



**PORT-FLEX**  
**AN INNOVATIVE SAFE DRINKING WATER**  
**SOLUTION**

**BY**

**EXCELLENCE ENGINEERING PVT. LTD.**

**(IN ASSOCIATION WITH A DUTCH GROUP)**



EXCELLENCE ENGINEERING PVT. LTD.

# ARSENIC POISONING ALL AROUND

PORT-FLEX™

## Arsenic poisoning 12 states

**DEADLY SPREAD** Enters food chain through farm products in the region, kills around one lakh people

Chetan Chauhan

www.chetan@hindustantimes.com

**NEW DELHI:** Arsenic contamination is spreading fast in 12 states and beyond, with around one lakh people already dead and the chemical entering the food chain through farm products in the region, a committee of secretaries in a report to the government has said.

The committee has also estimated that 7.04 crore people have been affected, with around three lakh people having arsenic-related diseases in the country. Of them, the report said, around 30% are poor and malnourished and the money needed to deal with the problem is about ₹9,700 crore.

More damning is the research done by the Indian Council of Agriculture Research (ICAR), showing that 90% of arsenic-laden water in affected areas was used for irrigation, with the study finding its traces in vegetables covering farm-rich states like Haryana and Punjab.

The council found high quantity of arsenic in potato, brinjal, arum, amaranth, radish, lady finger, and cauliflower, while a relatively low level of accumulation was found in beans, green chilli, tomato, bitter guard, lemon and turmeric.

Major oil seeds and pulses are reported to contain high arsenic content, the report said, adding that high-yielding rice varieties have more arsenic accumulation

than the local varieties.

"As people take contaminated water along with contaminated food, the chances of damage become greater. The food crops sold to inhabitants of uncontaminated regions lead to their consumption of arsenic-contaminated food," the committee said.

Arsenic groundwater contamination was first reported from West Bengal in 1983. By 2000, its spread was reported from the Ganges-Brahmaputra fluvial plains covering Jharkhand, Bihar, Uttar Pradesh, Assam, Chhattisgarh and Manipur. In the next 14 years, Haryana and Punjab were included in the list.

Now, 96 out of the 640 districts in India, including 13 in Haryana, have high concentration—more than 50 parts per billion (ppb) as against the national standard of 10 ppb—of arsenic.

The report says total number of deaths so far is one lakh people, with over three lakh suffering from arsenic-related diseases. The report, however, does not mention the time frame. Research has shown that consumption of arsenic content can indirectly cause cancer, apart from heart disorders.

The committee suggested a national action plan to address the issue. It has also recommended a national task force to overlook the arsenic contamination action plan and has sought more funds from the government.

### FOOD FOR THOUGHT

ICAR found high quantity of arsenic in potato, brinjal, arum, amaranth, radish, lady finger and cauliflower

#### REASON FOR CONTAMINATION

- High use of pesticides in agriculture is linked to rise in the problem
- Primarily it happens because of withering of rocks and minerals in fluvial plains of Ganga and Brahmaputra river basins.

#### HUMAN IMPACT

- Exerts its toxic effects by impairing 200 enzymes in the human body
- Inorganic arsenic indirectly increases susceptibility to cancer.
- High arsenic consumption can cause dermal, cardiovascular, respiratory, gastrointestinal, neurological and reproductive ailments
- Symptoms: Skin disorders such as skin lesions, hyper keratosis and melanosis.
- No evidence that it directly causes cancer.

#### NATIONAL STANDARD

Particles per billion (ppb)



#### TOXIC FACTS

12 Affected states	96 Districts	10,028 Habitations
70.4 million People affected	1 lakh Dead	3 lakh Major disorders



## ICSE PLANS SYLLABI CHANGE FROM 2018

Puja Padnekar

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**MUMBAI:** Starting from the 2018 academic year, students of the Council of Indian School Certificate Examinations (CISCE) will appear for examinations with new syllabi that will include a revamped question paper pattern.

The council has decided to change the syllabi for classes 9, 10 and 12 to ensure that more students crack competitive exams. The changes have also focused on making syllabi lighter for Classes 9 and 10.

Changes will be made to subjects such as history, civics, geography, mathematics and physics in classes 9 to 10 in the Indian Certificate of Secondary Education (ICSE) and class 12 in the Indian School Certificate (ISC) exams.

The question papers will also be framed along the lines of the Central Board of Secondary Education (CBSE).

"Experts felt the need to realign the syllabus to ensure that our students do not lag behind in competitive exams," said a senior official from the council. "The content will remain as per the COBSE (Council of Boards of Secondary Education) guidelines."

The council had received complaints that the syllabus in classes 9 and 10 was too heavy.

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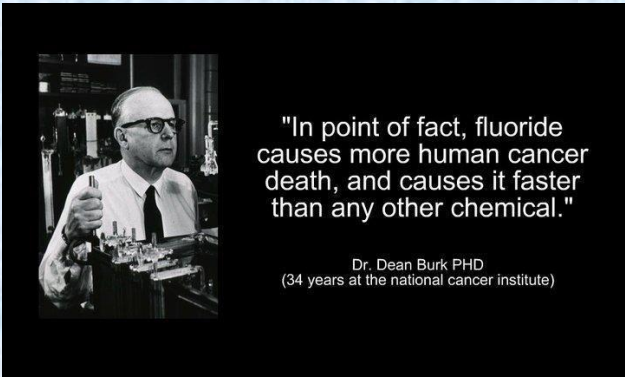


# ARSENIC IN DRINKING WATER



- A semi-metallic chemical & a natural component of the earth's crust, **Arsenic** is globally found in groundwater
- **Arsenic poisoning** is caused by ingestion, absorption or inhalation of dangerous levels of **arsenic**

# FLUORIDE IN DRINKING WATER



- Skeletal Fluorosis is caused by excessive accumulation of fluoride in the bones
- Dental Fluorosis is a disturbance of dental enamel caused by excessive exposure to high concentrations of fluoride during tooth development





EXCELLENCE ENGINEERING PVT. LTD.

# RURAL & POOR SUFFER THE MOST





# DRINKING WATER SCARCITY IN DROUGHTS





EXCELLENCE ENGINEERING PVT. LTD.

# WATER IS LIFE



## PUBLIC AFFAIRS

11/01/2016 - BUSINESS STANDARD

# Crude oil now cheaper than packaged water

Its price has declined by 70 per cent since June 2014

AJAY MODI  
New Delhi, 10 January

Late Murli Deora, petroleum minister in the United Progressive Alliance government, used to say kerosene oil was sold to the public at a price lower than packaged drinking water. Those days, kerosene was priced at ₹9 a litre, while a litre of water would cost ₹12. That was 2009 and kerosene price was artificially kept lower as a populist measure by offering heavy subsidy.

With the Indian basket of crude oil falling to below \$30 a barrel last week, a litre of crude oil now costs about ₹12 (approximately), lower than packaged water's price of ₹15 a litre. Last Thursday's closing of \$29.24 a barrel was the lowest in a decade. In rupee terms, this translates to ₹1,956.65 (exchange rate of ₹66.91). Crude oil price has declined by 70 per cent since June 2014, the first full month of the Narendra Modi-led government at the Centre.

A barrel consists of 159 litres and at its last available price of ₹1,956, a litre would cost ₹12.3. The Indian basket represents published freight on board prices of average of



### STEEP FALL

(\$/barrel)

50.91	35.68	66.54	29.24
Average price of Indian basket of crude oil (April-December 2015)	Average price in Dec 2015	Highest point in FY16 on May 6, 2015	Lowest point in FY16 on Jan 7, 2016

Source: PIB

Oman/Dubai crude for sour-grade and Brent for sweet-grade in the ratio of 72:28.

India meets 80 per cent of its crude oil requirement through imports. A CLSA report last month said low crude oil price, if sustained, could add \$60 billion to the country's gross domestic product. In the first eight months of FY16, the value of India's crude oil import declined 43 per cent to \$61 billion against \$107 billion in the corresponding period.

The public has benefited from this decline in crude oil, which has translated into lower prices of petrol and diesel. Diesel price decline also benefits a number of user industries while airlines have gained from a decline in aviation turbine fuel. Since

June 2014, oil marketing companies have reduced petrol prices 21 times while diesel has been reduced 17 times. The prices of both these fuel are down by around ₹14 a litre.

But, all the gains have not been passed. Part of the decline has been adjusted by increases in excite duty on petrol and diesel. There has been three such increases in the current financial year. In FY15, the government had increased duty four times. "In case prices rise in future, we always have the flexibility to offload excise duty. So, this has been planned as a shock absorber," minister of state for petroleum and natural gas Dharmendra Pradhan told Business Standard in an interview last month.

Life with Clean Drinking water is healthy.

Life with contaminated drinking water is worse than a life.



# THE SCENARIO

- Low flow of waters in rivers
- Dirty rivers, lakes, catchment areas
- High pollution in underground & surface water
- Too-much & too-little water—feature every year
- Drinking & potable water crises in disaster situations
- High water wastage in agriculture leading to fast water table depletion & draughts
- Demand for Drinking water doubles by 2030
- Unreliable quality; quality-to-price mismatch and short shelf life of packaged drinking water in the market





# ***PORT-FLEX—THE INNOVATIVE*** **DRINKING WATER SOLUTION 1**



- Treats water from any source (well, river, pond, sea), any contamination (arsenic, fluoride & more)
- Portable, scalable, reusable, short installation time (30 min. to 2 weeks after supply time of 3-4 months)
- Suits situations like mountainous regions, remote villages, small towns, flood, earthquakes, refugee influx etc.
- Standalone, decentralized, self-powered for supply of water on 24x7 basis
- Extremely low cost (9 paisa per litre), generates local employment and skill development



# ***PORT-FLEX—THE INNOVATIVE*** **DRINKING WATER SOLUTION 2**



- Flexible processing rates (150-130,000 Lit/hr & more); wide range of storage capacities (25K-2,000K litre)
- Long water shelf life (12-24 months); long project life (20+ years)
- Constant quality monitoring
- Environmentally friendly with negligible discharge <10%(against 70-80% for RO water)
- Environment restoration—Rain Water Harvesting, Greening & Trees plantation





# ***PORT-FLEX—THE INNOVATIVE*** **DRINKING WATER SOLUTION 3**

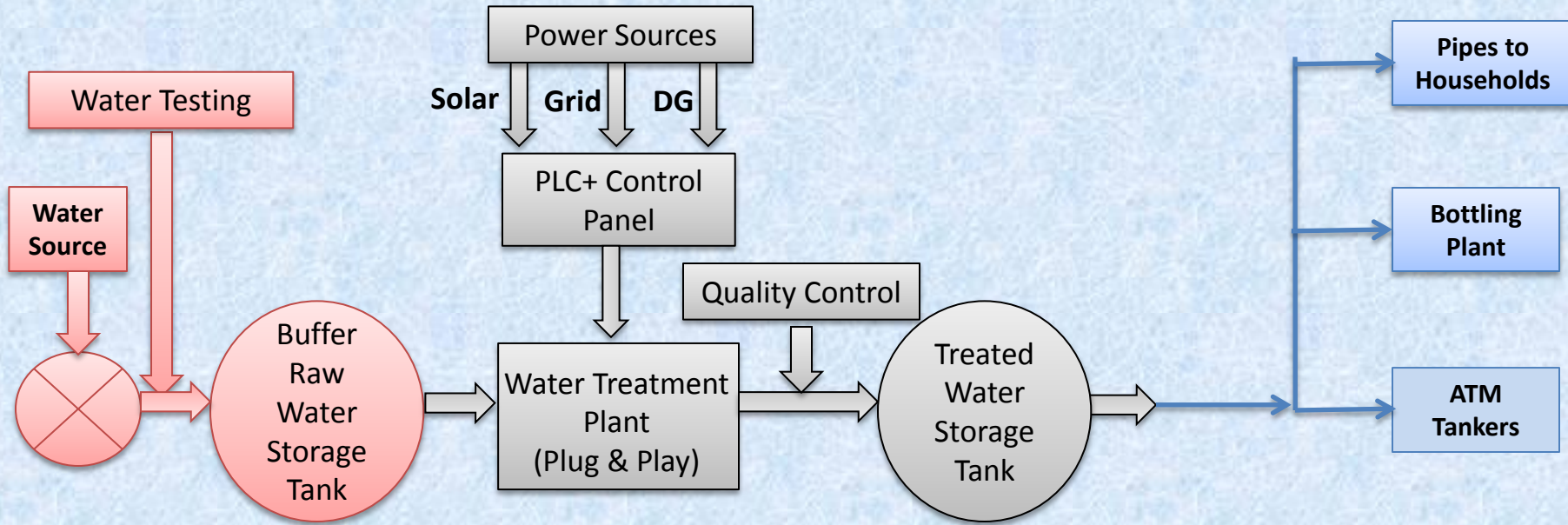


- Combines several processes like UV Sterilization, Ionization, De- & Re-mineralization, Thrombosis, Membrane Bio-Reactor (MBR), Unique Reverse Osmosis (EWURO), Micro Filtration, Softening and many more.
- Uses world class technology: 300+ reputed international clients including international events like Olympics, World Cup Soccer etc.



EXCELLENCE ENGINEERING PVT. LTD.

# SYSTEM PORT-FLEX WATER SOLUTIONS



**Water Intake System**

**Water Treatment System**

**Water Distribution**

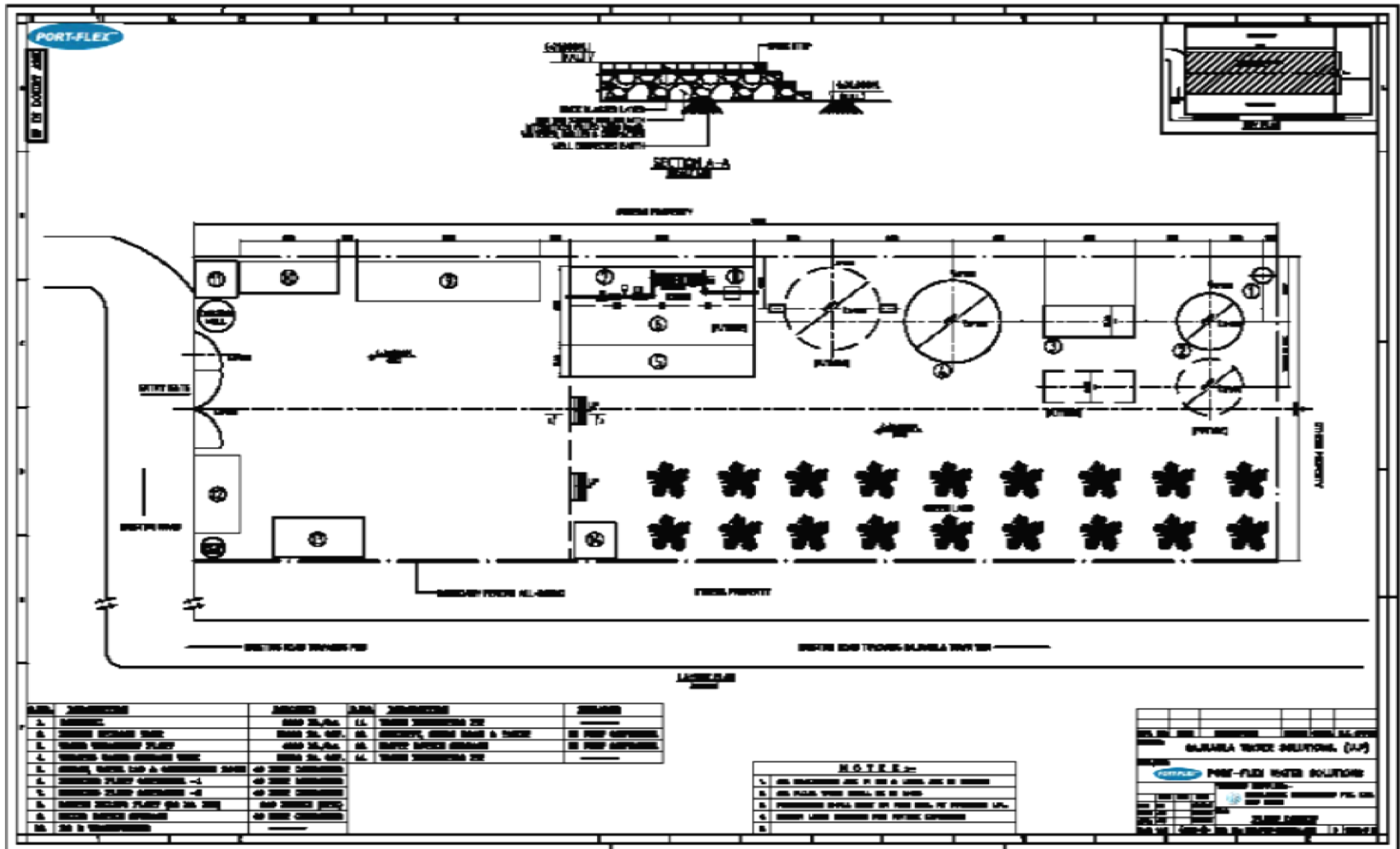
**Trees      Water Harvesting Units      Greening**





EXCELLENCE ENGINEERING PVT. LTD.

# PORT-FLEX WATER SOLUTIONS TYPICAL PLANT LAYOUT



NO.	DESCRIPTION	QUANTITY	UNIT	REMARKS
1.	TRUCK WASHING PLANT	1	NO.	
2.	TRUCK WASHING PLANT	1	NO.	
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**NOTE:-**

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
3. FOUNDATION SHALL BE AS PER IS CODES UNLESS OTHERWISE SPECIFIED.
4. ALL MATERIALS SHALL BE AS PER IS CODES UNLESS OTHERWISE SPECIFIED.
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EXCELLENCE ENGINEERING PVT. LTD.

# PORT-FLEX PLUG & PLAY CONTAINERIZED WATER TREATMENT CUM SUPPLY UNIT

PORT-FLEX™

PORT-FLEX™

## Plug & Play Water Treatment cum Water Storage Plant

Treats all contaminations including  
**Arsenic and Fluoride**



(AN INDO - DUTCH CO-OPERATION)

**Port-Flex**  
Water Solutions



24x7 Drinking Water Supply Solutions for  
Villages, Small Towns & Disaster Areas

**SUSTAINABLE, SCALABLE & COST EFFECTIVE**

PORT-FLEX™

### Plug & Play Water Treatment cum Water Storage Plant

- Supply of Arsenic, Fluoride, Heavy Metals etc. treated Drinking Water as per BIS Standards / WHO norms, within 30 minutes
- Plug & Play Water Treatment Plant with Intake and Treated water Storage System
- Ideally suited to Villages, Small Communities, Armed Forces & Disaster Situations

### Unique Features

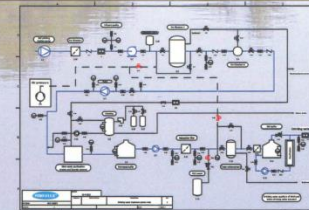
Fully Containerized Water Treatment System in standard in 20 / 40 ft containers, Fully Plug & Play System, Automatic

Can Treat all kinds of water contaminations like Fluoride, Arsenic, Heavy metal, etc.

Wide range of capacities available ranging from 150, 280, 450, 650, 900, 1200, 1800, 2400, 3600, 4700 and 7500 liters per hour that will be able to ensure safe and good tasting drinking water.

Highly energy efficient, very low power requirement ranging from 4 to 20kw/hr only depending upon capacity

Treated water storage capacities 2x 2000 & 4x 2000 liters. Size of containers depending upon capacity.





# CONCEPT FOR STRATEGIC WATER SUPPLY CUM STORAGE FOR DRAUGHT HIT VILLAGES

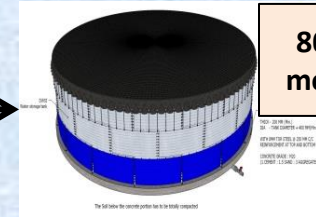
**Water source-  
surface or underground**



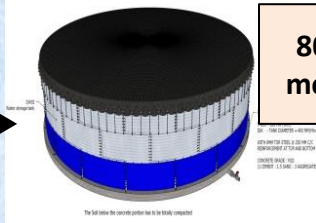
**Power  
source: Solar  
+ Grid**



**750,000 lit. tanks each**



**800 persons for 3  
months@10lit/day**



**800 persons for 3  
months@10lit/day**

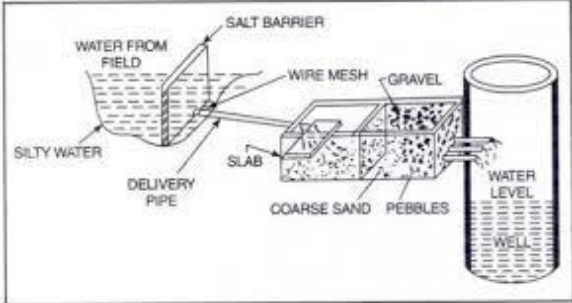


FIG. 16.15. Rain water harvesting through dugwell recharge

**Water harvesting**

**Plug & Play , containerized Water Treatment Plant**

**Corrosion free, algae free,  
with 25 years life at least,  
food grade, portable, -20 to  
+50 degree Celsius, cost  
effective, easy to install  
storage tanks**



EXCELLENCE ENGINEERING PVT. LTD.

# ***PORT-FLEX* PORTABLE & FLEXIBLE WASTE WATER TREATMENT PLANTS**

**PORT-FLEX™**

- **Completely biological, robust, climate proof and low maintenance costs. Municipal and industrial wastewater both can be treated . Can be transported anywhere in the world.**
- **Highly energy efficient. Without using any chemicals, a complete disinfection system is included in the our Wastewater Treatment Container.**
- **This customized system is ideal for permanent as well as temporary locations and is often used during missions and humanitarian disasters.**
- **The effluent produced is ready to be directly discharged into nature or reused..**
- **Capacities can vary from 1 m<sup>3</sup> up to 5.000 m<sup>3</sup> per day.**







# BACKGROUND IN BRIEF



- Excellence Engineering Pvt. Ltd. (EEPL) is an ISO 9001: 2008 certified company and registered with The National Small Industries Corporation Limited (NSIC) of Govt. of India
- EEPL was established in the year 2012
- Port-Flex Water Solutions is a registered trade mark and business vertical of EEPL
- Port-Flex concept is under Patent Registration
- Port-Flex innovative technology has been presented to the empowered Dr. R.A. Mashelkar Committee on 26th May'16 under Ministry of Drinking Water and Sanitation, Govt. of India.



# PROOF OF PERFORMANCE (WORLD WIDE)



- ✧ Olympic Summer Games, London 2012 (GB)
- ✧ UEFA Euro 2012 Poland-Ukraine
- ✧ World Youth Days (WYD), Rio de Janeiro 2013
- ✧ Olympic Winter Games, Sochi 2014 (RUS)
- ✧ FIFA World Cup, Brasil 2014
- ✧ Mysteryland, USA
- ✧ Houseboat Sewerage for City of Amsterdam (NL)
- ✧ Museum Square Amsterdam (NL)
- ✧ Another 300++ Completed projects





# ***WE CONTINUE TO INNOVATE...***

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