

Sparkling Diamonds – Sparklingly Clean City

*A fruit borne out of
symbiotic efforts of
Innovative SMC Engineers
& Robust Aqua pumps*



The Diamond City

With an annualised GDP growth rate of 11.5% (between 2001 and 2008); Surat is (& will be) the **World's Fastest Growing City** (from 2019 to 2035 - according to a study conducted by *Economic Times*).

Surat is selected as the **1st Smart IT city** of India which is being constituted by the Microsoft CityNext Initiative tied up with IT services majors Tata Consultancy Services & Wipro.

Famous for its diamond industry; **8 out of 10 diamonds on the Earth** are cut & polished in Surat (earning India about US\$ 10 billion/annum in exports).

Awarded as the **"Best City"** by the Annual Survey of India's City-Systems (ASICS) in 2013.



International Business Center, Piprod, Surat



History :

Surat was founded by a man called Gopi, who named the area Suryapur, Duarte Barbosa described it as **Suratt** while the Dutchman Jacob Peeters referred to it as **Sourratte**.

Lying in the fertile Estuary of Tapi river on Gulf of Cambay, it is blessed with abundant fertility & is a truly prosperous city. It was the emporium of India, exporting gold and cloth; while major industries were shipbuilding. It used to be a large seaport & was the **1st Trading Office of the British East India Company (1612 A.D.)**.



Past :

Surat is a Flood & Plague prone city.

WASTE WATER

“Thousands Flee Indian City In Deadly Plague Outbreak”

“A flood in Surat killed at least 120 people. . . .” - The New York Times



Flooding is a perennial problem in India. A flood in Surat killed at least 120 people in August and caused damage estimated at \$60 million. - Amit Dave/Reuters

By Somini Sengupta

This port city lies in a deadly flood prone zone between Tapi river's Estuary – Arabian Sea & the upstream Ukai dam.

Its average elevation is just 13 metres while the climate is tropical and monsoon rainfall is abundant (about 2,500 mm a year) – a perfect recipe for flooding.

Since the 20th century, it has experienced some **20 floods**...!

- In 1968, most parts of the city were flooded.
- in 1998, 30% of the city was submerged under water due to flooding (following release of water from Ukai dam located 90 km upstream of the city)
- In Aug 2006 more than **95%** of the city was **flooded** killing more than 120 people, stranding tens of thousands in their homes without food or electricity and closing businesses and schools for weeks.



“During the 2006 floods, Aqua proactively stood along with SMC & supplied almost 28 submersible sewage pumps (as a part of its Corporate Social Responsibility) within just 1 hour of verbal request from SMC – these pumps were immensely helpful in dewatering the Dry Pits of Non Submersible type Pumping Stations & led to miraculously quick restoration of water supply & drainage”

- Jatin Shah, Ex City Engineer; SMC
- S. R. Tidke, Sr Mgr; AMPL

Past :

“Surat : A victim of its Open Sewers”
“India’s City of Plague : A Caldron of Urban Ills”
 - The New York Times

WASTE WATER



October 3, 1994, Section 1; Page 1



September 25, 1994, Section 1; Page 18



Open Sewers & Drains clog very frequently lead to water logging even with nominal rains.

The huge ingress of water would often flood the Dry Pit of Older Dry well – Wet well type waste water pumping stations forcing the stoppage of Dry Pit Non Clog Waste Water pumpsets leading to stoppage of waste water disposal pumping station (when it was needed the most)...!

Brain Storming :

“ Over the years, Surat has repeatedly suffered a lot due to Floods & UnHygienic Open Sewers. But the 1994 plague was a catalyst for improving P&Engg infrastructure.

Notably, two government officials, Mr. S. R. Rao and Mr. S. Jagadeesan were entrusted to transform Surat – a key part of which was upgrading it's Underground Drainage System”

- Urban Planning Dept, Gujarat



Technical Sessions given by Aqua to SMC

Being an Industrial City, the Engineers of SMC were already One of India's best. They interacted with many Pump manufacturers & finding Aqua to be one of the most respected, responsible & responsive; the two brain stormed extensively – both at Sites & in Technical Sessions.



SMC & Aqua interacted extensively on Field to work out best solutions in the initial trend setting years.

Finally, SMC decided to go in for Aqua's Flood Proof solutions :

- **Submersible** Sewage pumps for their **New** projects (*as they require much Lesser Cost as well as Lesser Land to construct*) &
- Dry Installed **Flood Proof Submersible NC** pumps for their **Existing** Dry Pit - Wet Pit type PS prone to flooding (*to improve their reliability*).

Immediate Solutions :



Apart from pumping stations, Aqua's robust Sewage pumpsets have been used extensively by SMC for Sewer Diversion to reduce downstream pollution - here a rivulet flowing to Tapi river.



"Aqua's pumps were virtually dumped at every difficult site (above shown is Varachha Khadi diversion) - but they did the dirty job beautifully. .!"

- P. I. Magajwala, DE Drainage Department; SMC.

Immediate Solutions :



Submersible pump working under very highly turbulent incoming sewage : Salabatpura SPS

One of the Initial Acid Tests...!

A 130hp Aqua Submersible pump was lowered into Incoming Chamber of a Dry Pit- Wet Pit type PS to scavenge the “dead water” (which the Vertical Non Clog pumps couldn’t suck resulting into “heading” in pipeline & subsequent siltation) – **this pump has worked without a single maintenance call for 10+ years...!**

Long Term Solutions :

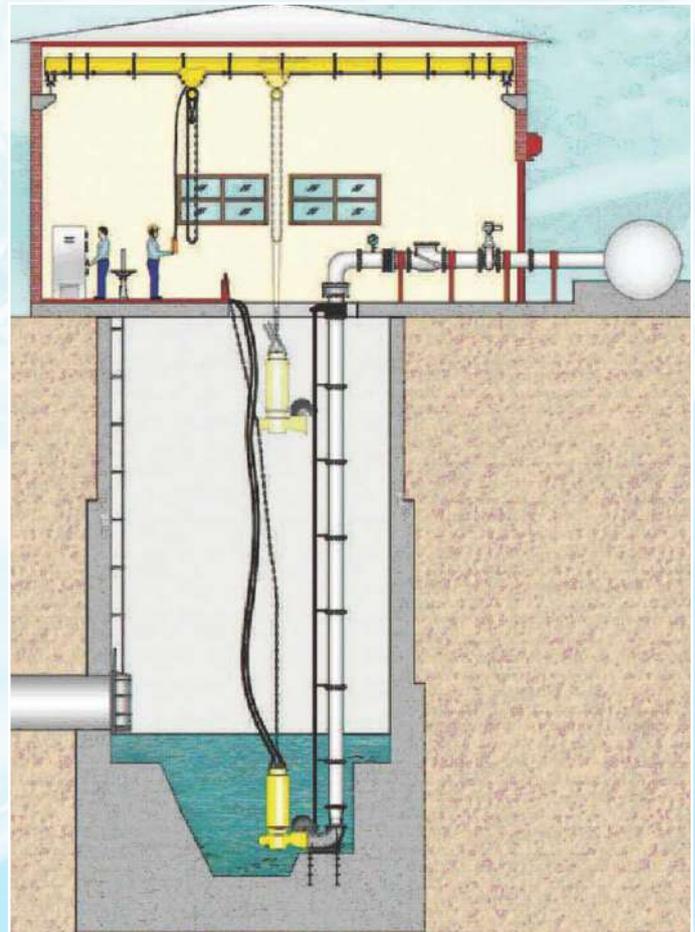
Wet well + Submersible NC Pump

This represents the cheapest & most user friendly pumping station design.

The pump is installed directly at the bottom of the wet pit using automatic coupling system. This system ensures that the pump is properly lowered (& firmly connected to the discharge piping) or Lifted out (disengaged from line) in a simple, precise & quick way.

The pump is kept in place by its own weight - there is no need for any fasteners to clamp it to the delivery piping. Removing the pump for maintenance is equally simple -just pull it up; there are no bolts to be dismantle.

The operator need not enter the septic sump once the automatic coupling system is fitted.



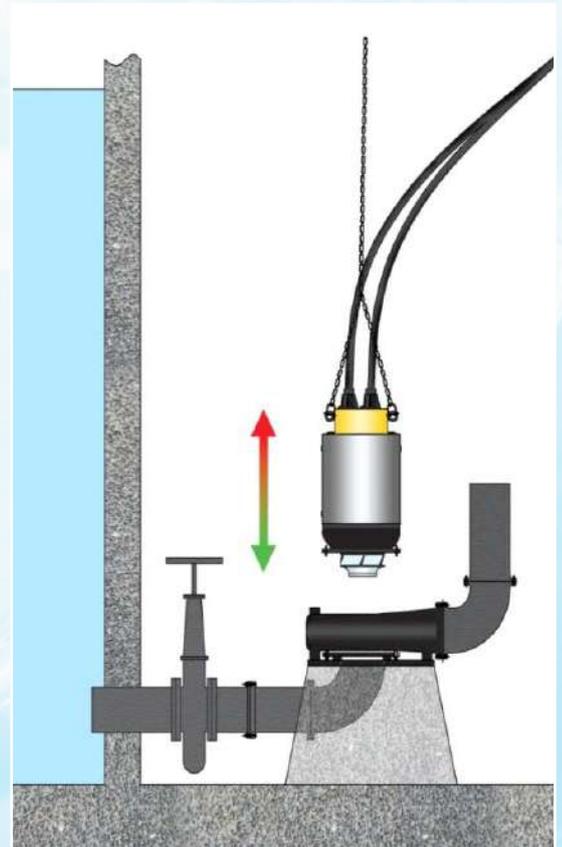


Wet well + Submersible NC Pump

Solution for Existing PS: Dry Installed Flood Proof Non Clog pumpsets



To tackle Maintenance problems & abrupt stoppage of Vertical Bare shaft VNC + TEFC motor pumpsets; they can be replaced by Flood Proof Submersible pumpsets which fit into the same suction & discharge piping but **can be operated even if the Dry well is Flooded...!**



Aqua in SMC SPS Drainage Department *(as on 24.05.2020)*

Sr. No.	Name of the Site	Capacity of site (MLD)	Type of Pump	Qty.	Rating (HP)	Head	Discharge	
						Rated (M)	Delivery Size (mm)	Discharge in M ³ /Hr.
1	Navagam SPS	58.00	Submersible	6	180	22	350	1350
2	Karanj SPS	102.00	Submersible	2	225	17	600	2466
3	Modimoholla (a-kumar) SPS	3.00	Submersible	2	20	16	150	144
			Submersible	2	30	16	200	270
4	Adajan SPS	39.12	Flood Proof Submersible VNC	2	270	29	400	1620
			Submersible VNC	1	180	20	400	1620
5	Rander SPS	26.87	Dry Pit submersible	6	70	17	300	720
6	Pal SPS	31.00	Dry Pit submersible	3	70	17	300	720
			Dry Pit submersible	1	250	22	400	1800
			Dry Pit submersible	1	270	27	300	1620
7	Athwa SPS	21.00	Submersible	2	90	22	250	630
8	Umra South SPS	30.67	Dry Pit submersible	4	120	17	400	1260
9	Mota Varachha SPS	10.93	Submersible VNC	2	17.5	7	250	342
			Submersible VNC	1	45	7	300	864
			Submersible VNC	2	50	7	350	1206
10	Mota Varachha GEB SPS	27.68	Submersible VNC	4	135	12	450	1800
11	Kosad SPS(Plant)	82.80	Submersible	6	100	15	400	1260
12	Kosad Railway SPS	56.81	Submersible	3	100	10	450	1800
			Submersible	2	45	10	350	774
			Submersible	1	45	10	350	864
13	Utran SPS	37.19	Submersible	5	285	24	600	2160
14	Chhapparabatha SPS	65.70	Submersible	2	80	25	250	540
			Submersible	2	215	25	350	1350
			Submersible	2	270	24	450	1800
15	Bharimata SPS	40.00	Submersible	6	155	23	300	1044
16	Variyav SPS	36.72	Submersible	2	70	10	450	1170
			Submersible	2	35	10	300	540
17	Katargam Kantareshwar SPS	68.95	Flood Proof Submersible VNC	1	250	26	400	1620
18	New Anjana SPS	12.00	Flood Proof Submersible VNC	1	90	14	250	900
19	Godadara SPS	30.10	Submersible VNC	6	60	19	200	486
20	Magob SPS	66.00	Submersible VNC	2	140	23	300	900
			Submersible VNC	4	270	23	400	1980
21	Puna Simada SPS	84.00	Submersible VNC	6	270	23	400	1980
22	Sarhana SPS	21.00	Submersible VNC	1	70	19	400	540
			Submersible VNC	2	120	19	300	1080
23	Vadod Jiav SPS	30.58	Submersible	6	45	19	250	342
24	Sonari SPS	27.05	Submersible VNC	6	55	20	200	378
25	Pocket H (Bhimrad) SPS	4.63	Submersible VNC	6	25	23	100	108
26	Pocket F (Abhava) SPS	9.45	Submersible VNC	6	50	20	150	306
27	New Unn SPS		Submersible	4	50	18	150	342
28	Vesu Bharthana SPS		Submersible	6	70	17	400	720
29	Khatodara GIDC SPS	18.56	Submersible	3	180	32	300	900
			Submersible	1	75	17	250	720
30	Nanpura SPS		Flood Proof Submersible VNC	2	225	19	400	1872
31	Pocket A (Magadalla) SPS	6.94	Submersible VNC	6	22.5	18	100	162
32	Pocket B (Gaviyar) SPS	20.07	Submersible VNC	6	45	15	200	468
33	Pocket C (Sulatanabad) SPS	10.64	Submersible VNC	6	40	21	150	252
34	Pocket D (Dumas) SPS	10.45	Submersible VNC	6	35	18	150	252
35	Pocket E (Bhimpore) SPS	12.02	Submersible VNC	6	55	24	150	288
36	Node 41 DPS Manhole	45	Submersible	3	10	8	150	162
37	Node 10 ONGC Manhole	45	Submersible	3	10	8	150	162
38	Node 2 Kabrastan Manhole	100	Submersible	4	15	7	200	360
39	Pocket D Health Centre Manhole	45	Submersible	3	10	8	150	162
40	Pocket E Bhimpore Manhole	100	Submersible	4	15	7	200	360
Total Pumps				184				

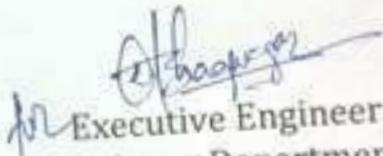


Executive Engineer
Drainage Department
Surat Municipal Corporation

DNG/OUT/NO. 2353
DATE. 24/11/2011

TO WHOM SO EVER IT MAY CONCERN

Surat Municipal Corporation had installed Aqua make Dry Pit type flood proof non clog Sewage Submersible pump set in March-2008, having capacity of 450 LPS, 29 Mtr. Head, 270 H.P. - 02 nos. and 450 LPS, 19 Mtr. Head, 180 H.P. - 01 no. are installed at Adajan Sewage Pumping Station. This pump sets are working satisfactorily, since March-2008.


Executive Engineer
Drainage Department
Surat Municipal Corporation

IN CASE OF ANY ENQUIRY PLEASE CONTACT CONCERN OFFICER

Drainage Department, Surat Municipal Corporation
Old West Zone Office, Tadwadi,
Rander Road,
Surat - 395 009

☎ (261) 278 0057 Ext.201
☎ (261) 245 1935, 242 2110
✉ xen.dng-smc@gmail.com

Visit us at www.suratmunicipal.gov.in



Adajan SPS : Dry Installed, Flood Proof Submersible pumps replacing VNC pumps



E. H. PATHAN
Executive Engineer & Head (Drainage)
Surat Municipal Corporation

DNG/OUT/No. 555

Date:- 4/6/2020

To Whomsoever It may concern please

Subject:- Performance Certificate for "AQUA" make Non clog Sewage Submersible Pump sets installed at Various Sewage Pumping Stations for Drainage Department of Surat Municipal Corporation for Surat City.

It is to certify that, we are using the "AQUA" make Non clog Sewage Submersible Pump sets at Various Sewage Pumping Stations for Drainage Department of Surat Municipal Corporation for Surat City through EPC / Trunking contractors since 2 decades. We are satisfied with the performance and services offered by the company. We are also satisfied with prompt services after sales provided by Aqua Team.

No noise during operations (Lower Public Hardship) & Easy Installations directly in wet wells – this is a major benefits for especially for augmentation of Sewage Pumping Stations in densely crowded areas.

Energy Efficient – At a few Sewage Pumping Stations, we saved a lot on Energy Bills (As compared to to earlier used of Dry pit type Direct Mounted Vertical Non clog Pump sets).

I Personally appreciated to Team Aqua for his positive approach and humble presentation at all respect and acts as solution provider for our various issues of operation / retro engineering to makes most convenient to our issues of clogging and others application.

we are expressing good wishes to entire Aqua Team Members for their good and prosperous future.


Executive Engineer & Head
Drainage Department
Surat Municipal Corporation

Drainage Department, Surat Municipal Corporation
Old West Zone Office, Tadwadi,
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Visit us at www.suratmunicipal.gov.in



Submersible Flood Proof pumpsets, Navagam SPS

Within the ambit of Tendering norms; Aqua is the preferred choice, as it :

- Has the best long term maintenance free track record in SMC & all over India.
- It's 2nd Generation of pumpsets :
 - o Are Robustly designed for **Indian operating conditions** (*unlike others which are mere copies of European designs*).
 - o Are fitted with **heavy duty VFD compliant** Inverter duty motors.
 - o Tolerate wide Electrical supply fluctuations.
 - o **Wide range** of Hydraulic designs allow Clog less handling of sewage at optimal efficiency.
 - o High pump efficiency is sustainable over longer periods due to Smart Set hydraulics.

As a Testimonial of Robust Pumps & Sincere Long Term Services; approximately 82% (184 out of 224nos) of all Submersible & Flood Proof Submersible pumps in SMC are of Aqua make...!

- J. G. Bhadbhade, Jt. M. D.; AMPL

Aqua Machineries Private Limited

www.aquapumps.com

Registered Office & Manufacturing Plant

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marketing@aquapumps.com