AGRICULTURE

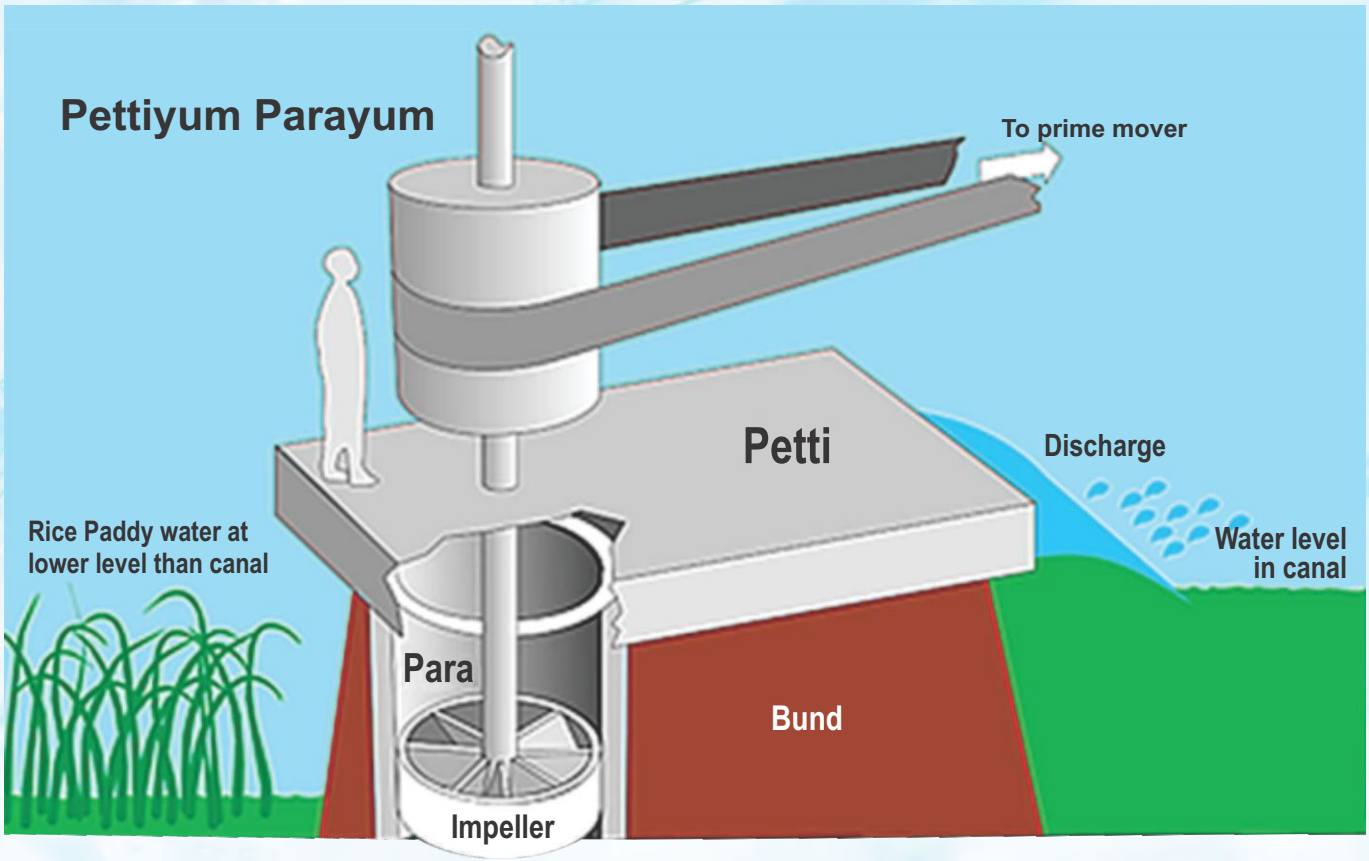
Drawing on its R&D expertise, Aqua develops Case Specific pumps; which help Kerala Government lower it's Energy Bills by 25% (& Malayalee Farmers drain their Flooded Paddy fields reliably)...!

The Kerala wetlands cover an area of about 13,632 hectares spread over Thrissur and Malappuram districts & extents from Chalakudy river in south to Bharathapuzha river in the north.

These wetlands *(some of which lie at or even below the Mean Sea Level)* act as irregular natural drainage system through a network of canals and ponds which drains the wetlands to Rivers & finally into the Arabian sea. It is fertile with alluvium soil, agriculture is the major occupation of the people of wetlands with 90% of farmers practicing paddy cultivation.

But major problem is Inadequate drainage facility - i.e. ineffective & inefficient system of pump draining water from the segmented rice fields during the cropping season.

This is where Aqua's Engineering Expertise came to help of Farmers & Government.



To mitigate the problem of draining the seepage & flooded water in back water regions for cultivation of paddy; in the early 20th Century; Farmers introduced Propeller pumps – popularly known as **'Petti & Para'**.

Petti *(meaning in Malayalam is Box)* while **Para** *(meaning in Malayalam is mass measuring instrument)* i.e .Column pipe. It is a traditional dewatering pumping system, which is driven by a heavy **electric motor of 60hp** discharges water at 200 to 250 litres per second.

The pump components manly column pipe and delivery made of wood while the pump shaft / Impeller / Pulley are metal components. The pumps were driven through belt and pulley by Slip Ring SPDP Electric motors taking a lot of space & construction costs.

Para is used for sucking the water from paddy field. It is a wooden part, cylindrical in shape, which contains impeller and part of the main shaft. It has two parts, upper and lower. The upper part is approx. 1 meter in length and lower part is approx. 65 cm long, which is always filled with water.

Belted Pulley system: This Pulley is driven by a motor with a cross belt. The motor pulley is very small as compared to this pump pulley so that the speed of pump is considerably reduced. Size of the pulley is typically 66 cm in diameter. Usually the material used for making pulley is of cast iron.

The Efficiency of such Petti-Para pumps was Low resulting in a lot of Electricity wastage *(free of cost by the Government)* in the form of subsidies to farmers - it also requires costly & tedious Civil Installation works.

Solution :

Interaction with Farmers & Government Engineers; in order to cater the demand with:

- Lower Power Consumption,
- Smaller Land Requirement,
- Lower Construction Costs &
- Hugely Lower Maintenance;

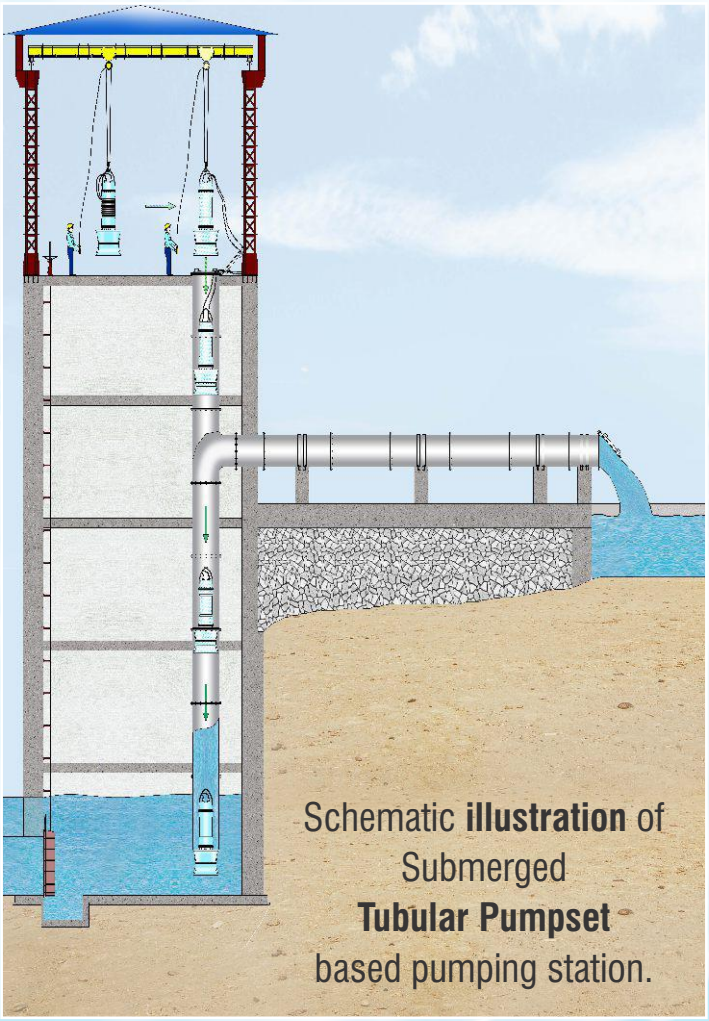
Aqua designed Submerged Axial Flow Tubular *(ATB)* & Submerged Elbow *(AES)* pumpsets *(as alternate replacements of Petti Para pumps)*. These pumps were Witness Tested by Proffessors of Government College of Engineering, *(along with Engineers of Department of Agriculture)*.

The range of operation is an astonishing 5.0 m to 1.5m. These pumps can handle solids as well as fibrous materials found in the fields without any problem. As they are of Mono Block design, Belt Pulley Tightening, Shaft alignment, Lubrication of Line Shaft Bearings & other such associated issues of long coupled *(VT type)* Petti Para pumps are automatically eliminated.

A Brief Comparision

		Petti Para	Submerged pumpsets *(Tested by Engineering College)*	
		Tentative Data	*Model A*	*Model B*
Head	**m**	3	3	3
Flow	**m3/hr**	2000	2700	1620
Motor Power	**hp**	60	50	30

Sr. No.	Location
1	Elavathur Kizkakku kole padavu
2	Thekakonjera kole padavu
3	Kizhakke karimpadam kole padavu venkitangu krishibhavan
4	Ponamudha kole padavu, Venkitangu krishibhavan
5	Alapad pullu kole padavu, Chazhur krishi bhavan
6	Pallipuram Alapad kole padavu, Paralam Krishibhavan
7	Ayyappan kole padavu, Chazhur krishi bhavan
8	Pulluthara kole padavu, Chazhur krishibhavan
9	Anthikkad kole padavu, Anthikkad krishi bhavan
10	Manalpuzha Kannoth kole, Mullasery
11	Manalur Thazham Kole padavu, Antikkad Krishi bhavan
12	Thannir kayal kole padave, Venkitangu krishibhavan
13	Vaddake ponnur Thazham kole padavu, Tholur Krishibhavan
14	Purathur kole padavu, Chazhur krishibhavan



Schematic **illustration** of Submerged **Tubular Pumpset** based pumping station.

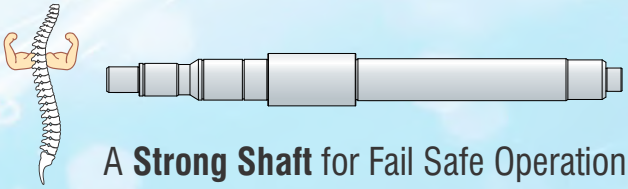
Submerged **Elbow pumpsets** are Fully **Portable** & hence **easily Installable.**

Substantial Savings

Reduction in Pump House Space, Construction Cost & Suction piping manifold cost & complexity.

Plug & Pump

No base Plate or Coupling to align;
No priming to startup



A **Strong Shaft** for Fail Safe Operation

Low Life Cycle Costs *(LCC)*

Almost Zero Consumables, Minimal Maintenance & Low Wire to Water Power Consumption.

Simple & Quick to Commission

Due to mono block design; No need to align shafts, couplings, thrust bearing, spiders; set up forced water lubrication, oiling, thrust bearing cooling system; etc.

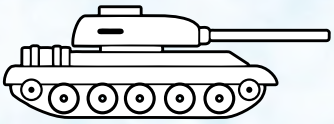
Robust & Reliable

- Minimum breakdown even in High Silt levels
- No breakdown due to the Elimination of Couplings, Fragile Line Shafts & its Water Lubricated Line Shaft Bearings, Spiders, etc.
- Over-safe Design & Smart Protection Systems result in high Reliability

Tribologically Optimized Bearing components for Bullet Proof **Reliability**

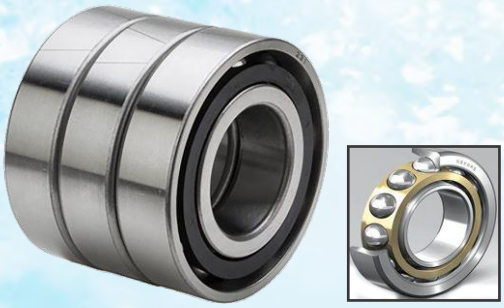
No need for Frequent Periodic....

Shafts &/or **Coupling** | **Gland Packing** | **Oil** &/or **Grease**



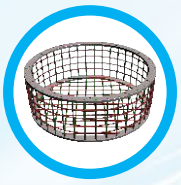
Robust Tank like **Build**

Tolerates Wide Voltage **Variation**



Robust, Multiple *(Duplex or even Triplex)* DE Bearing arrangments, easily tolerate **Heavy Thrusts** *(emanating due to wide head variation)* for **L10h** exceeding **1,00,000h**

Smart Lifting Handle

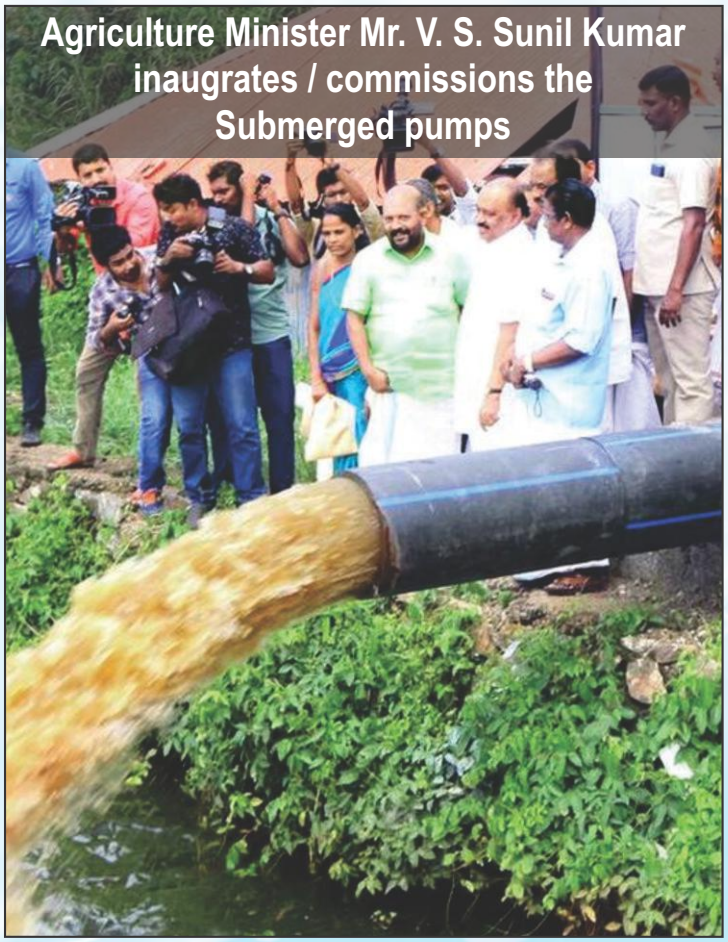


Extreme Duty Trash Basket **to tackle** Heavy Weeds, Hyacinth, etc from **Choking** the pump

Heavy Duty Primary Seals with Option of **Springs Isolated** from Silt of Raw Water for **Very High Life**


കാർഷിക വികസന കർഷക ക്ഷേമ വകുപ്പ്
പ്രത്യേക കാർഷിക മേഖല
വികസന പദ്ധതി 2018-19
കോൾ പടവുകളിലെ സബ്മേഴ്സിബിൾ
വെർട്ടിക്കൽ ആക്സിയൽ ഫ്ലോ പമ്പ്സെറ്റ്
പ്രവർത്തനോൽഘാടനം
ഉൽഘാടനം :
അഡ്വ. വി.എസ്. സുനിൽകുമാർ
ബഹു. കൃഷിവകുപ്പ് മന്ത്രി
അദ്ധ്യക്ഷ : ശ്രീമതി. ഗീത ഗോപി
ബഹു. നാട്ടിക എം.എൽ.എ.
ഓപ്പറേഷൻ കോൾ ഡബിൾ
സ്ഥലം : പള്ളിപ്പുറം ആലപ്പാട്ട് പാടശേഖരം
ചാബുവാൻ കോൾ എഞ്ചിൻതറ പരിസരം, പാറളം
സമയം : 02-02-2020 ഞായറാഴ്ച രാവിലെ 9.30


കേരള സർക്കാർ
കാർഷിക വികസന കർഷകക്ഷേമ വകുപ്പ്
പ്രത്യേക കാർഷിക മേഖല പദ്ധതി 2018-19
പെട്ടി പറയ്ക്ക് പകരം സബ്മെഴ്സിബിൾ വെർട്ടിക്കൽ ആക്സിയൽ ഫ്ലോ
പമ്പ്സെറ്റ് സ്ഥാപിക്കൽ
പാടശേഖരം : ഇലവത്തൂർ കിഴക്ക് കോൾ പടവ്
കൃഷിഭവൻ : വെങ്കിടങ്ങ്
വിതരണം ചെയ്ത
സ്ഥാപനം : M/s ആൽക്കം ഇന്റസ്ട്രീസ്, മേട്ടുപാളയം
അടങ്കൽ തുക : 17,15,000/- രൂപ
നിർവ്വഹണം
കൃഷി അസിസ്റ്റന്റ് എക്സിക്യൂട്ടീവ് എഞ്ചിനീയറുടെ കാര്യാലയം, തൃശ്ശൂർ


Agriculture Minister Mr. V. S. Sunil Kumar
inaugrates / commissions the
Submerged pumps

AQUA®©

STORM WATER

To Whom It May Be Concern

This is to certify that M/s Alchem Industries – Mettupalayam (Coimbatore) executed work of supply, installation, trial run and commissioning of Submerged Vertical Tubular Column Axial Flow Pumpset in Thrissur district with prime mover, delivery line, panel board and all other accessories.

The details are as under:

Work Order Ref	:	Order No: **TH II (2)20390/2018 Dated: 18.09.2018.**
Work Order Value	:	Rs.16316000 /-
Agreement No	:	24/2019-2020 Dt.: 17.02.2019
Contractor	:	Alchem Industries, 32A-Ooty Road, Mettupalayam-641301 Coimbatore
Pump manufacturer	:	Aqua Machineries Pvt Limited- Ahmadabad.

Type of Pump set: AQUA Submerged Tubular Column Pumpset

Pumpset Type	Pump set Model	Motor Rating HP/KW	Qty	Discharge
Submerged Vertical Tubular Column (Canister) Axial flow pump set.	ATBP._V-Tu_1st_Bo._.5027._T._M._.20N_.415_NJ	20/15	1	250 LPS or more at 3.75 meters head
Submerged Vertical Tubular Column (Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.8054._T._LL._.60N_.415_NJ	60/45	1	865 LPS or more at 2.7 meters head
Submerged Vertical Tubular Column (Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	5	775 LPS or more at 3 meters head
Submerged Vertical Tubular Column(Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	1	750 LPS or more at 3.1 meters head
Submerged Vertical Tubular Column (Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	1	665 LPS or more at 3.5 meters head
Submerged Vertical Tubular Column (Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	1	665 LPS or more at 3.5 meters head
Submerged Vertical Tubular Column(Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	2	600 LPS or more at 3.9 meters head
Submerged Vertical Tubular Column (Canister) Axial flow pump set	ATBP._V-Tu_1st_Bo._.7047._T._LL._.50N_.415_NJ	50/37	2	585 LPS or more at 4 meters head

Date of commissioning: 2019-2020

The Overall performances of the equipments are satisfactory from the date of Commissioning.

Executive Engineer (Agri)

Kozhikode

"We feel that, as compared to the Petti Para pumps; the new technology submerged pumpsets save approximately 25% Energy."

- Dr. Sathiyan K. K.,
Dean,
Kelappaji College of Agricultural Engineering & Technology,
Tavanur, Malappuram

No. AE (3)931/2015

Office of the Assistant Executive Engineer (Agri)
Anayara.P.O, Thiruvananthapuram-29
Phone: 0471 2 743820 Email aeeagritvm@gmail.com
Dated: 07.07.2021

To Whomsoever it may Concern

This is to certify that M/S Alchem Industries - Mettupalayam (Coimbatore) executed work of supply, installation, Commissioning and trail run of 20 HP Horizontal Type ELBOW Axial flow pumpsets at Vellayani Kayal Padasekharam (Mangilikkary, Kanjirathadi, Pandarakkari, Nilamekkari, Thiruvananthapuram District).

The details are under.

Supply Order No.	EE(2)1338/18, dated. 27.02.2019
Work order Value	Rs. 49,98,000.00
Contractor	Alchem industries, 32, Ooty Road, Mettupalayam - 641 301
Pump Manufacturer	Aqua Machineries Pvt. Limited
Pump set Type	"AQUA" Horizontal mounted Axial Flow ElBOW type.
Discharge	300 LPS (Range 330-220 LPS)
Head	3 MTS (Range 2-4 MTS)
Pump Efficiency	82%
Motor Rating	20 HP/750 RPM
Quantity	7 No's
Date of Commissioning	30.03.2020

The overall performance of the pump sets is satisfactory from the date of commissioning.

07.07.2021

ASSISTANT EXECUTIVE ENGINEER (AGRI)
THIRUVANANTHAPURAM
ANAYARA P.O. PIN-695 029.

"We are amazed at the Simple Operation & Zero Maintenance of Aqua Submerged pumpsets"

- Pavan Kumar, *Head,*
Farmer's Committee;
Pallipuram Alapad kole padavu

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