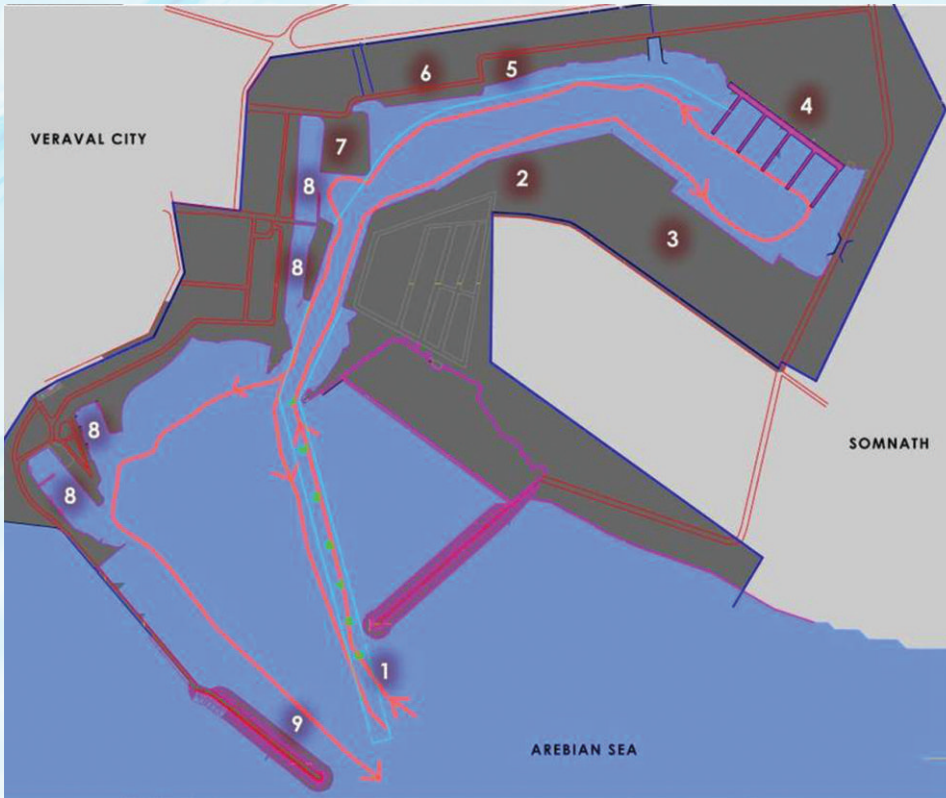
Veraval is mainly famous for fisheries and it is the major industry in the city which is governed by the fisherfolk known as “Kharwas” & **exports a huge quantity** of fresh and excellent quality **seafood** to Europe, Japan, USA, Persian Gulf countries and to Southeast Asia.

The city is also well-known for **building boats** - here trawlers & traditional boats are used for fishing.

Apart from this, Gujarat Ambuja Cement, Indian Rayon Nuvo Ltd., Gujarat Heavy Chemicals Ltd. & Gujarat Siddhee Cement Ltd. are amongst the several companies located in Veraval.

Blessed with the **Longest Coastline of India (1600 km)**, GoG enacted **Gujarat Maritime Board (GMB)** in 1982 - it was the **1st Maritime Board of India**.

GMB has established itself as maritime leader in port development, privatisation and specialised cargo handling in India – its vision is to enhance ports and International trade & is responsible for management, control and administration of **44 ports** in Gujarat State.



LAY OUT PLAN FOR VERAVAL PORT G.M.B.

TIDAL INFORMATION

MHHW	2.09Mt
MLHW	1.82Mt
MBL	1.33Mt
MHLW	1.09Mt
MLLW	0.48Mt

LEGEND

MARINE STRUCTURE

- WESTERN BREAK WATER 334M LONG
- EASTERN BREAK WATER 480.0M LONG
- FINGER JETTY
- DRY DOCK 55.0M X 32.0M

SHORE STRUCTURE

- 1. PORT OFFICE
- 2. AUCTION HALL
- 3. PLOT FOR PROCESSING

OTHER STRUCTURE DETAIL

- ROAD
- PORT AREA

NOT TO SCALE

GUJARAT MARITIME BOARD
 ENGINEERING DEPARTMENT
VERAVAL PORT
 ENTRANCE CHANNEL.
 SURVEY CARRIED OUT FROM 08 Feb. to 16 Feb. 2003
 MARINE SURVEY SUB-DIVISION BHARUCH

What is Port Dredging..?

Port Dredging is the act of removing sand & silt from the bottom of water body for safe passage of floating vessels.

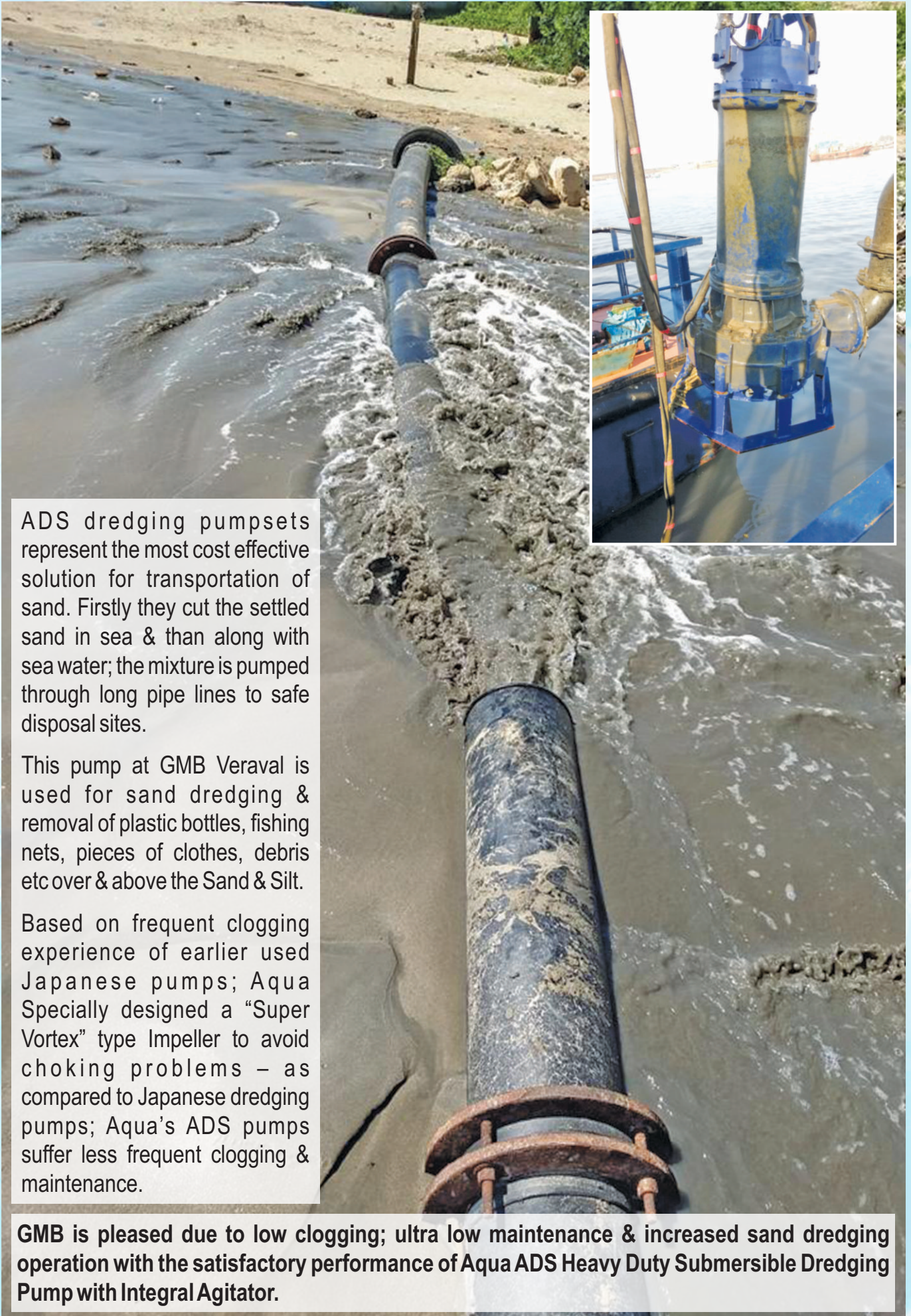
Since massive ships carry the bulk of the goods imported into the country, dredging plays a vital role in the nation's economy.

Vessels require a certain amount of water in order to float and not touch bottom. This water depth continues to increase over time as larger and larger ships are deployed. **Unfortunately tides bring in sand and silt which gradually fill channels and up harbors.** This material must be periodically removed by dredging failing which vessels get bogged down in silt..!

Dredging is a routine necessity for maintaining or increasing the depth of navigation channels, anchorages, or berthing areas to ensure the safe passage of boats and ships. Dredging is also performed to reduce the exposure of fish, wildlife, and people to contaminants and to prevent the spread of contaminants to other areas of the water body.



An Aqua ADS Submersible Dredging pump being lowered for dredging



ADS dredging pumpsets represent the most cost effective solution for transportation of sand. Firstly they cut the settled sand in sea & than along with sea water; the mixture is pumped through long pipe lines to safe disposal sites.

This pump at GMB Veraval is used for sand dredging & removal of plastic bottles, fishing nets, pieces of clothes, debris etc over & above the Sand & Silt.

Based on frequent clogging experience of earlier used Japanese pumps; Aqua Specially designed a “Super Vortex” type Impeller to avoid choking problems – as compared to Japanese dredging pumps; Aqua’s ADS pumps suffer less frequent clogging & maintenance.

GMB is pleased due to low clogging; ultra low maintenance & increased sand dredging operation with the satisfactory performance of Aqua ADS Heavy Duty Submersible Dredging Pump with Integral Agitator.

Construction of a typical ADS pump - Rugged Design to the Core !

Rugged Motor : Heavy duty, Class "F" insulated (*withstands upto 155°C max winding temp, Class "H" optionally available to withstand 180°C*). High starting torque & generous service factor (*1.25 for ASS & 1.7 for ADS*) allows stall free Star Delta /ATS starting even if pump is fully buried under sedimented solids. Adapts well to real life Indian supply conditions (*poor & unbalanced voltage*) better than imported counterparts.

Shaft : Rigid & deflection proof, Oversized to take shock loads from rocks, etc. Corrosion resistant stainless steel, has no wearing sleeves for a maintenance free long life.

Motor Cooling : By media submergence. For amphibious applications (*where submergence may or may not be possible*) an optional cooling jacket can be provided.

Oil Chamber : Lubricates & cools both the mechanical seals ensuring that seals can endure temporary dry running. Also acts as a collection sump for leakage between the primary seal & secondary seal.

Mechanical Seals : Two independent, bi directional rotation seals ensure good sealing. The primary seal is of Silicon Carbide faces for superb erosion resistance in abrasive media.

Stuffing box : Hybrid, multi stage design. The synergistic effect of multiple mechanisms of the stuffing box maintains low pressure, minimum swirl & very low solids near the seal thereby minimizing erosive seal wear.

Strainer : (*For ADS only*) - Larger solids which could foul the pump-pipe system are screened out by the strainer screen. Long service life due to thick walled SS construction.

Stand : Large base Stainless Steel Stand ensures secure topple free base even on unlevelled fluid beds.

Impeller : Non Clog, handles solid upto 125mm. CAD design ensures high efficiency, minimum eddy losses & thus low erosion. Design (*Enclosed / Semi Open or Vortex*) & material selected to be compatible with hardness, sedimentation rate, solid size, specific gravity & corrosiveness of the media. Keyed onto shaft. No close running hydraulic joints plus a high torque motor mean no clogging even after extended periods of stoppage under silt.

Fasteners : In corrosion resistant materials for long service life.

Comprehensive Cable Gland : Four stage sealing ensures pressure resistant moisture proof sealing even in case of protective sheath puncture, ensuring moisture free motor environment.

Reverse Rotatin Protection : (*Optional*) Electro-mechanical device senses wrong rotation direction & cuts off power supply.

Motor Protection : Thermal overload protection projects the windings against burn out by cutting off the supply in case of overheating.

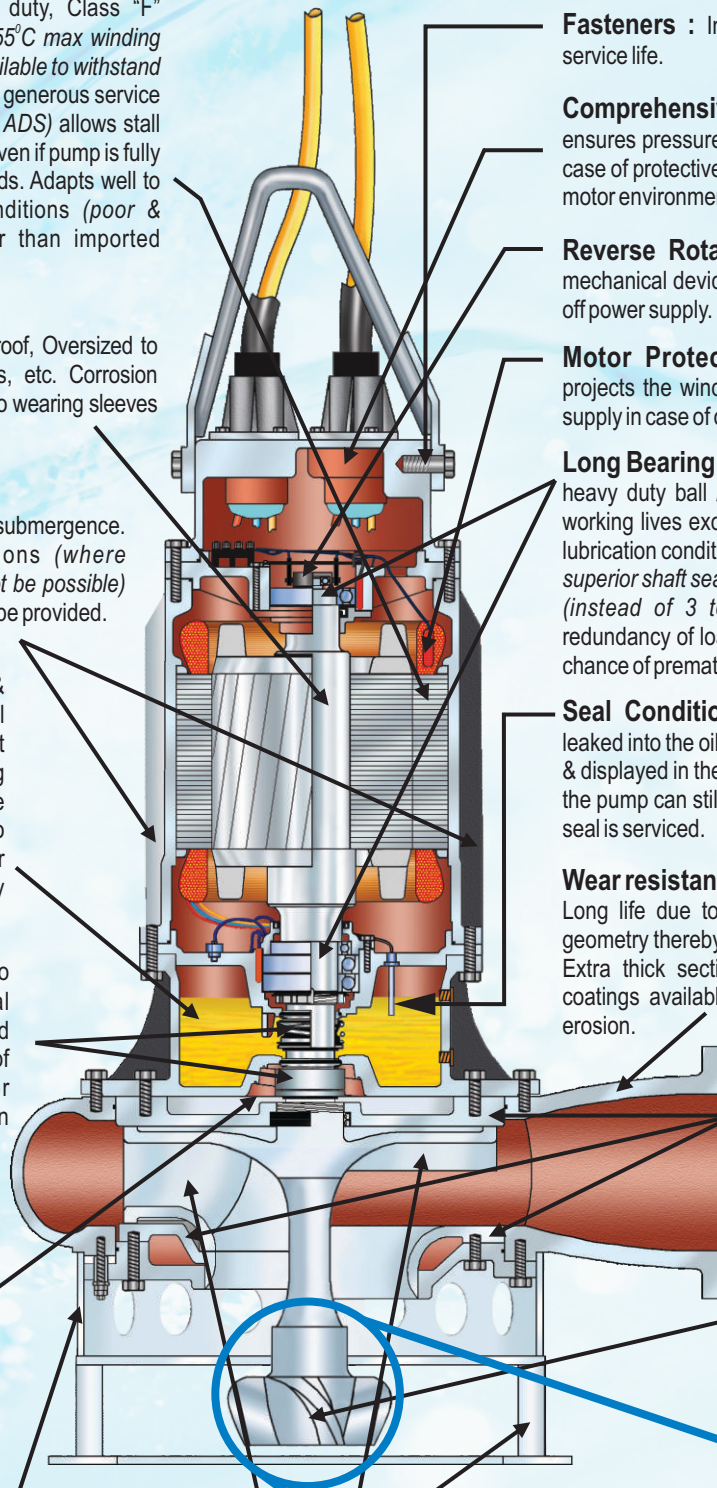
Long Bearing Life : Maintenance free, greased for life, heavy duty ball / roller bearings with L10 & actual field working lives exceeding 1,00,000 hours. Apart from ideal lubrication conditions (*moisture free environment thanks to superior shaft sealing*), the use of 3 or 4 oversized bearings (*instead of 3 to 5 undersized bearings*) eliminates redundancy of loading & cross location, hence there is no chance of premature failure.

Seal Condition Monitoring : (*Optional*) Moisture leaked into the oil chamber from the primary seal is sensed & displayed in the control panel. Back up seal ensures that the pump can still be run for some time before the primary seal is serviced.

Wear resistant Pump Casing : Long life due to the CAD designed smooth contoured geometry thereby reducing internal eddies & erosive wear. Extra thick sections at know points of wear. Optional coatings available to enhance wear against corrosion / erosion.

Wear Plates : Abrasion resistant, Generous thickness for extra life in erosive media. Replaceable.

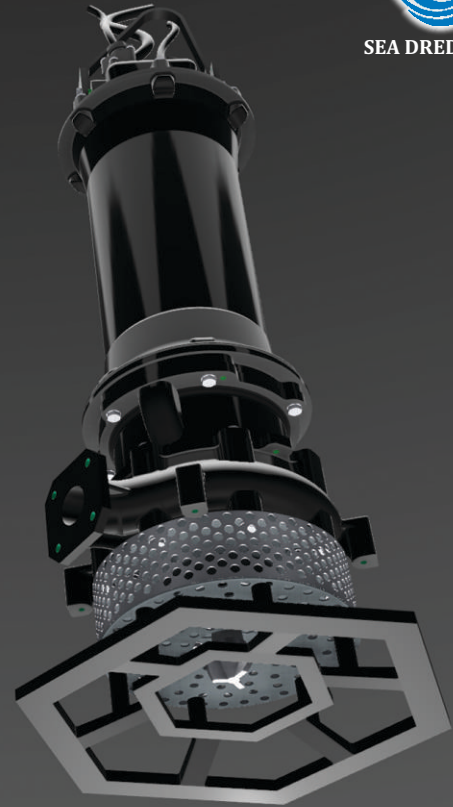
Agitator : (*Only in ADS*) Abrasion resistant, heavy duty CAD designed agitator forces a steam of water to the bottom thereby stirring up the sedimented solids into suspension, which are then sucked up by the pump. Agitator helps pump upto 80% solids by weight. Is food proofed against opening up in case of reverse motor rotation.



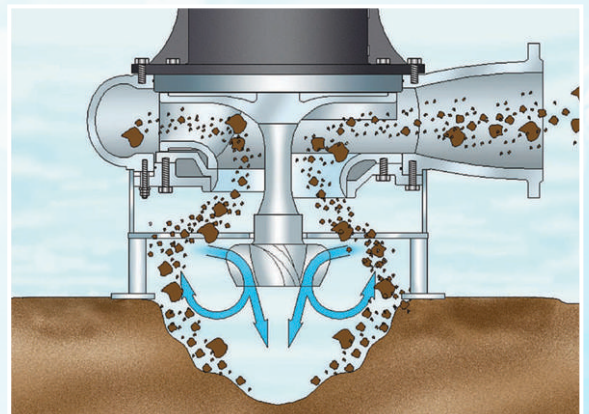
Rugged, non clog submersible pump set with integral Agitator for Hydraulic Dredging

Extremely high silt content (*above 2,50,000ppm*) as found on bottom of drainage pits

It dredges out the silt from bottom of Drainage pits & hence avoids its volumetric capacity reduction



Built in agitator forces high-energy vortices onto the bottom, stirring & churning up sedimented material below the pump's suction. This effect in tandem with the resultant pressure differential between pump suction versus down pressure of agitator, thoroughly mixes & homogenizes the stirred up material, which is then sucked by the pump. Especially useful for bulk pumpage of slurries with fast settling fine to coarse solids (*dredging etc.*).





GUJARAT MARITIME BOARD
(GOVERNMENT OF GUJARAT)
 OFFICE OF THE Deputy Executive Engineer (Mech)
 Veraval Group of ports | opp.to Patan Gate
 ,Near Port Khadi Main entrance Gate
 Veraval 362265 ઈમેલ : arsinhdodia@gmail.com
 PH. 02876-220899.

No. GMB/DEE/M/VRL/ 5]

Dt. 19/4/2018.

TO WHOM IT MAY CONCERN

This is to certify that Gujarat Maritime Board was placed an order to M/s Aqua Machineries Pvt. Ltd, Ahmedabad vide work order no. GMB/JAM/ME/PB/533 dated 21/10/2016 for the work of supply installation testing & commissioning of SAND SUCTION DREDGE PUMP having technical specification 100 HP /75 Kw , 750 RPM, 3 PHASE, 440 VOLT against replacement of Toyo Denki make sand suction pump having same capacity.

The agency have completed the work satisfactory as per order & Supplied sand pump (Submersible Dredging pump) of AQUA make by the M/s Aqua Machineries Pvt. Ltd, Ahmedabad observed excellent & observed satisfactory operation to doing sand dredging in open sea & harbour area .

The indigeneous product having observed good performance in sea dredging application for sand dredging. The certificate is issued as per agency request for their future business development purpose.

[Signature]
 Deputy Executive Engineer (M)
 G.M.OB. Veraval Port.

To,
 M/s Aqua Machineries Pvt. Ltd, Ahmedabad
 as per your latter of dated 19-4-2018.



www.gmbports.org
 Ports_GMB

મુખ્ય કાર્યાલય : સાગર ભવન | સેક્ટર ૧૦-એ | છ રોડ | એરકોર્ટ ઍરેલ અને ગાંધીનગર-૩૮૨૦૧૦ | ગુજરાત (ભારત)

Joint Inspection Reports for the work 'SITC of Sand Pump of Dredger U B Pavitra at Veraval Port' during trial on dated 25.09.2017

- Sand Pump is installed on Dredger UB Pavitra and connected with existing HDPE Pipes with dia 200 mm & length 500 mtr.
- Control Panel for the pump is installed on Dredger deck and connected with D.G. Set
- Sand Pump's Insulation /Megger test were taken by Aqua's Service Engineer and found OK
- All Control System checked and found in good condition
- D.G sets voltage set on 440V
- Pump was started on no load and checked direction of rotation
- Pump was lowered in Sea bed in running mode. Voltage & Current are measured, recorded and compared with the design limits. Found within design limit as per the Aqua's laboratory reports.
- Flow with sand contents observed at delivery end and found satisfactory as per comparing it with previous pump throughput as per physical observation.

Remarks: Based upon the joint inspection during test & trial, it was found satisfactory to the satisfaction of all undersigned provided Agency will required to submit physical pressure at delivery site & its calculation reports for Pump Capacity & Head as per tender terms.

[Signatures]
 Mr. A R Malik Mr. Raghuram Achanta Mr. A/Sinh Dodiya Mr. Amit Kumar
 (Representative (Surveyor, IRS) DEE(M), Veraval Marine Engineer.
 Of Agency)

Aqua Machineries Private Limited

www.aquapumps.com

Registered Office & Manufacturing Plant

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