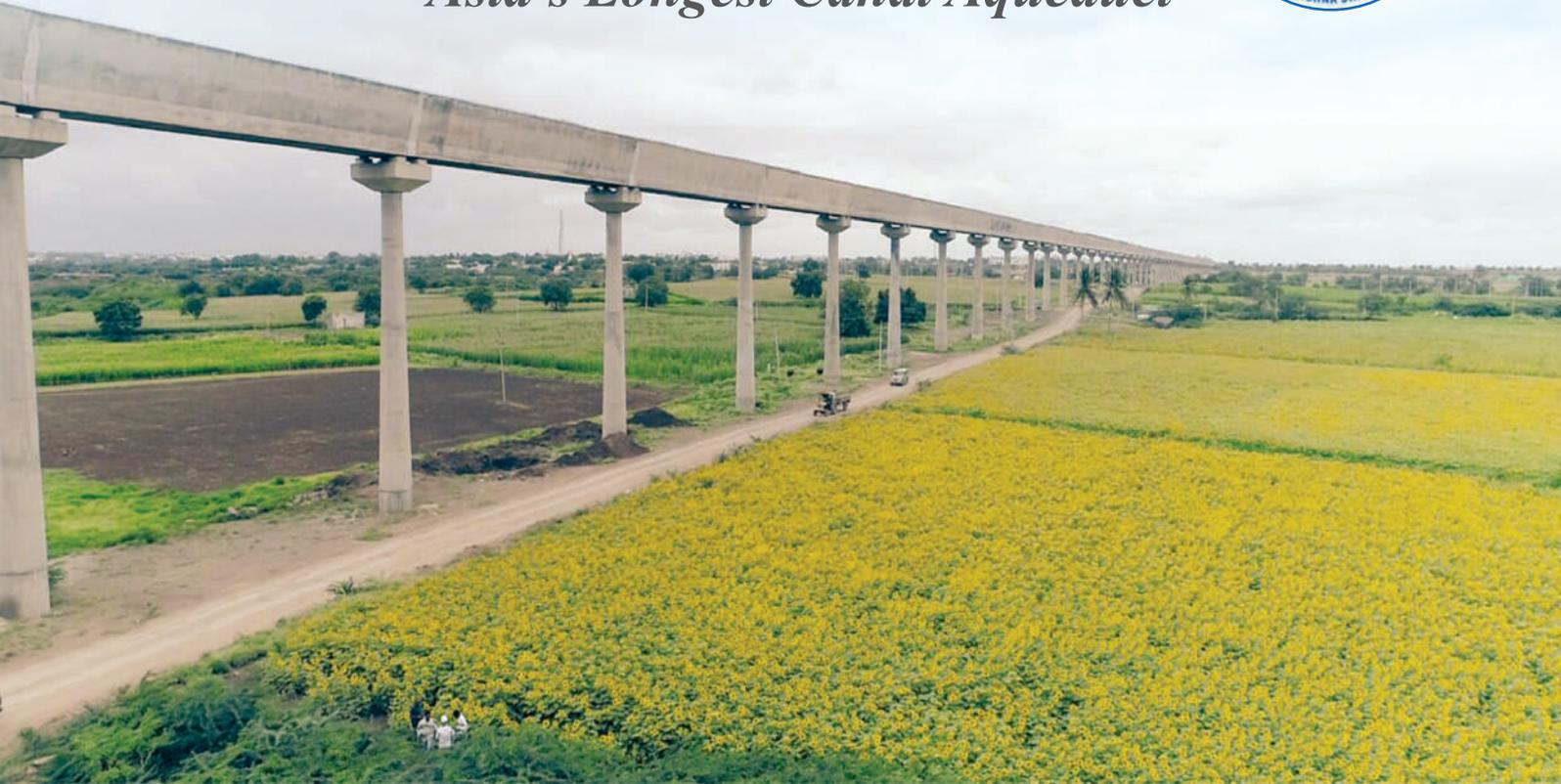


# *Tidagundi*

*...a village where  
Asia's Longest Canal Aqueduct*



Karnataka, a state in southern India, offers a rich tapestry of history, culture & natural beauty. Known for its diverse landscapes & vibrant traditions. Karnataka is derived from the Kannada words karu & nadu, meaning “elevated land”. Karu Nadu may also be read as karu, meaning “black” & nadu, meaning “region”.

Tidagundi Village is situated in Bijapur Taluka, Bijapur (*officially Vijayapura*) is the district headquarters of Bijapur district of the Karnataka state of India & is one of the popular heritage cities. It is situated 19km away from Bijapur, which is both district & sub-district headquarter of Tidagundi village.

The total geographical area of village is 1726.05 hectares. Tidagundi has a total population of 1,951 people.



### **Situation:**

This is a roadside village in the Northern maidan region of the state where failure of rains is a frequent experience.

There are no rivers running through the village.

A smaller stream called ‘Bidugavalu’ runs to the South of the village but it practically dries up in summer. There are no forests or hills closeby.

This is perhaps the greatest element of instability in the agriculture of this village.



Elevation above main sea level has made drought disturbingly common in Tidagundi, Bommanalli & Makanpur villages in Vijayapura district.



A farmer said that, “We have not seen the lakes completely filled even once in the past decades. The water table here has dropped to below 1000 ft & farmers were plunging deeper into distress with no sign of water no matter how many borewells were dug. Consequently, many farmers migrated to the cities in search of employment.

**Solution:**



The Tidagundi viaduct is an elevated canal, with a road running on top of it. The construction of the canal was undertaken as part of the Mulawad Lift Irrigation & the third phase of the Upper Krishna Project. The canal is supported by 400 pillars & is built at a height of 100ft. The canal is expected to feed water to 25 lakes & ponds in the drought-prone district.

14.7km long aqueduct, which is the tallest & longest structure of its kind in India - altered this situation. It has helped fill up to lakes & improved the water tables.



**Aqua's Economical Solution:**

*Combines the Robustness of Centrifugal pumps, Efficiency of VT, Reliability of Induction Motors in a submersible enclosure.*



4Nos. (3W+1S) Aqua make SubCF pumps were installed at Tidgundi LIS due to which water was made available for irrigation in the nearby fields through the water canal & the problem of drinking water in the houses of the nearby village also reduced.

**Supply, Installation, Testing & Commissioning of Submerged Centrifugal Pumpsets at Tidagundi Lift Irrigation Scheme with Five years Comprehensive Operation & Maintenance Work.**

<b>Agency</b>			
M/s. JNS-ACPL (JV)			
<b>Pump Model</b>			
ARS_V_AC_1st_DS_3552_MQ_4P_850N_6600NJ <i>(Double suction type)</i>			
<b>Head</b>	<b>Discharge</b>	<b>Motor Rating</b>	<b>Voltage</b>
66mtr.	2589 m <sup>3</sup> /hr	850HP/ 634kW	6.6kV (HT)
<b>DN Size (Delivery Nozzle)</b>		<b>Qty.</b>	
350mm		4Nos. (3W+1S)	

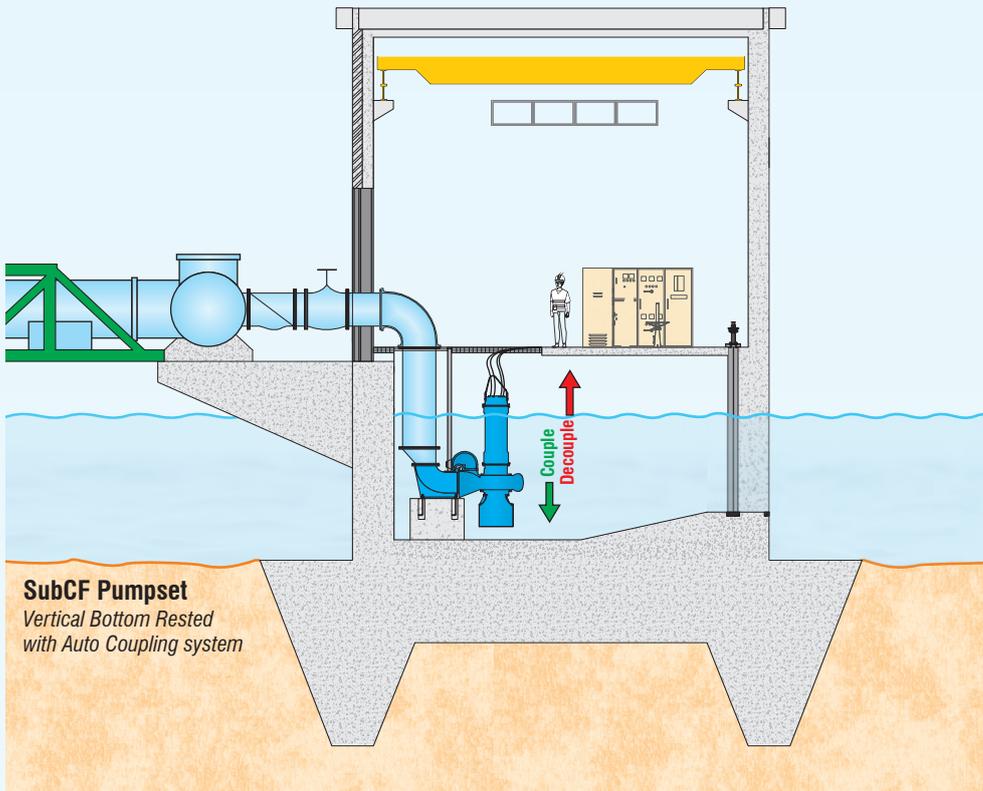
**Project Benefits:**

Now, Water is available at a depth of 50ft in fields lying downstream of the lakes & at a depth of 200ft in those that are upstream.

Farmers said that, "Peasants in the villages, who were despairing owing to the lack of water, were now harbouring hopes of reaping a rich harvest with horticulture crops such as cotton, grapes, pomegranate. We hope that there will be prosperity in all surrounding villages in the next five years."



## Aqua Pumps Benefits:



### Vertical + Auto Coupling Installation

This represents the **most Economical & most User-friendly** pumping station design. The Pumpset is installed directly at the bottom of the Intake Well using **Aqua's Automatic Coupling System**.

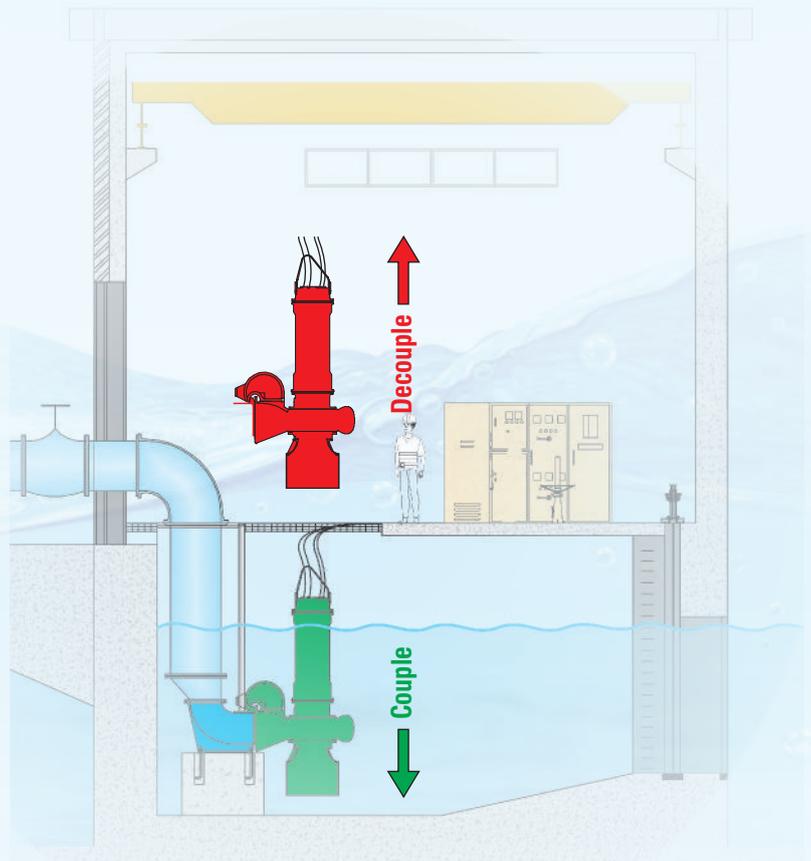
The Auto Coupling system ensures that the Pumpset is properly Lowered (& firmly connected to the discharge piping) OR Lifted out (disengaged from discharge piping) in a **simple & precise manner within MINUTES...!**

It uses Guide Rails (which guide the pumpset correctly downwards) till its discharged flange matches that of the auto coupling pedestal.

The contacting surfaces are well machined & designed such that the weight of the pumpset & wedge design of auto-coupling ensure a leak-free joints.

The pumpset is kept in place by its weight - **there is no need for any fastening of Bolt-Nut** to clamp it to the delivery piping.

Removing the pumpset for maintenance is equally simple - **just pull it up; there are no bolts to be dismantled** (the operator need not enter the sump once the automatic coupling system is fitted).

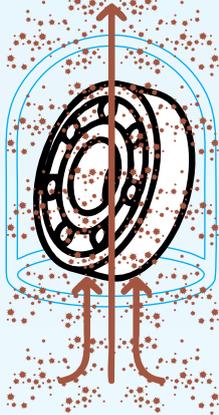


As the Pump can be installed - removed within minutes; it is also possible to run All the Installed pumps (ofcourse within the limits of permissible high head range) & keep Standby pumps out of the Pumping Station - i.e. Store Standby. This is useful in case of Non Perennial water inflows when temporary pumping rate needs to be increased (over & above the planned rate)

**Concept Benefits:**

**Conventional Pumpset**

*(utilizes Water Lubricated Pump Bearings & Leakage Prone Rope Glands)*

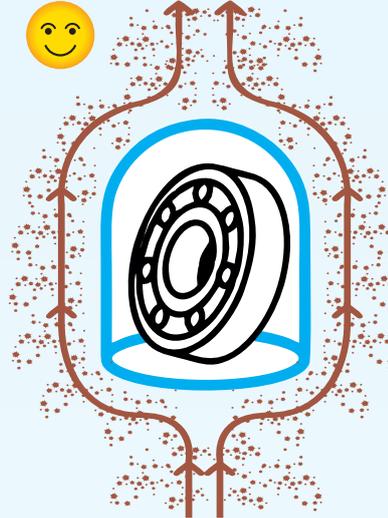


**Rope Packing in Cast Iron Gland**

**Pump Bearings** are exposed to **Silt Water** leading to their **Erosion** & possible **Premature Failures**.

**Submerged Pumpset**

*(utilizes Two, Zero Leakage Mechanical Seals)*



**Mechanical Seal in Stainless Steel Gland**

**Bearings** are located deep inside the motor & are **Totally Sealed** by **Two Mechanical Seals** thereby are totally **Protected** from Water, Silt, Rust & Galling



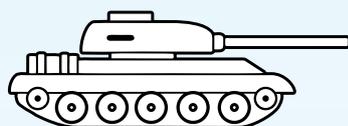
**Robust, Multiple** DE Bearing arrangements, easily tolerate **Heavy Thrusts** (emanating due to wide head variation) for **L<sub>10h</sub>** life upto **1,00,000h**



Anti Drip, Fully Synthetic; Super Premium Grease ensures a minimum Regreasing Interval (F10h) of upto **75,000 h**



**A Strong Shaft for Fail Safe Operation**



**Robust Tank like Build**



**Robust & Reliable**

- **No Failure** of Bearings despite **high silt** in water
- **No Rusting / Galling** of Bearings despite **upto 9months of rest**



**Low Energy Cost** : Due to Elimination of many Ancillary & Auxiliaries; **Wire to Water Power Consumption** of SubCF based Pumping Station **is slightly Lower** (compared to Conventional Bare Shaft Pump - Motor Set based Pumping Stations).\*


**Minimal Noise, Vibration & Heat Emission;** due to elimination of Auxiliary & Ancillary systems (like Forced Water Lubrication, Thrust Bearing Cooling system, Motor Heat Exchanger).

### Ultra Low ManPower Requirement



- **Requires No Special Pre – Post / Ancillary-Auxillary Operations** (like Valve Opening- Closing, starting-stopping-monitoring Forced Water Lubrication systems operation etc.)
- **Requires No Consumables** (like Oil, Grease, Gland Ropes, Bush, Pins, Couplings, Sleeves, etc)
- **Requires No Routine Maintenance** (like Gland Tightening, Gland Rope replacement, Shaft Alignment etc.)

### Intelligent InBuilt Monitoring

Easy Monitoring (& Remote Control<sup>#</sup>) of your Pumpset's Health.



- **PSLD** detects Pressurized Water Leakage from Mechanical Seals.
- **CCWLD** detects Accidental Water Leakage from Cable Sheath's Cuts &/or Nicks into the Motor.
- **SBWLD** detect Accidental Water Leakage in to Motor's Stator Chamber.
- **BTDs** in the form of Bi-metallic Switches (for All Pumpsets) & RTD's (PT100 - 3 Wire Simplex type - from Size > 150kW) to Monitor Bearing Temperature (without any Additional Cost)<sup>#</sup>.
- **WTDs** in the form of Bi-metallic Switches (for All Pumpsets) & RTD's (PT100 - 3 Wire Simplex type - 1 per each Phase - from Size > 150kW) to Monitor Winding Temperature (without any Additional Cost)<sup>#</sup>.

<sup>#</sup>requires additional communication hardware

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\*(refer marketing@aquapumps.com for additional white papers)

**Site Photos:**



**KRISHNA BHAGYA JALA NIGAM LIMITED**  
(A Government of Karnataka Undertaking)  
Office of the Executive Engineer KBJNL  
MLI Division-No.3 Basavana Bagewadi

Date: 14-02-2024

No: KBJNL/MLI/D-3/Arakeri head work/2023-24/991

To,  
AQUA MACHINARIES Pvt Ltd  
Ahmedabad

Sir,

Sub :- Regarding issue of the performance certificate -Reg

Ref :- 1) This office Agreement No 08/2019-20 Dated: 03-07-2019  
2) Your office letter No. AMPL/KBJNL/N.Bag Div/01 dated 13-02-2024

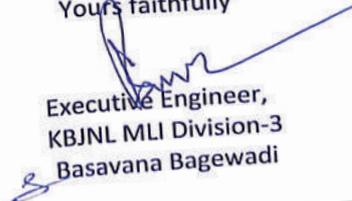
With regards to the above subject and reference (1) the work "Survey, investigation, design, supply, erection, testing and commissioning of required number of vertical turbine pumps coupled to ht motor for providing irrigation facility to additional area from tidagundi branch canal under mulwad lis viz., intake forebay, jack well cum pump house, manifold, along with electrical panel, soft starter, capacitor, 110 kv power transformers, ht bus bar / cabling, 110/6.6 kv sub-station, power line and 110 kv terminal bay, ms rising main, valves, and construction of delivery chamber, supply of spares parts and tools including requisite man power for o&m of the system covered under the scope for five years from the date of completion for tidagundi lift irrigation scheme on turnkey basis" was awarded to M/s JNS-ACPL (JV).

The agency M/s JNS-ACPL (JV) supplied and installed Submerged centrifugal pump of M/s Aqua machineries Pvt Ltd. The details are as follows.

- 1) Pump Model:- ARS\_V\_AC\_1<sup>st</sup>\_DS\_3552\_MQ\_4P\_850N\_6600NJ (Double suction Type)
- 2) Head 66 Mtr
- 3) Discharge:- 2589 m3/hr
- 4) Motor rating :- 850 HP/ 634 kw
- 5) Voltage 6.6 kV (HT)
- 6) DN size (delivery Nozzle):- 350 mm
- 7) Qty's :- 4 No's (3w+1s)

The pumps were commissioned and working in a satisfying manner. This is for your information.

Yours faithfully

  
Executive Engineer,  
KBJNL MLI Division-3  
Basavana Bagewadi

# Aqua Machineries Private Limited

[www.aquapumps.com](http://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](mailto:marketing@aquapumps.com)