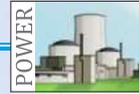




Waste Water



Recycled Waste Water

Bangalore City, Jakkur Lake & Yelahanka GTPS



**Bangalore Water Supply
and Sewerage Board**



**KARNATAKA POWER
CORPORATION LTD.**

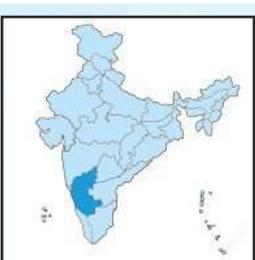


**KARNATAKA STATE
POLLUTION CONTROL BOARD**

*Preventing untreated Sewage from overflowing to the Lake &
using that Sewage's Tertiary Treated Water to meet
the Power Station's Water demand...!*



2x350MW Cycle Gas Based Power Station, Jakkur



Situation



Jakkur lake is spread over **160 Acres** & located in northern Bengaluru & receives rain water from three storm water drains which used to feed the lake starting from Yelahanka, Agrahara and Shivanahalli.

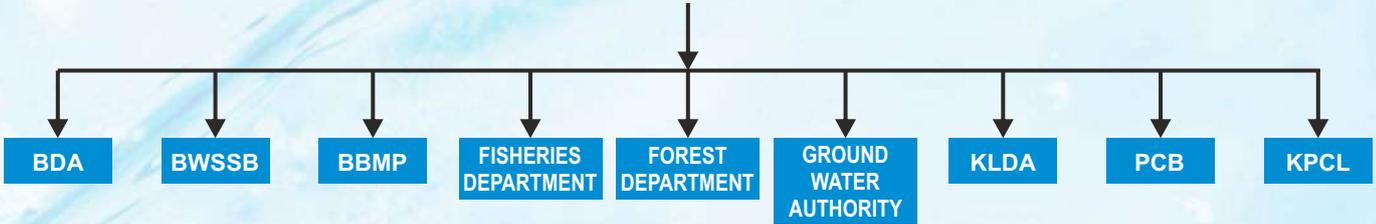
Due to rapid urbanization and increase in population, the catchment area is highly encroached & instead of storm water; the lake started receiving sewage leading to it rapid decay...!



The Lake prior to the rejuvenation...

Situation

The Stake Holders



- BDA** : Bangalore Development Authority has Redeveloped the lake with De-silting, fencing etc
- BWSSB** : Bangalore Water and Sewerage Board has Setup & runs the Sewage Treatment Plant
- BBMP** : Bruhat Bengaluru Mahanagara Palike owns the lake
- Fisheries Department** : Responsible for the fisheries contract
- Forest Department** : Responsible for off lake plantation
- Groundwater Authority** : Monitors groundwater extraction around lake
- Karnataka Lake Development Authority** : Is responsible for lake protection
- Pollution Control Board** : the regulator of Lakes & STP's Quality Auditor
- KPCL** : Utilizes 15mld recycled Tertiary Treated Water for operating its Gas based TPP

Solution

The following steps were taken:

- The Lake was Fenced & De-silted.
- Trees were planted along it's sides.
- Social sustainability was achieved by community ownership.



- BWSSB augmented its 10mld STP to 15mld to improve the quality of sewage (discharged in the Lake) & also upgraded it to produce high quality Recycled Tertiary Treated (Sewage) Water fit for Power Station.

Solution

KPCL funded the STP's upgradation as it's Power Station required **high quality of water** necessitating **“one of its kind”** STP based on Membrane & Moving Bed Bio-film Reactor technologies.

Highly Reliable, Energy Efficient (*IE2*), Compact & VFD Compliant pumps were required - **instead of Importing** such pumps, Aqua was chosen for such Custom - Built Pumps.



AQUA SUBMERGED TUBULAR COLUMN PUMPSET (ATB)				
Model	Qty.	Flow	Head	
ATB_V_Tu_1st_Tu_7047_M_LL..._0035_00415_NJ	4	1550 m ³ /hr	3mwc	

Implementing Agency :



Bangalore Water Supply and Sewerage Board
ಬೆಂಗಳೂರು ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ

Consultant:



TATA CONSULTING ENGINEERS LIMITED

Contractor :

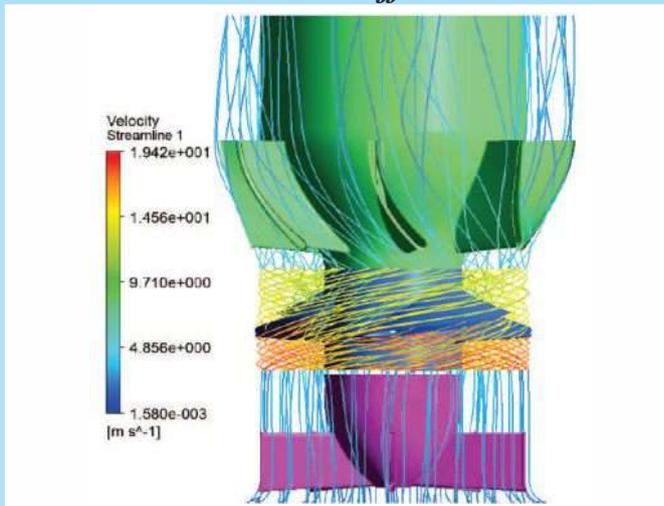
PASSAVANT
Energy & Environment

Established in 1842 in Germany, Passavant Energy & Environment (formerly Passavant-Roediger) developed groundbreaking technologies and processes in municipal wastewater, sludge, water and industrial wastewater treatment, including the company's in-house world renowned sludge digestion technology.





CFD Optimized Pump Hydraulics for Best Possible Efficiencies



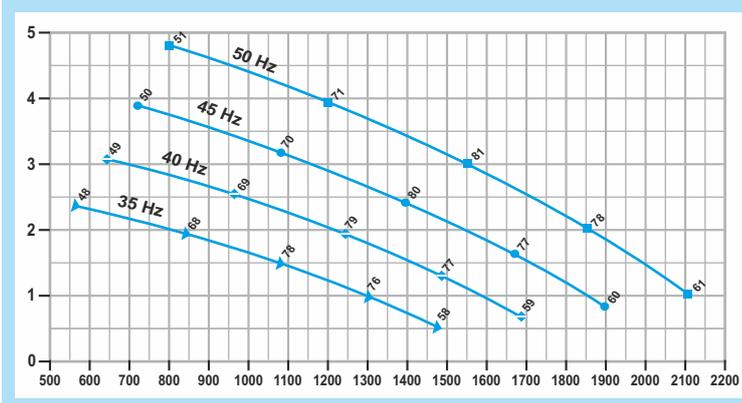
Thanks to Aqua's Inhouse R&D & CFD capabilities; the Consultant & Clients were able to ascertain smooth hydraulic performance of pump's hydraulics.

"Looking at the Prestigious Clients, the high stakes involved & demanding application; we needed Efficient & Highly Reliable, VFD compliant Axial Flow Submerged Tubular Column Pumpsets for IRR application.

Being a German origin company; we were initially thinking of Importing the IRR pumps - but looking at Indian conditions, we finally decided to go in for Indigenous (Aqua make) pumps.

Now, after substantial usage; we can say that the performance of Aqua pumps (especially in demanding Indian conditions) has justified our decision."

- Mr. Rajas Golatkar
M.D., Pasaavant Energy & Environment



To save energy; the pumps are equipped with:

- 1) High Efficiency IE2 &
- 2) VFD compatible motors.

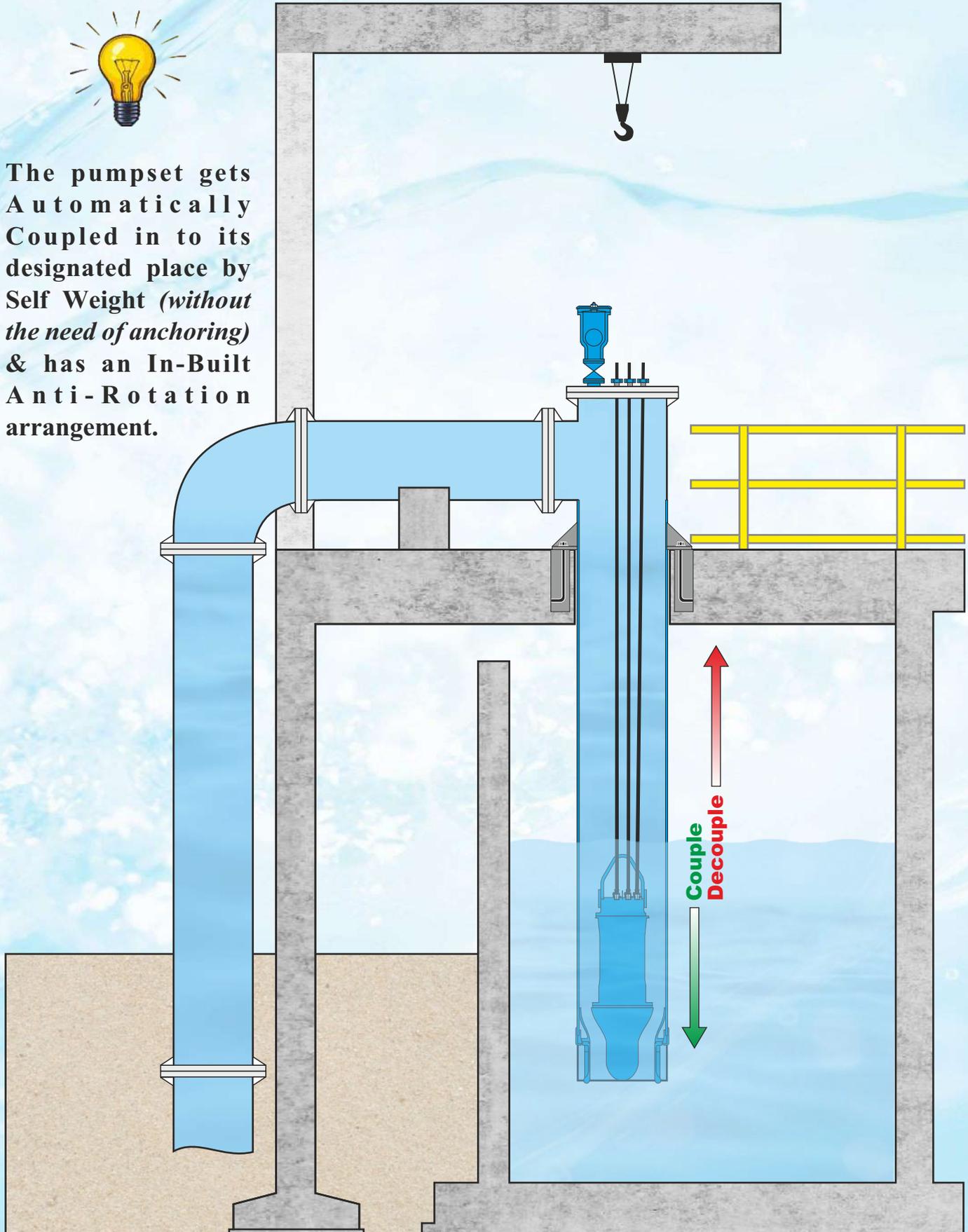
Aqua has extensive design expertise in such applications & also has VFD testing capability upto 2500kW.

General Arrangement

Submerged Tubular Column Axial Flow pumpsets can be easily & quickly installed in the Column pipe by simply lowering / lifting without entering the wet pit.



The pumpset gets Automatically Coupled in to its designated place by Self Weight (*without the need of anchoring*) & has an In-Built Anti-Rotation arrangement.



Results

With combined efforts of M/s. BWSSB, M/s. T.C.E., M/s. Passavant & Aqua's pumpsets the Lake is now rejuvenated & the Thermal Plant is commissioned.



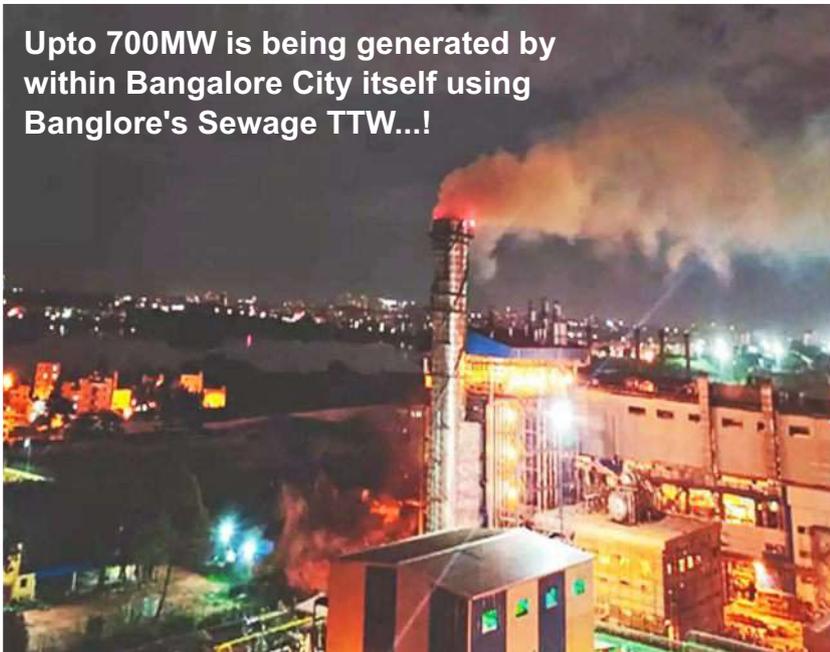
The lake is now clean...



...& rejuvenated for people



...& home to many birds



Upto 700MW is being generated by within Bangalore City itself using Bangalore's Sewage TTW...!



Quality of Treated Waste Water.....

Raw Sewage

Treated wastewater



Advantages of Aqua's Submerged Tubular Column Pumpsets

- CFD Optimized Propeller Pump Hydraulics for High Efficiency.
- Single Piece Cast, heavy duty Propeller withstands Impacts (from Solids entrained in pumped Sewage) & resists Accidental Vane Angle / Pitch Twisting (& subsequent hydraulic vibrations).
- Motor is always cooled (by the pumped liquid itself).
- Simple & Compact Super Structure & Pipe Work.
- VFD Compatible Motors.
- Quick Installation, Easy Operation & Zero Maintenance.
- Heavy Duty Bearings & Mechanical Shaft Seals.

IE1	Standard Efficiency	✓
IE2	High Efficiency	✓
IE3	Premium Efficiency	✓

Options of IEC IE2 & IE3 level Motor Efficiencies are also available (at price premium).


Bangalore Water Supply and Sewerage Board
 Office of the Executive Engineer, STP - Hebbal Valley, Opp. Nagavara Lake, BDA Outer Ring Road, Bengaluru- 560024.
 No. BWSSB/EE, STP(H V)/PB/ 982 /2018-19 DT: 07/12/2018

TO WHOMSOEVER IT MAY CONCERN

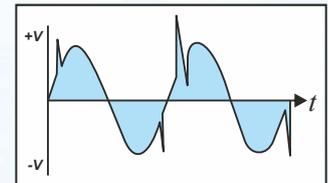
This is to certify that we have purchased 4 nos. M/s Aqua Machineries Pvt Ltd make Submerged Tubular Column Pumpsets for IRR (MLR) for 1550 M3/hr with and installed 700mm dia Column pipe at Jakur 15 MLD TTP of BWSSB at Jakkur, Yelahanka Bangalore, through M/s Passavant Energy & Environment India Pvt Ltd, vide Work Order No. BWSSB/CE(P)/ACE(MIS)/JK-TTP/657/2016-17 dt: 19.10.2016.

The pumpsets are working satisfactorily for the last 6 Months.


 Executive Engineer (STP) Hebbal Valley,
 Opp. Nagavara Lake, BDA Outer Ring Road,
 Bengaluru- 560024.



**Non Drip,
Life Long Grease**



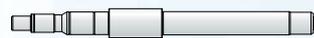
**Tolerates Poor
Power Quality**



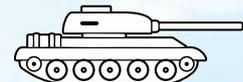
**Well Synchronized
Design**



**Keeps its cool even in blisteringly
Hot ambient conditions.**



**A Strong Shaft
for
Fail Safe Operation**



**Robust
Tank like Build.**

Aqua Machineries Private Limited

www.aquapumps.com

Registered Office & Manufacturing Plant

Survey No. 504/1-2, 442/2, Near Haridarshan Estate, Near Express Highway, Ramol, Ahmedabad-382 445. Gujarat, India.

marketing@aquapumps.com