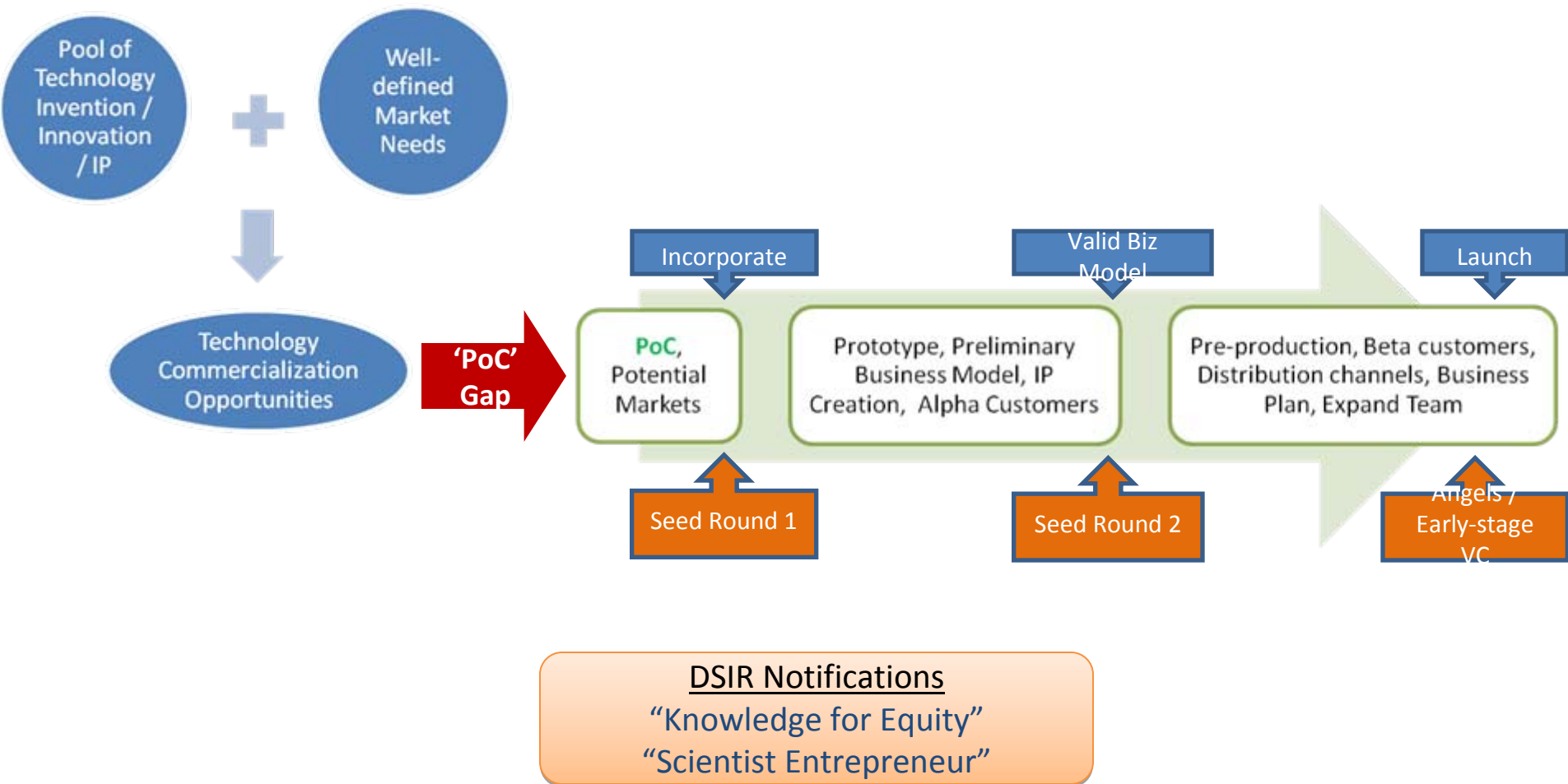


Technology Firms in Water Industry



Lab2Mkt Program

(Technology Commercialization via Spinoffs)



Note: Water Enthusiasts, NOT Experts!

What we've spent time on

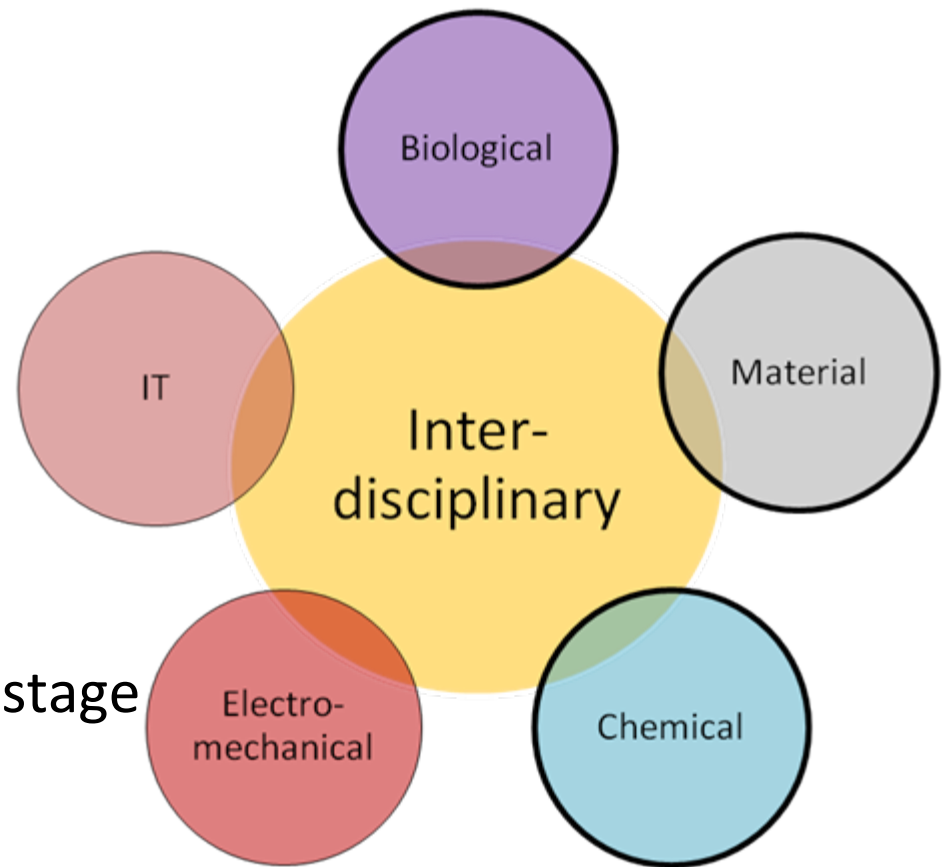
- Secondary market research
- Technology perspective
 - Material science
- Top-down / analytical approach

What's missing?

- Primary market research
- Field experience
 - Industry professionals, entrepreneurs, NGOs, policy-makers,
...
- Unsavory bits

Water Technology – Goals, Categories

- Purify water
 - Potable water
 - Other domestic, municipal use
 - Industrial use
- Treat, reuse wastewater
 - Municipal
 - Industrial
- Reduce water loss, theft, wastage
- Analyze, test water



http://www.venturecenter.co.in/research.php

by Startups, Entrepreneurs, Business Incubation Pune - Mozilla Firefox

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http://www.venturecenter.co.in/research.php

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New coal mining permi... United Nations World ... NI_engelsk.pdf (applic... ::AVENTURA COMPO... Lit2Go - Kindergarten ... Johnnie's Math Page - ... Global tender

What are the most acc... Discussion | LinkedIn Water from air- Fact or ... US EPA cecliterature.pdf (applic... Summit Vohra Of Admissi... Resea

Service offerings

Beneficiaries

Sponsors & donors

Projects

Research

Careers & other opportunities


Contacts & mailing lists

[SUMMARY MAP: Programs, services, resources](#)

The table below summarizes the research work done to-date, with links to the relevant sites/reports.

Topic & Author(s)	Links
Investing in Technology Enterprises in India <i>Author: Kaushik Gala</i>	Essays on Technology Enterprises in India Featured in PuneTech (2010): Should businesses in India innovate, imitate or adapt technology?
Risk capital for MSMEs <i>Author: Kaushik Gala</i>	Risk Capital for MSMEs in India (Summary report, August 2010) Essays on Risk Capital for MSMEs Featured in PuneTech (2010): How many innovative small businesses are there in India?
Funding database <i>Authors: Vibhor Jindal, Magesh Nandagopal, V Premnath</i>	Funding Landscape in India for Technology Startups Featured in DARE magazine (November 2009): Government Funding for Technology Entrepreneurs

Water: Opportunities for Impact



Water: Opportunities for Impact

13 November 2010

Sciences Innovation Symposium
(1 Oct 2009) 7th NCL Innovations Seminar: Dr. Gopakumar G. Nair
Archives

Announcements
(16 Nov 2010) Visit: David Willetts, Minister of State for Universities and Science (UK) to NCL, Venture Center, IISER | Photos
(05 Aug 2010) Accelerated Commercialisation of Technology and Innovation (ACTIV) workshops
(27 Apr 2010) Press Release: Soft launch of IP Facilitation Center for MSMEs
(26 Apr 2010) Soft launch of "Intellectual Property Facilitation Centre" (IPFACE)
Archives

In the news
(November 17, 2010) Indian Express: UK minister in city to discuss education ties | DNA : UK wants more student exchange programmes with India | SiliconIndia : UK students should go to India: British govt | Pune Mirror: When two Oxfords collide | Times of India : University of Pune good for raising flow of students to India: UK minister
(October 13, 2010, Indian Express) Leap from lab idea to business venture, NCL paves the way
(October 2010) UK-India join hands for flagship technology commercialisation workshops
(September 26, 2010, Indian Express) Workshop seeks to create synergy between university research and technology innovation
Archives

Copyright 06-10, Entrepreneurship Development Center, Pune, India.

Biological Sciences

Cell Disruptor Process



How it works?

- Cellruptor Process – Pressure + Biogas
- The EcoSolid Process – Addition of Quick Lime (CaO_2) to dewatered sludge and passed through Plug flow reactor.

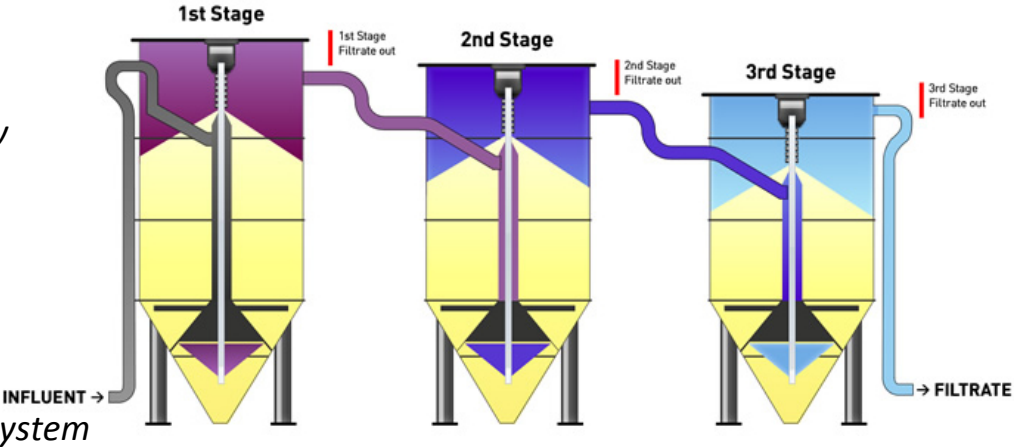
Company Name: *Eco Solids International*
Country : UK
Promoters/Investors : Low Carbon Accelerator
Product: *Cellruptor, Eco Solid, Eco Liquid*
Patent :
Market status: First installation in Dec 2010

Waste to Energy



How it works?

- MMF packaged unit has 3 stages –
- The MMF Solids Separator - removes suspended solids on a rotating belt conveyor
- The MMF Modular Filter, automated continuously cleaning media filtration system (sand and Poly Aluminum Chloride and fixed film media), and
- The MMF Energy Conversion System which transforms the removed fresh solids into energy end products.



Company Name: *Micromedia Filtration now M2 Renewables Inc.,*

Country : USA

Promoters/Investors : SAIL Venture Partners

Product: *MMF Solids Separator, MMF Modular Filter MMF Energy Conversion System*

Patent :

Market status: Installed

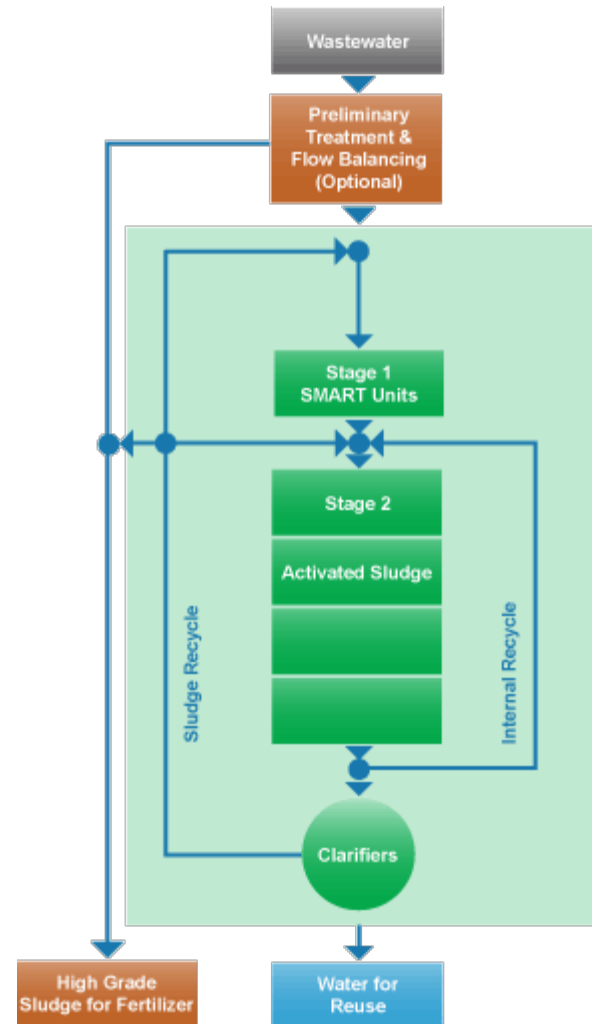
Shaft Mounted Advanced Reactor Technology (SMART)



Company Name: *Bluewater Bio International*
Country : UK
Promoters/Investors : Aqua Resources Fund Ltd.
Product: HYBACS Process
Patent :
Market status: In market

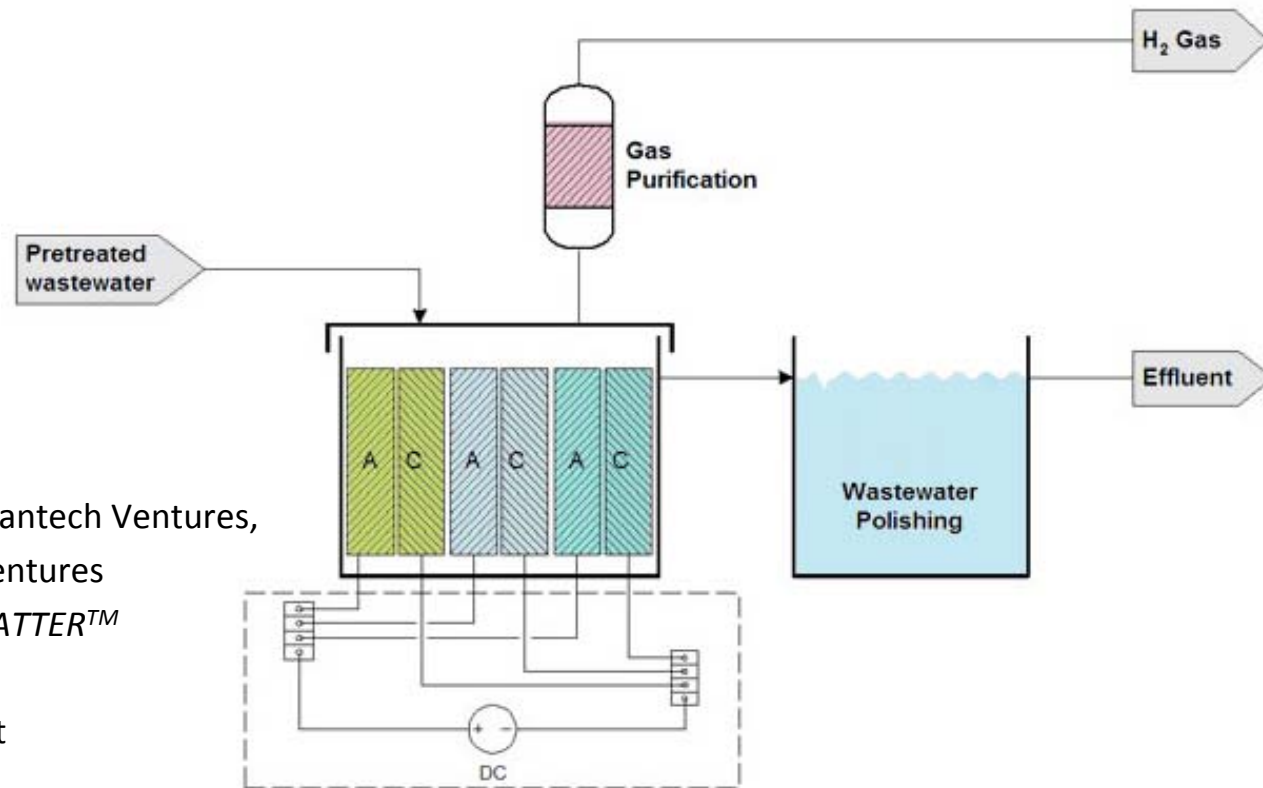
How it works?

- The HYBACS Process treats industrial wastewaters with BOD values around 20000 mg/l -40000 mg/l.



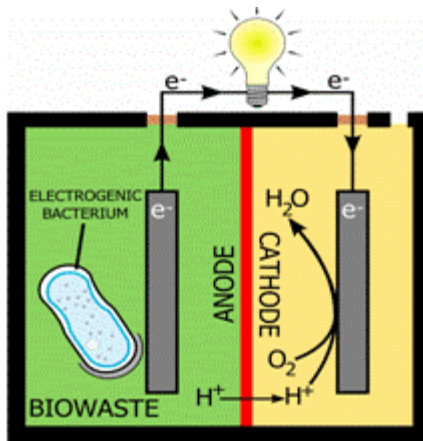
How it works?

- Applying the principle of microbial fuel cells (MFC) for the direct production of electricity or hydrogen from wastewater.
- Denitrification can be done



Company Name: *Emefcy*
Country : Israel
Promoters/Investors : Israel Cleantech Ventures,
Plan-B Ventures
Product: *MEGAWATTER™*
Patent : Pending
Market status: In market

Microbial Fuel Cell – Energy from Wastewater



How it works?

- Uses an In Silico screening platform called “Computer-Assisted Strain Construction and Development Engineering (CASCADE)” to systematically select organisms in respect to different wastewaters.
- Links chemical and genetic fingerprints of the organism

Company Name: *Cascade Clean Energy*
Country : USA
Promoters/Investors : Quantum Intelligence Inc.,
Product: *CASCADE Methane Bioreactor and CASCADE MFC products*
Patent : Patented
Market status: Testing

Automated Chemostat Treatment (ACT)



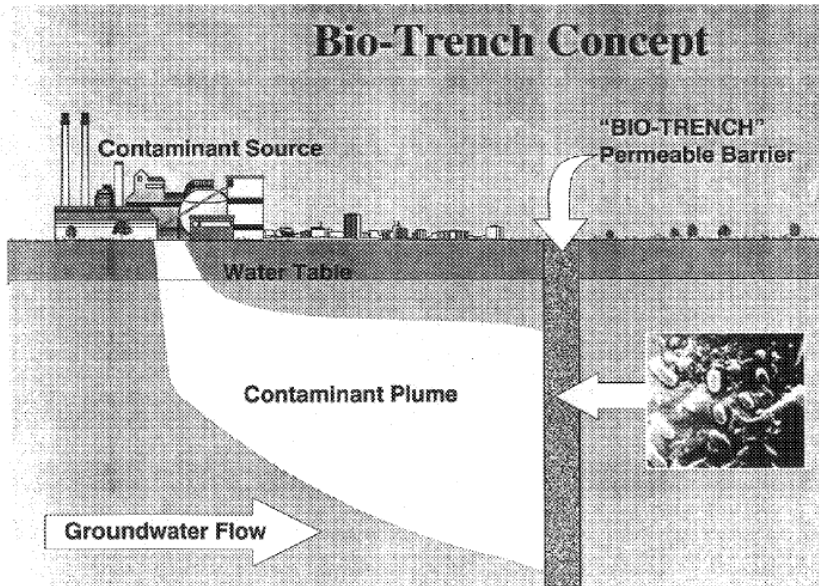
Company Name: *BioPetroClean*
Country : Israel
Promoters/Investors : 21Ventures
Product: *BioPetroClean*
Patent : 3941692, 4276094
Market status: Only in USA

How It works ?

- Initial tests are done and consortia of bacteria are injected into the system.
- No sludge is produced as very less bacteria is introduced



Microbead Technology

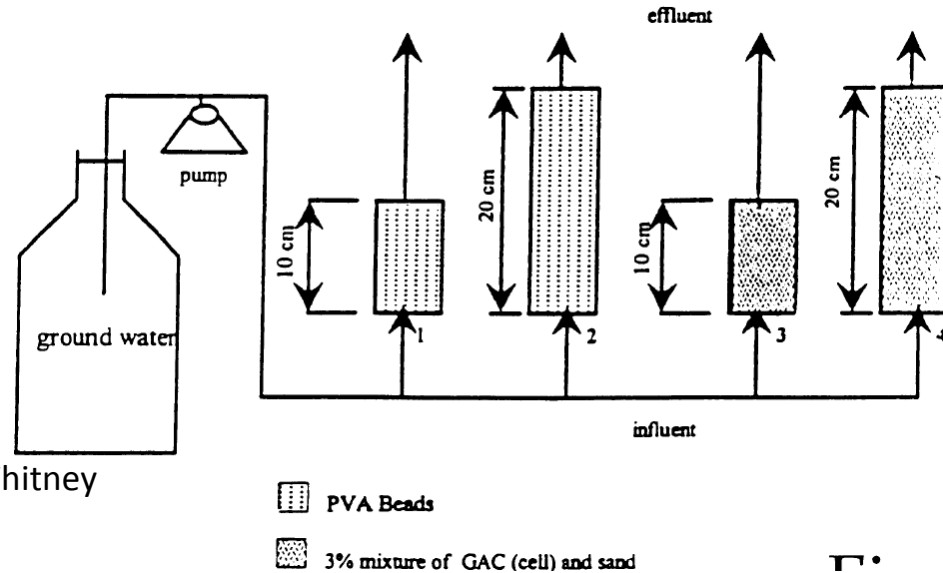


How it works?

- Encasing multitudes of microbes within a membrane,
- Using strains that can digest a variety of pollutants.

Company Name: *Microvi Biotech*
 Country : USA
 Promoters/Investors : Individual Investors, American Petroleum Institute, National Science Foundation, Pratt & Whitney

Product:
 Patent : 6337019
 Market status: Early stage research and development

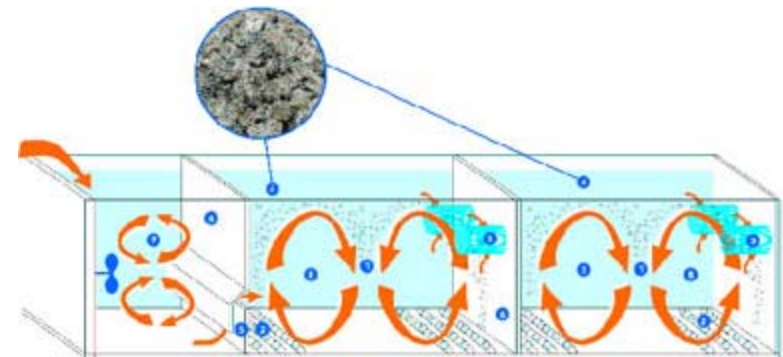


MBBR, IFAS Wastewater Treatment Plants



How it works?

- Attached growth air lift reactor (AGAR) process - for moving bed reactors (MBBR),
- Fixed film activated sludge process (FAST) gives highly efficient aeration design, as the carrier is fully open and hence more surface area



Company Name: *Aqwise*
Country : Israel
Promoters/Investors : AHMSA Steel Israel Ltd., Elron Electronic Industries Ltd. and Israel Cleantech Ventures.
Product: *The AGAR® Process*
Patent :
Market status: In market

Disinfection on the Go



How It works ?

- Uses ultraviolet (UV) light technology to purify water, destroying more than 99.9 percent of bacteria, viruses and protozoan cysts such as giardia and cryptosporidia.
- Cannot remove pesticides and other organic contaminants, heavy metals.

Company Name: *Hydrophoton*
Country : USA
Promoters/Investors: Maiden, Miles
Product: *Steripen*TM
Patent : 6579495, 7641790
Market status: In use

Chemical Sciences

Nutrient Recovery



How It works ?

- Proprietary fluidized bed reactor recovers ammonia and phosphorus from the wastewater treatment plants and converts it into Crystal Green, a fertilizer.
- Reduces phosphorus and nutrients by 90% and 20%
- The recovered phosphorus is mixed with magnesium chloride and caustic to form pellets, used as fertilizer.
- 85% of the phosphorus is removed from the sludge.

Company Name: *Ostara Nutrient Recovery Technologies*
Country : *Canada*
Promoters/Investors : *Vantage Point Venture Partners*
Product: *Crystal Green, biofertilizer*
Patent :
Market status: *Pilot scale*

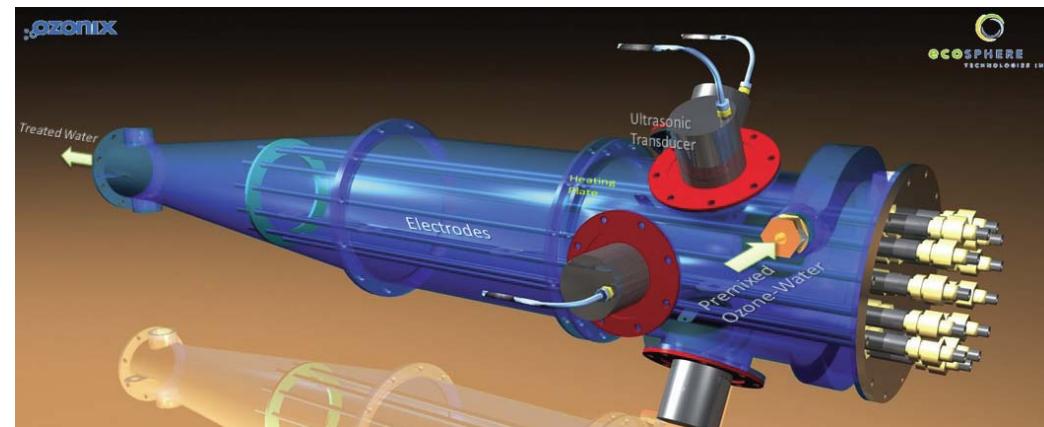
Advanced Oxidation Process



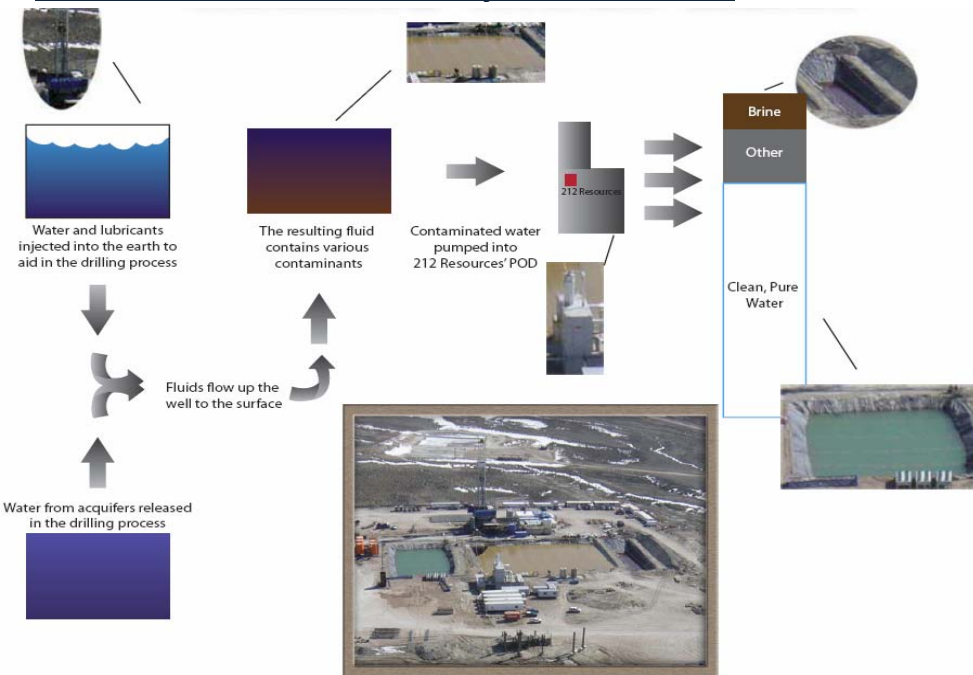
How it works?

- By Advanced Oxidation Process
- A combination of Ozone Generation, Hydrodynamic Cavitation, Acoustic Cavitation and Electro-chemical Decomposition in a reaction vessel to treat contaminated water.
- Treats difficult to treat industrial wastewater, produced water,

Company Name: *Ecosphere Technologies*
Country : USA
Promoters/Investors : Bledsoe Capital Group
Product: Ozonix™ Reactor
Patent : 7699988, 7699994,
7785470, 6564815
Market status: In market



Produced Water Recovery & Treatment



How It works ?

- Treats hydrocarbon and produced water, Flow back water from Shale gas formations onsite

Company Name: 212 Resources

Country : USA

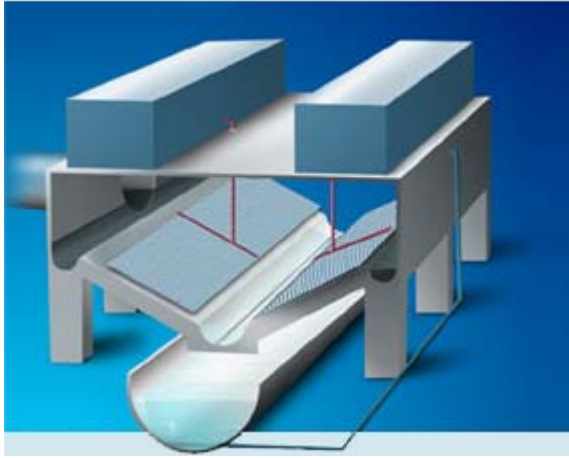
Promoters/Investors :

Product: Transportable PODs and fixed treatment plants for treatment of flow back and produced water from the drilling and production of natural gas

Patent : 20090082906

Market status: In market

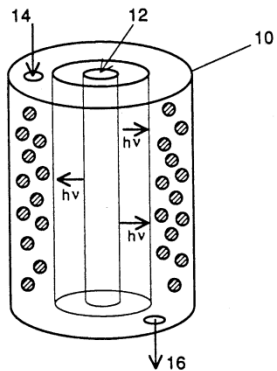
No Thermal Plasma (NTP) Advanced Oxidation



How It works ?

- High voltage short pulse creates the Non Thermal Plasma above the contaminated water
- This produces the hydroxyl radical, UV and ozone radiation required for the online oxidation of chemicals without addition of other chemicals
- Treats pharmaceutical wastes, pesticides and VOCs.

Company Name: *Aquapure Technologies*
Country : Israel
Promoters/Investors : Private
Product: *Pure water*
Patent : 6802981 B2
Market status: Running since 2002

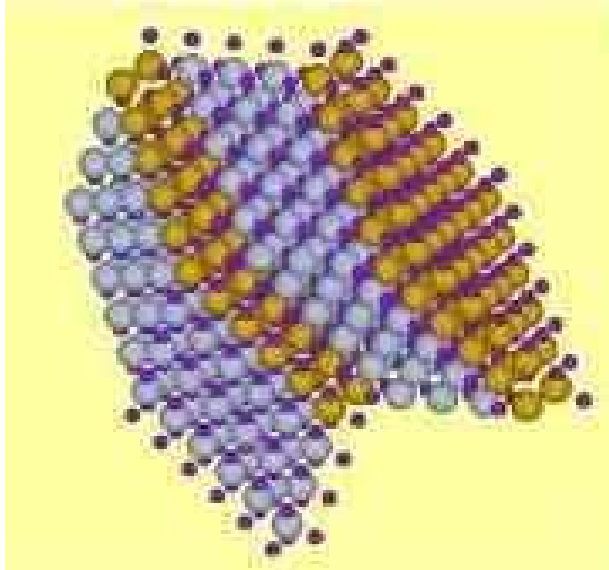


How It works ?

- Uses membranes of titanium dioxide to treat complex organic molecules in combination with ultraviolet light, electrodes and oxidizing agents to strip out impurities

Company Name: *Aquamost*
Country : *USA*
Promoters/Investors : *University of Wisconsin scientists - private*
Product: *Water purification device that removes hormone mimics (endocrine disruptors), pharmaceutical drugs, industrial contaminants agricultural chemicals*
Patent : *5035784*
Market status: *Not in the market, testing under progress*

Electrolysis Based Product for Purification

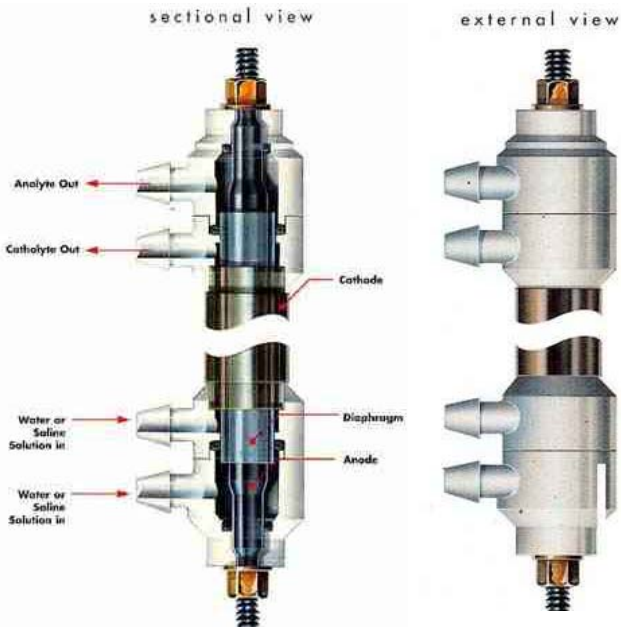


How It works ?

- Ebonex is a titanium sub oxide material and is electrically conductive.(bipolar)
- Uses ebonex technology to treat water and wastewater mainly in industries.

Company Name: *Atranova*
Country : Cambridge, UK
Promoters/Investors : Sagentia Group and Atraverda
Product: *Ebonex*TM
Patent :
Market status: In operation since 2009

Electro Chemical Activation Technology (ECA)



Company Name: *Radical Water*
Country : South Africa
Promoters/Investors : Private
Product: *Radical Water*
Patent : Application 20070261954, 6843895
Market status: In use

How It works ?

- ECA solutions are created by mixing readily available food grade salt with water
- Then passing the brine solution through the flow through Electrolytic module reactor.
- Once inside the reactor, the brine is activated by way on an electrical charge and two distinct solutions are produced
- Anolyte which is used as a disinfectant
- Catholyte which is used as a detergent
- Prevents development of biofilm on water
- Takes less time to clean (30 minutes compared to 5 hours traditional method)

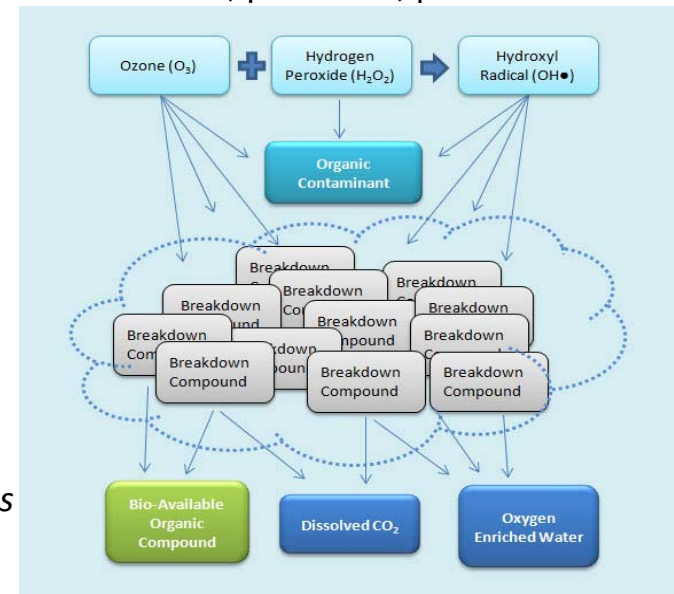
Advanced Oxidation



Company Name: APT
Country : USA
Promoters/Investors :
Product: *HiPOx[®] and PulseOx[®] process technologies*
Patent :
Market status: Manufacturing

How It works ?

- Based on Advanced Oxidation Process (AOP) chemistry
- Produces the hydroxyl radical (OH•),
- Treats a wide range of recalcitrant or difficult-to-treat compounds, biologically toxic or non-degradable materials such as aromatics, pesticides, petroleum

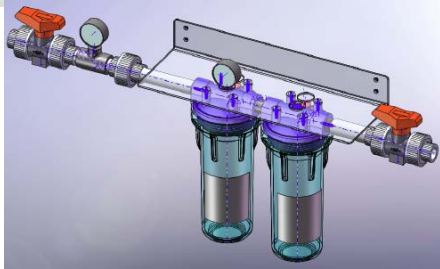


Carbon Nanotubes



➤ Water Box

WaterStick



➤ WaterTap

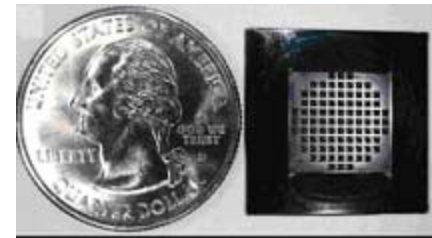
Company Name: *Seldon*
Country : USA
Promoters/Investors :
Product: *Seldon WaterStick™, Seldon WaterTap™, Seldon WaterBox™*
Patent : 7211320 and 7419601
Market status: Pilot tests underway

How It works ?

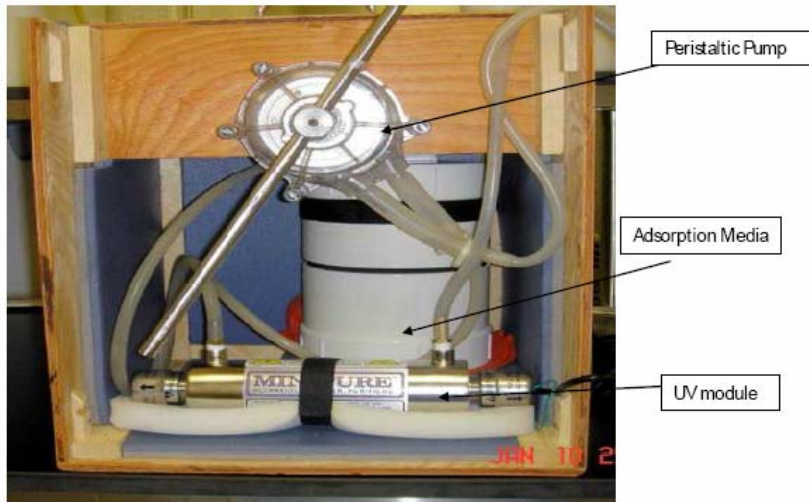
- A new nanostructured nonwoven material : “nanomesh™” is used for groundwater, fuel and air purification
- WaterBox – groundwater purification
- WaterTap – domestic supply lines
- WaterStick – mobile point of use

- Sheets of carbon atoms rolled tightly (only 7 molecules of water can fit across their diameter)

- This gives a large surface area, great strength, light weight, high electrical conductivity, rapid heat transport.



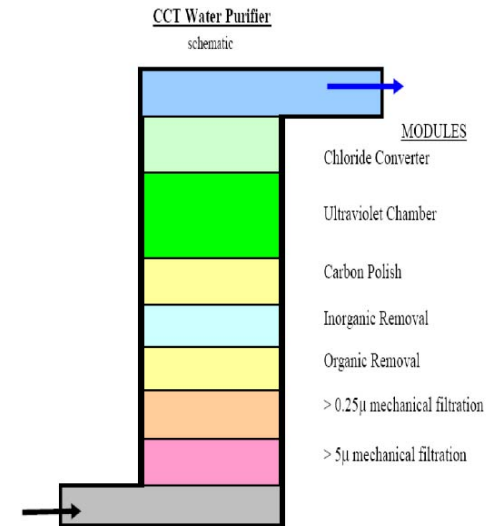
Arsenic and Heavy Metals Removal



How It works ?

- By coating filter media (sand, titanium dioxide, zeolites) with nano technology for removal of heavy metals and other pollutants
- Bifunctional ligand technology recharges the exhausted NMX™ filter media allowing subsequent layers of heavy metal

Company Name: *Crystal Clear Technologies*
Country : Silicon Valley, USA
Promoters/Investors : James M Harris, CEO(MIT) and Lisa Farmen, President
Product: *Hand powered Low cost purification technology using Nanotechnology*
Patent : 7713496B2
Market status: Tie up with DOW, Siemens, Brita filters



Heavy Metals Removal



How It works ?

- Sorbster is Granular engineered media
- Works on mercury, selenium, arsenic and other metals
- Sorbster is added to industrial wastewater or municipal water and pollutants are chemisorbed.
- The compound is sold as concrete filler.
- Contact time is less than 2 minutes.

Company Name: *MAR Systems Inc.,*
Country : USA
Promoters/Investors : Claude Kennard and Tony Lammers
Product: *Sorbster*
Patent : 7341667, 7449118, 7479230
Market status: Production to start by summer 2010

Chitosan Enhanced Sand Filtration



Company Name: *Clear Water Compliance*

Country : USA

Promoters/Investors :

Product: *Revolut ION*

Patent :

Market status:

How It works ?

- Chitosan is first added at the rate of 1part per million.
- It acts as filter aid for the treated storm water when it is process thro a sand filtration unit.
- Useful for high flow, low concentration
- Removes pesticide, heavy metals, high suspended solids and reduces turbidity

Mercury Removal

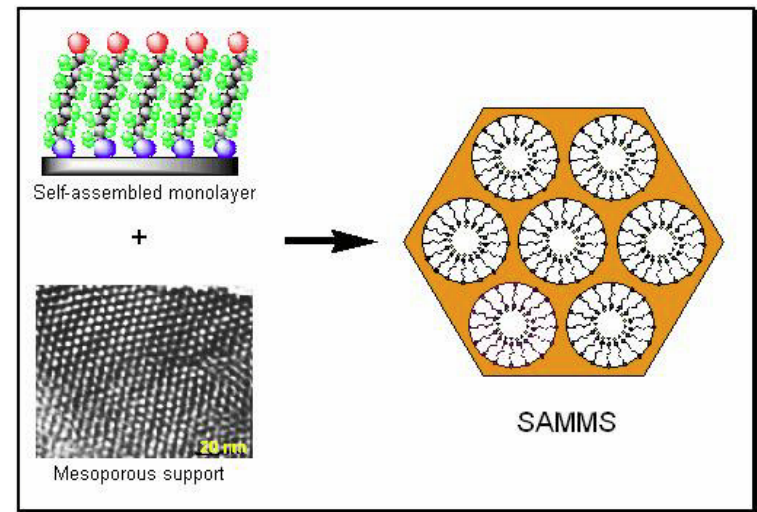


10 gpm continuous flow SAMMS® filtration system

Company Name:	<i>Steward Environmental Solutions, (Developed by Batelle for Pacific Northwest National Laboratory)</i>
Country :	USA
Promoters/Investors :	Private
Product:	<i>Self-assembled monolayers on mesoporous supports -Thiol- SAMMS™</i>
Patent :	
Market status:	Started commercial installations this year in US

How It works ?

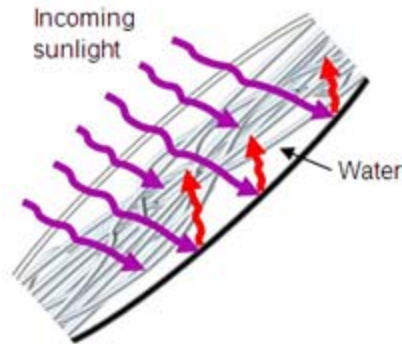
- Molecularly engineered material to absorb mercury
- Created by attaching a monolayer of molecules to mesoporous ceramic supports . The larger pore size offered by the mesoporous materials (20-200 Å) enables attachment of the monolayer as well as access to the binding sites within the pores. The high surface area of the materials (~1000 m²/g) also allows an extremely high density of binding sites.



Photochemical Water Purification



Photocatalyst

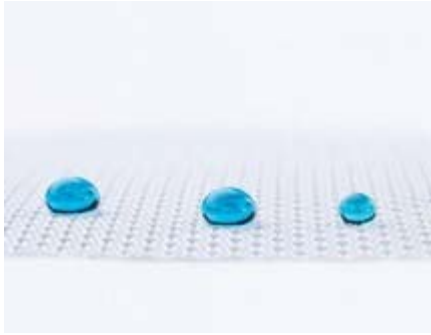


Company Name: *Puralytics*
Country : USA
Promoters/Investors : Private
Product: *Solar Bag, Shield*
Patent : 7071493
Market status: Since 2007, early stage start up

How It works ?

- Precise wavelength LED generates unprecedented levels of hydroxyl radicals (OH⁻) which
- By adsorption, reduction, disassociation and oxidation, remove all contaminants
- Also disinfection is accomplished

Liquid Repelling Nano Coating Technology

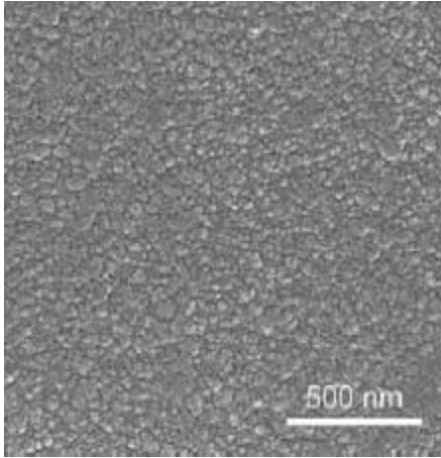


How It works ?

- Uses a special pulsed ionized gas (plasma), created in a vacuum chamber, to attach a nanometer-thin polymer layer over the entire surface of a product.
- This lowers the product's surface energy, so that when liquids come into contact with it, they form beads and simply run off.

Company Name: *P2i inc.*
Country : USA
Promoters/Investors : Dept of Sc & Tech. UK, Durham Univ,
Porton Capital, Unilever Ventures
Product: *Aridion™, liquid repelling nano coating technology*
Patent : 6551950
Market status: In use

Visible Light Disinfection



Coming clean: A micrograph shows the surface of a light-activated catalyst that disinfects water even in the dark. Palladium nanoparticles on the surface of a nitrogen-doped titanium oxide help to extend the catalyst's disinfection power up to 24 hours.
Credit: Shang, et al. University of Illinois at Urbana-Champaign

How It works ?

- The fibers of titanium -doped with nitrogen to make it absorb visible light
- The nitrogen-doped titanium oxide kills bacteria,
- Adding nanoparticles of palladium to the surface of the fibers, greatly increasing the efficiency of the disinfection

Company Name: [Jian-Ku Shang](#), *Professor of Materials Science and Engineering, University of Illinois, Urbana-Champaign*

Country : USA

Promoters/Investors :

Product: *Disinfection by Visible light*

Patent :

Market status: Under research

Electrified Nano Filter



Company Name:

Country : USA

Promoters/Investors : Stanford researchers, Yi Cui and Sarah Heilshorn.

Product: *Disinfection*

Patent :

Market status: Research work

How It works ?

- Filter water through the filter with electricity , powered with car batteries of solar panels
- Can handle flow rater of 100,000 lts/hour
- Dip a piece of cotton batting in a water-based carbon-nanotube ink, let it dry, then
- Dip it in an alcohol-based silver-nanowire ink and let it dry again

Emergency Water Generator Machine



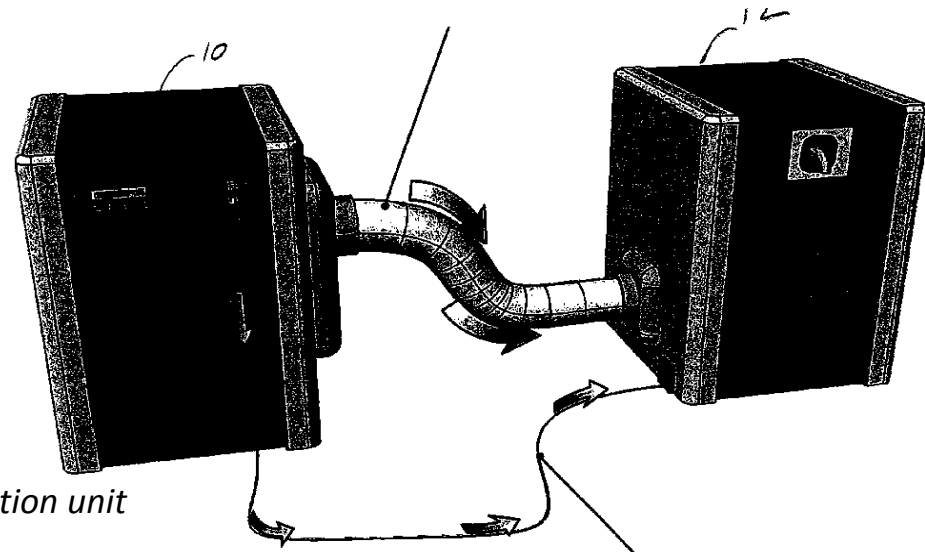
Company Name: *Aquasciences Inc.,*
Country : USA
Promoters/Investors :
Product: *Atmospheric Water Extraction Machines*
Patent : 7043934
Market status: Used by US Military

How it works?

- This machine works by pushing air through a liquid **salt solution of lithium chloride**.
- This compound is hygroscopic in nature, meaning it attracts water from its surroundings. Because the compound used in the machine attracts water molecules, it allows water to be harvested from arid regions, not just humid regions.
- The machine then extracts water from the salt solution and filters it through table salt, which acts as a natural disinfectant. This process is less hazardous than adding chlorine.
- Finally, water is filtered through a **carbon filter** to add taste.

Vapor Compression Distillation

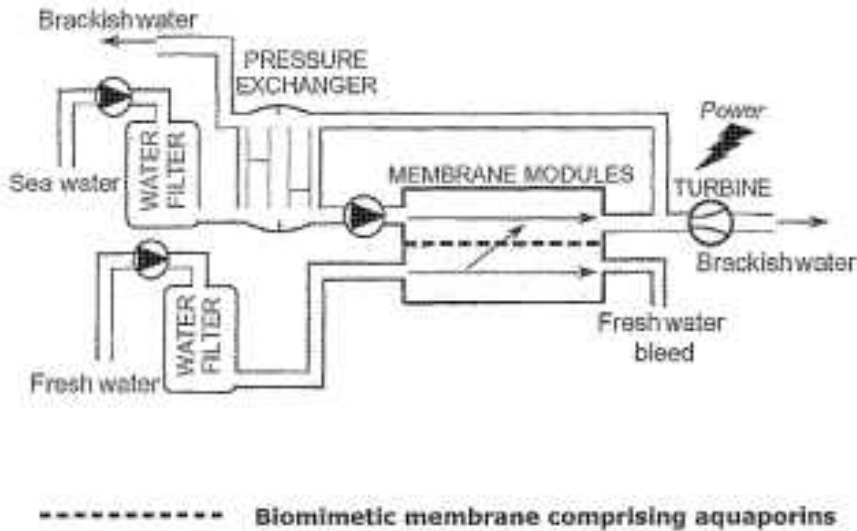
How It works ?



Company Name: *DEKA Products Ltd Partnership*
Country : USA
Promoters/Investors : Dean Kamen
Product: *Low cost portable water purification unit*
Patent : 7340879 B2, US7597784
Market status: Not in production

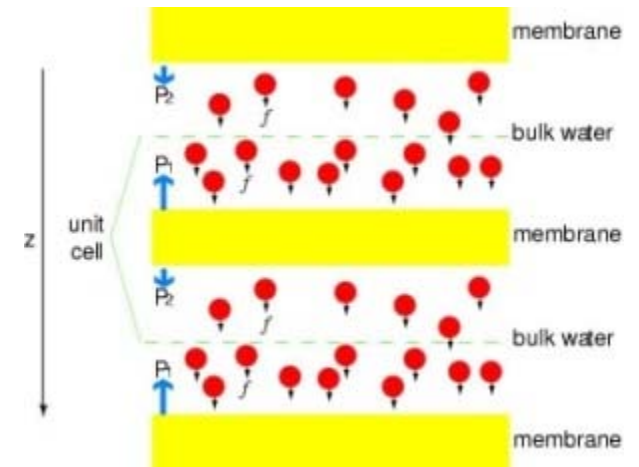
Material Sciences

Biomimetic membranes



How It works ?

- Biomimetic membranes - lipid bilayers incorporating reconstituted aquaporin channels
- Consumes less energy as compared to RO



Company Name: *Aquaporin A/S*
 Country : Denmark
 Promoters/Investors: M. Goldschmidt Capital A/S
 Syddansk Teknologisk Innovation A/S
 Morten Østergaard Jensen Holding A/S
 Artefakt Holding A/S

Product: *Aquaporin membranes*
 Patent : EP 1 937 395 (A1)
 Market status: Early stage start up

Closed Circuit RO Desalination

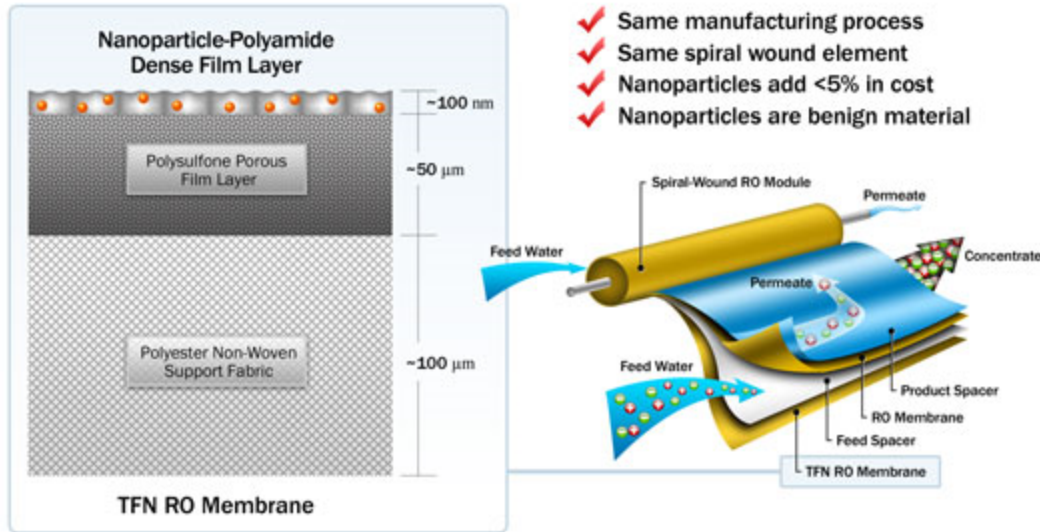


How It works ?

- Based on hydrostatic principles closed circuit RO where the flow rate of pressurized feed and permeate are equal.
- Requires less pressure (energy) for desalination.

Company Name: *Desalitech*
Country : Israel
Promoters/Investors : Nadav Efrety, backed by AquAgro Fund
Product: *Pure Water*
Patent : 7628921B2, 7695614B2
Market status: In production

Nanotechnology Based Water Filtration



How It works ?

- Nanocomposite (TFN) membrane technology for Reverse Osmosis, makes the membrane more permeable and maintains requisite salt and contaminant rejection.
- 20% less energy usage and 70% more water purification

Company Name: *Nano H2O*
Country : USA
Promoters/Investors : Funded by Khosla Ventures and partner with Veolia
Product: *Nano composite membranes for RO*
Patent :
Market status: Will start commercial production by mid 2010

Tea Bag Filter



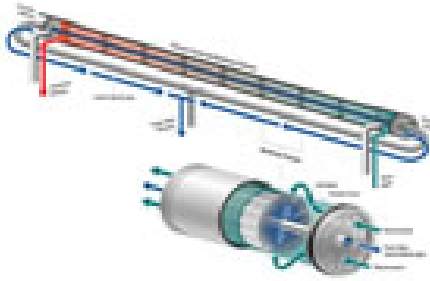
Company Name: *HOPE Project*
Country : South Africa
Promoters/Investors : Professor Cloete of Stellenbosch Univ,
Product: *Tea Bag Filter*
Patent : 4985150
Market status:

How It works ?

- Tea bag material is coated with a thin film of biocides encapsulated within minute nanofibres, which kills all disease-causing microbes.
- The bag is filled with active carbon granules that remove all harmful chemicals, for instance endocrine disruptors.
- Each "tea bag" filter can clean one liter of the most polluted water to the point where it is 100% safe to drink.
- Once used, the bag is thrown away, and a new one is inserted into the bottle neck.

1 bag = 1 liter

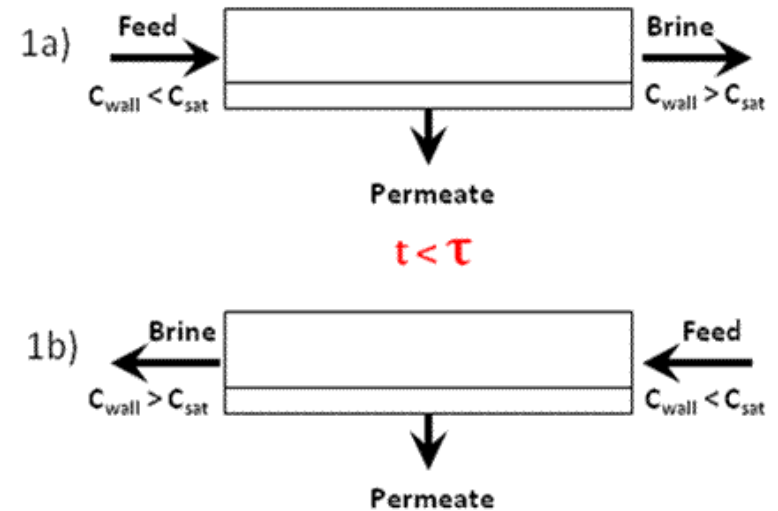
Flow Reversal Technology for RO



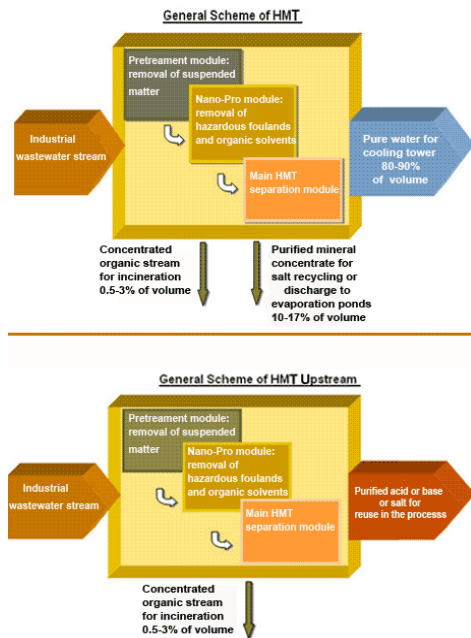
How It works ?

- An ultrasonic sensor to detect the biofouling and precipitation on the membranes, triggers a reverse flow before scaling starts

Company Name: *Reverse Osmosis Technologies (ROTEC)*
Country : Israel
Promoters/Investors : Mekerot
Product: *Reverse Osmosis*
Patent :
Market status: Planned pilot studies



Hybrid Membrane Technology and Nano Membranes



How It works ?

- HMT recovers high quality water from wastewater (80%-90%) for reuse.
- Produces a high concentrated organic effluent that can be sold as mineral salts
- A smaller quantity of wastewater volume for incineration.

Company Name: *Bio Pure Technology (BPT)*
Country : Israel
Promoters/Investors : Sigma PCM, Elron Electronics Industries, Aurum Ventures
Product: *Nano ProTM membranes, Hybrid Membrane Technology HTM System*
Patent :
Market status:

Forward Osmosis and Ultrafiltration



How It works ?

- Highly hydrophilic
- Consists a thin layer of cotton-derived cellulose-ester plastics embedded on top of a microfiltration membrane
- Draw solution of fructose is used

Company Name: *Hydration Technology Innovations*

Country : USA

Promoters/Investors :

Product: ***OsMem and SepraMem***

Patent :

Market status:

Forward Osmosis

How It works ?

- Uses a solution containing ammonium salts that is more concentrated than seawater.
- The solution goes into one side of a chamber, separated by a semi-permeable membrane, with the seawater on the other side.
- The draw solution is heated to 120F to vaporize and recycled back

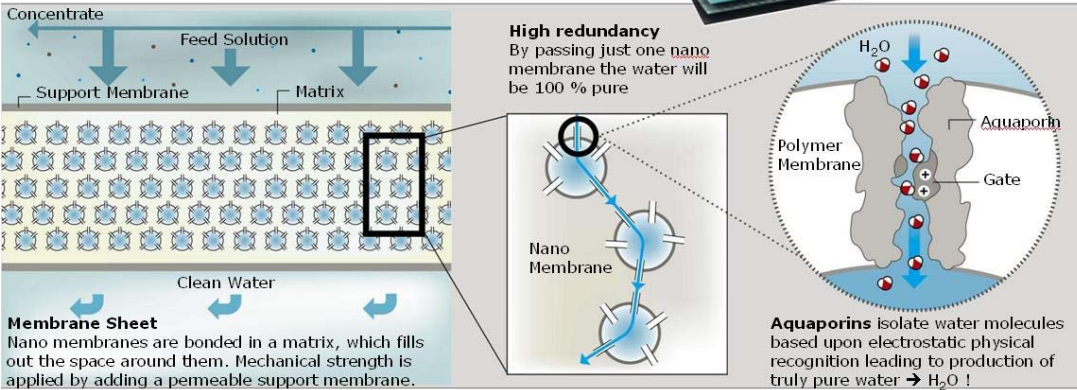
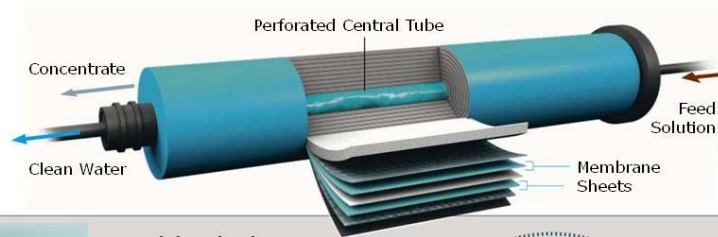
Company Name: *Oasys Water*
Country : USA
Promoters/Investors: Aaron Mandell
Product: Engineered Osmosis™ (EO™)
Patent : Pending
Market status: Will go commercial in 2011

Forward Osmosis

- Saves 70 % on specific power consumption!
- Increases production efficiency >5 times!
- Robust and scalable

How It works ?

- Using sea water as the draw solution



Company Name: *Danfoss AquaZ*

Country : South Africa

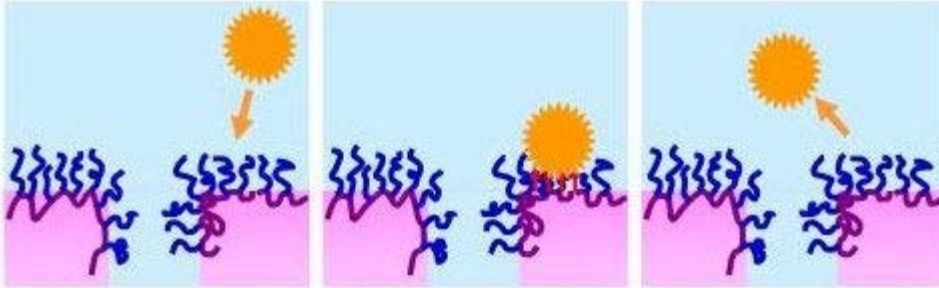
Promoters/Investors :

Product: *Aquaporin™*

Patent :

Market status:

Fouling Resistant Membranes



When the foulant (orange) approaches the brush-covered membrane surface, it compresses the PEO chains. As the chains spring back, the foulant is pushed away.

How It works ?

- Uses “smart comb” copolymer technology so that fouling molecules are repelled back from the membrane
- An additive to polyacrylonitrile (PAN)-based ultrafiltration membranes

Company Name: *Clean Membranes*
Country : USA
Promoters/Investors : Private
Product: *Antifouling Membranes*
Patent :
Market status:



Reduce Biofouling of Membranes

Company Name: *Advanced Hydro*
Country : Austin, Texas USA
Promoters/Investors : Quercustrust and 21 Ventures
Product: *Membranes for filtration*
.
Patent : Pending
Market status: Field test and pilots are in progress.

How It works ?

- Based on a deposition technique to adhere Polydopamine, a highly hydrophilic polymer onto the surface of commercial membranes.
- Simply flowing a specialized solution through the module.
- Deposition on Polysulfone ultrafiltration, Polyamide reverse osmosis and Nanofiltration, Polypropylene microfiltration and Polytetrafluoroethylene microfiltration membranes.
- 30-50% improvement - antifouling
- Polysulfone ultrafiltration, Polyamide reverse osmosis and Nanofiltration, Polypropylene microfiltration and Polytetrafluoroethylene microfiltration membranes.

Membraneless Filtration



How It works ?

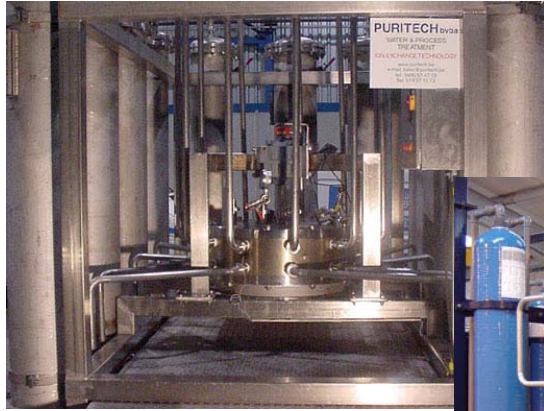
- Membrane-less filtration systems that have a very low energy cost of roughly .11 watts per gallon per hour
- 50 cm long, 1 mm in diameter piece of plastic tubing separates particles as small as 1 micron in size by centrifugal force
- Needs a continuous flow and cannot remove bacteria as they are smaller than 1micron in size.

Company Name: None
Country : USA
Promoters/Investors : PARC researchers
Product: *Spiral concentrator, for use as
 pretreatment for desalination*
Patent :
Market status: Scale up under progress

Electro Mechanical

Zero Effluent Nitrate Removal by Multi Diffusion Polyethylene Valve

How It works ?



➤ Stainless steel valve for juice purification



➤ Nitrogen removal for municipal treatment plant

- Purifies water for industrial use and food processing industries
- Uses ion exchange resins and a multiport valve.
- The valve is the only movable object and the resins can be arranged in any manner and do not move
- This reduces wear and tear, improves maintenance
- When used for water demineralization, it removes heavy metals and nitrates

Company Name: *Ionex*
Country : *Belgium*
Promoters/Investors :
Product : *Pure Water*
Patent :
Market status: *In use*

Improve Crop Yields, Saves Water and Treats Salt Water



How It works ?

- Induces an electromagnetic current into the water optimizing soil structure and increasing mineral and nutrient uptake.
- And prevents calcium and chemical buildup in pipes

Company Name: *Aqua-Phyd, Inc. ,*
Country : USA
Promoters/Investors :
Product: *Non-chemical water and soil treatment technology for use in irrigation, water supply, golf courses*
Patent : US 2007/0205158 AI
Market status: Installed in USA

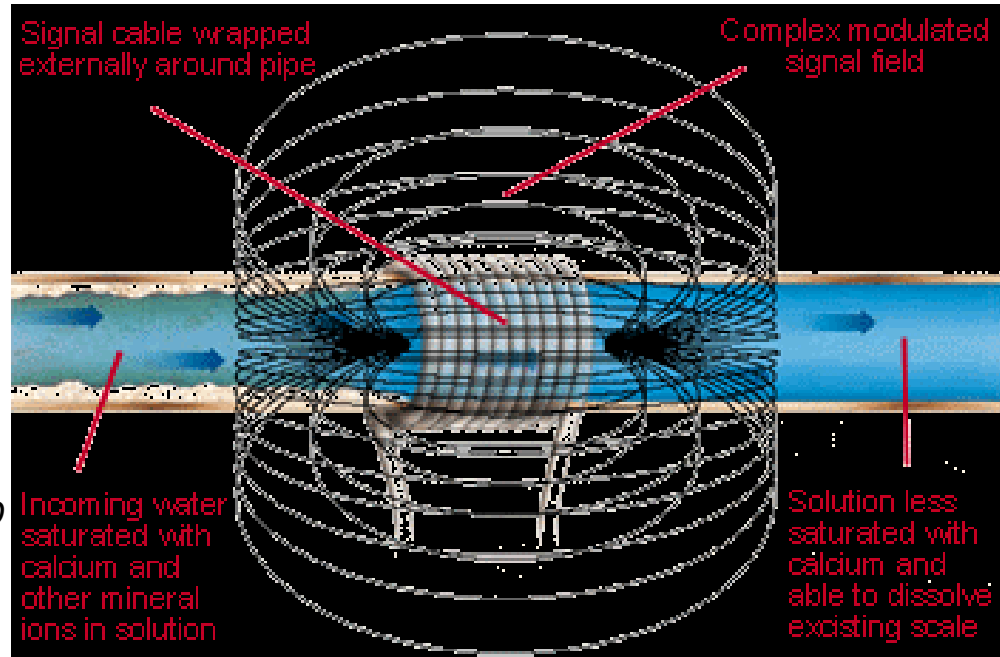
Continuous Electrodeionization for Descaling



Company Name: *Aquagenesis*
Country : USA
Promoters/Investors :
Product: *Descaling, purification by RO*
Patent :
Market status: For residential, commercial and industrial use

How It works ?

- Based on a proven proprietary and patented technology
- Developed at Siemens Water Technologies Corp.
- Suitable for pharma, semiconductor and power applications



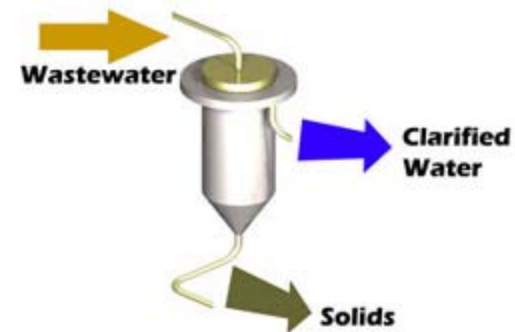
Water Reuse



Company Name:	<i>Epuramat</i>
Country :	Luxembourg
Promoters/Investors :	Private
Product:	<i>Box4Water, ExSep (extreme separation)</i>
Patent :	Appln no. 12/092334
Market status:	Installed in Europe

How It works ?

- Epuramat's 'ExSep' (Extreme Separation) unit replaces primary and most of the secondary wastewater treatments in one small unit.
- The ExSep accelerates the extraction process by taking advantage of the inertia of solid materials in a hydraulic re-directioning process

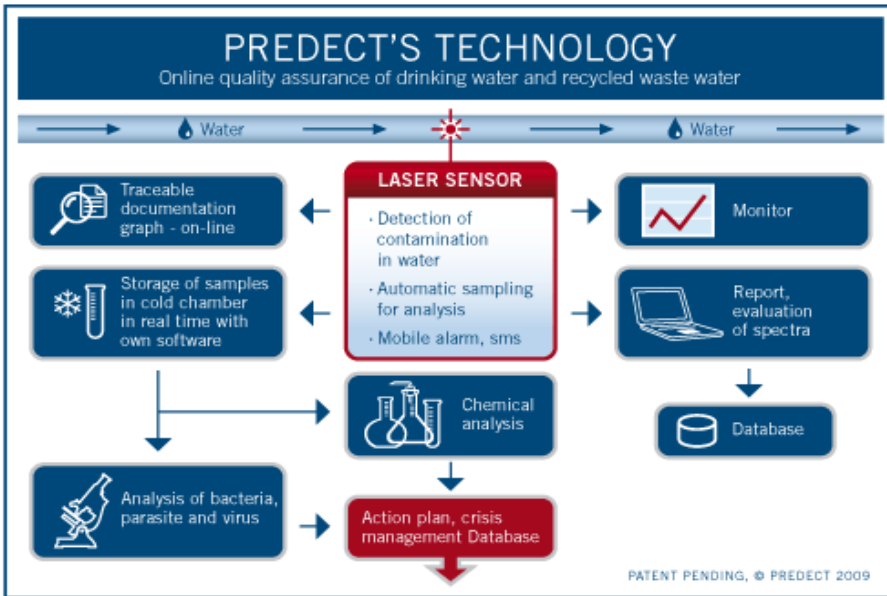


IT

Real Time Water Monitoring

How It works ?

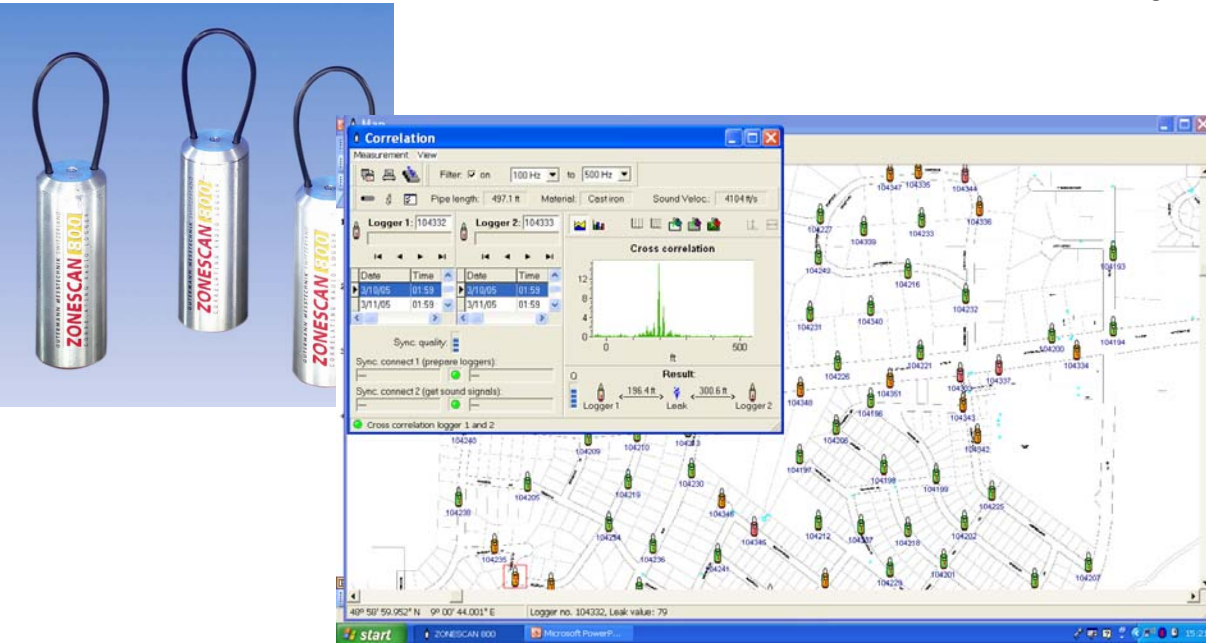
- When a laser beam is beamed through water, it causes refraction, light scattering and light extinction
- A software algorithm based on specific treatment plant's water profile analyses it,
- Detects the microbial contamination and classifies pollutants.



Company Name: *Predect*
Country : Sweden
Promoters/Investors : Sudhir and Ulla Choudhary
Product: *Predect 100, Predect 300, Predect 500*
Patent :
Market status: 6 installations since 2008

Acoustic Leak Detection Technology

How It works ?



Company Name: *Gutermann International*

Country : Zurich, Switzerland

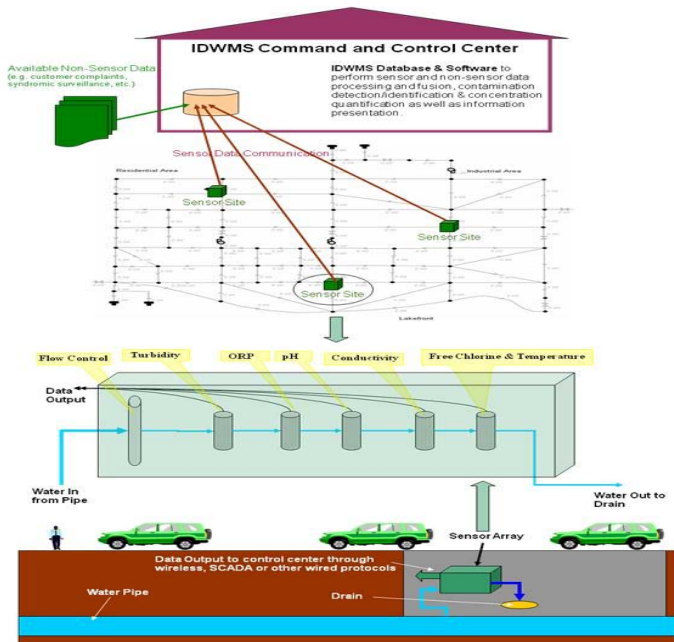
Promoters/Investors :

Product: *STAR-ZoneScan*

Patent :

Market status: in use

Continuous Online Monitoring



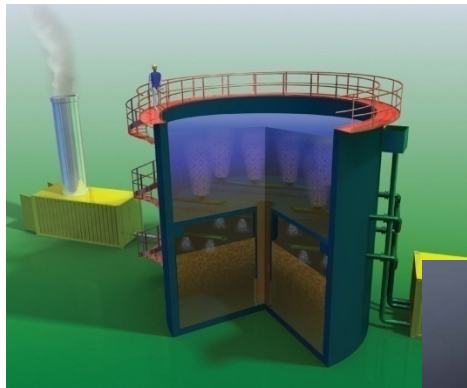
How It works ?

- Contaminant assessment , online monitoring is done by online spectrometric method
- It is based on AUG Signals' advanced detection, data fusion, probability and decision making algorithms.

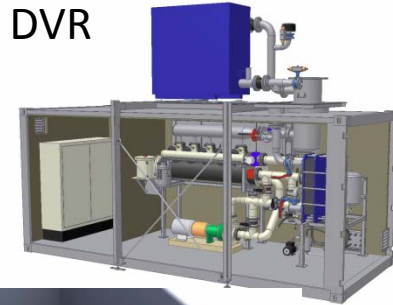
Company Name: *A.U.G Signals Ltd*
Country : Canada
Promoters/Investors :
Product: *Triton intelligent water monitoring*
Patent :
Market status:

Interdisciplinary Sciences

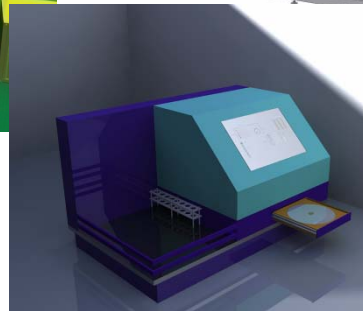
Dynamic Vapor Recompression (DVR)



DANA



DVR



Aquascope

How It works ?

- DANA - Dynamic ANaerobic and Aerobic Solution
- Aquascope - biomonitor to continuously monitor the microbiological composition of a fluid on line. based on Fluorescent In Situ Hybridisation (FISH), using bacteria-specific DNA-probes.
- ToxBox - an autonomous, sensitive and semi specific technique for rapid detection of several groups of biotoxicity. (to develop into autonomous detection system for measuring toxicity in for example drinking water distribution networks.)

Company Name: *Aquaexplorer*
Country : Netherlands
Promoters/Investors : Spin off from Van Hall Institute
Product: *Aquascope, energy efficient evaporation technology for treatment of brine streams, DANA (in partner with Aqwise) , ToxBox*
Patent :
Market status: Early stage firm,

Structured Matrix Technology

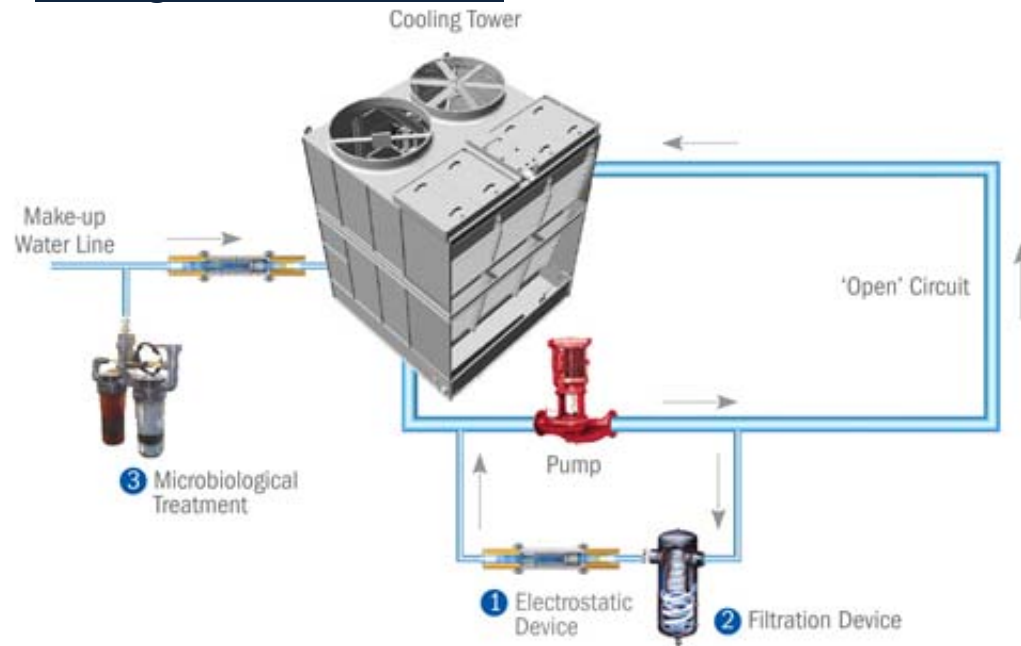


Company Name: *General Ecology*
Country : USA
Promoters/Investors : Richard T. Williams
Product: *First Need XL Water Purifier*
Patent : 5569374
Market status: Available online and in stores

How It works ?

- 3 stage purification
 - Removes pesticides and heavy metals
 - Disinfects
 - Works for 150 gal
 - New Costs \$112
 - Cartridge costs \$56
-
- A biocide and a filter with 0.1 u to 10 u
Structured Matrix Tech :
 1. Ultrafine Submicron Microfiltration,
 2. Molecular Capture and Broad Spectrum
 3. Adsorption
 4. Electrochemical Separations,

Cooling Towers Treatment



How It works ?

- Electrostatic Device
- Filtration Device
- Microbiological Treatment
- Precipitates calcium carbonate and acts to remove existing scale from cooling equipment surfaces and prevent future scaling, then filters and goes through microbiological treatment
- Scaling, Biofouling and corrosion are reduced

Company Name: *EnviroTowers inc. now Evandtec Inc.,*

Country : Canada

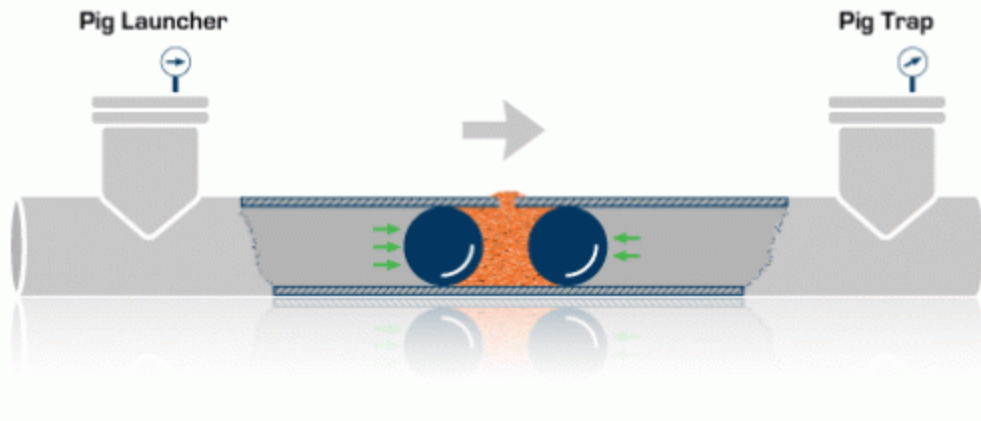
Promoters/Investors : XPV Capital

Product: *Cooling tower treatment*

Patent :

Market status: In use

Leak Detection and Sealing

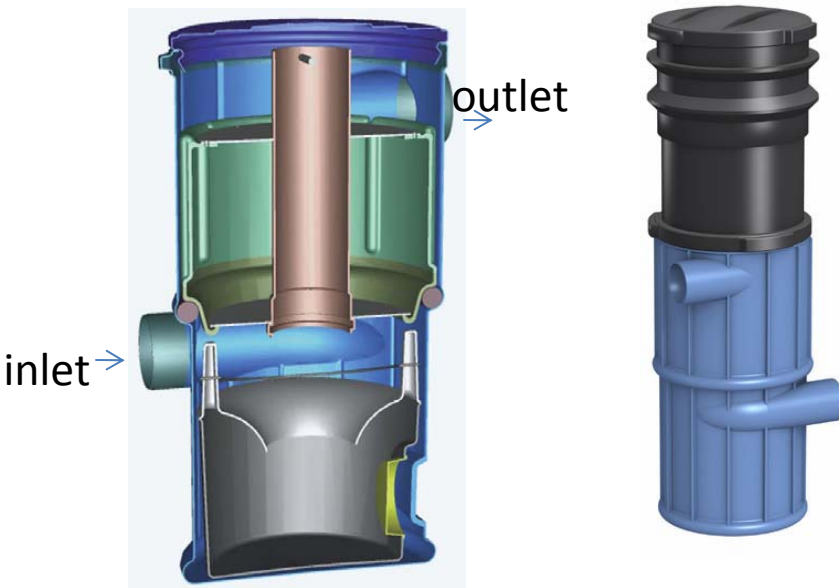


How It works ?

- Specially formulated spongy, bullet-shaped object resembling a pig is sent through the pipe internally
- The curative substance is “trapped” between two “pigs”; and once reaching the area of the leaks is literally forced into the cavity and seals it internally.

Company Name: *Curapipe Technologies*
Country : Israel
Promoters/Investors : Private
Product: *Curapipe systems*
Patent :
Market status: Early stage start up

Nitrate, Phosphate and Heavy Metals Removal



How It works ?

- Sedimentation, filtration, adsorption and precipitation on to the concrete fillers
- Water enters through the inlet and the sediments are collected at the bottom
- Laminar flow get the water through the cement fillers where filtration occurs
- Heavy metals and other dissolved solids are adsorbed by the modified porous concrete surface
- The pH is buffered which causes precipitation and the fine pores allow water to seep through the media

Company Name: *Freytech Inc.*
Country : USA
Promoters/Investors : Private
Product: *Ecostorm plus*
Patent :
Market status: In use

Single Washable Filter and UV



How It works ?

- A single washable filter and Ultraviolet sterilization element which kills virtually all micro-organisms.
- No chemicals added.
- Powered by a solar charged battery, or an external source, like a vehicle battery.
- The system can produce up to 30 gallons per hour.

Company Name: *Fourwinds Enterprises*
Country : USA
Promoters/Investors :
Product: *Portable water purification unit*
Patent : Pending
Market status: Looking for funding

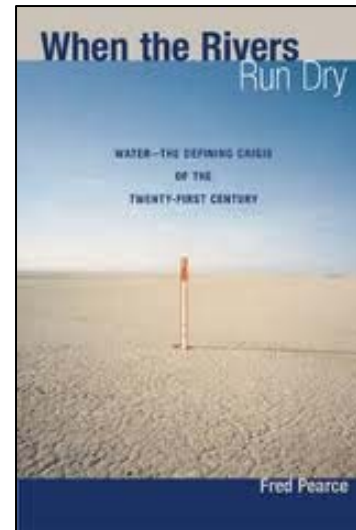
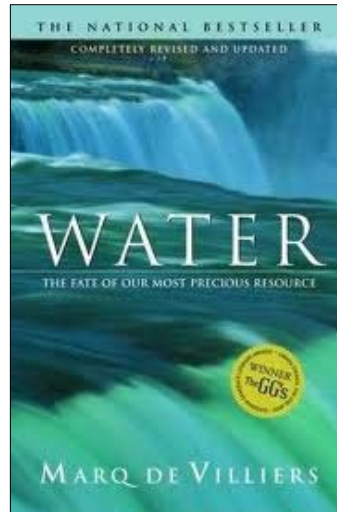
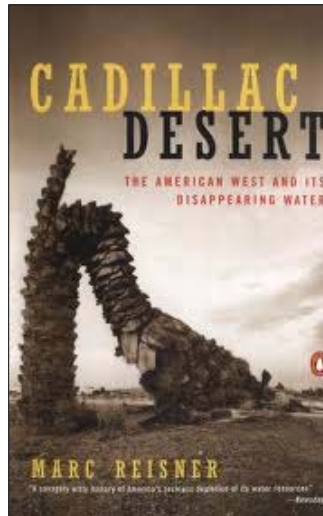
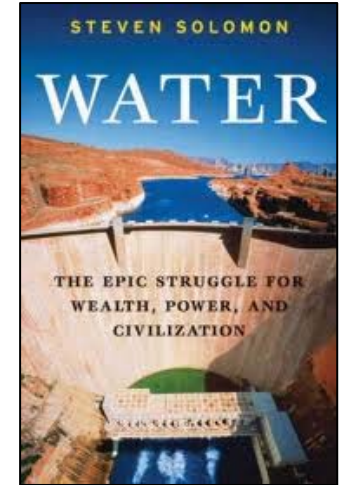
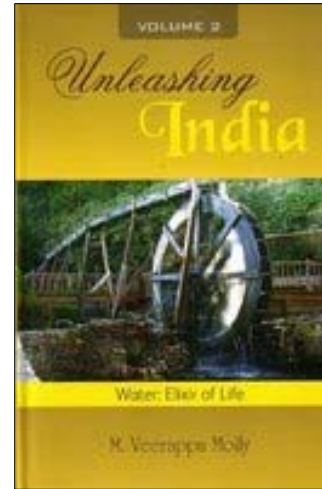
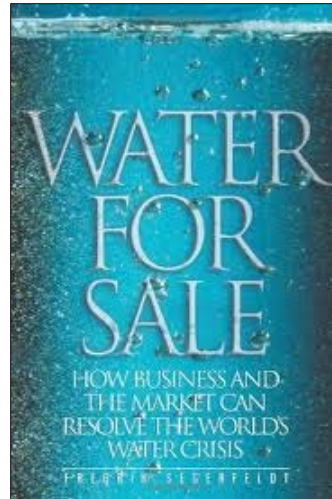
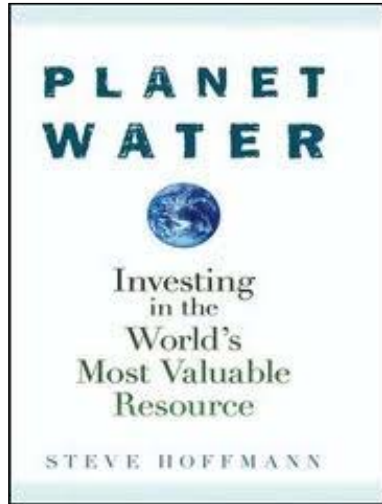
Dissolved Metals Detection by Fluorescence

How it works?

- ToxAlert - real time toxin identification using Extreme UV Fluorescence
- TapeAlert detects biological spores to single spore level
- PDL detects pipeline defects
- Patented method to capture the Nano Cellular Carbon (NCC) structure upto 100 fold concentration and
- A novel x-ray fluorescence geometry (XRF) for detection

Company Name: *American Micro Detections Systems*
Country : USA
Promoters/Investors : Badger Meter, Inc
Product: *ToxAlert, TapeAlert, PDL, REX x-ray Fluorescence Instrument*
Patent : US 7016462
Market status: Operations in place by June 2011

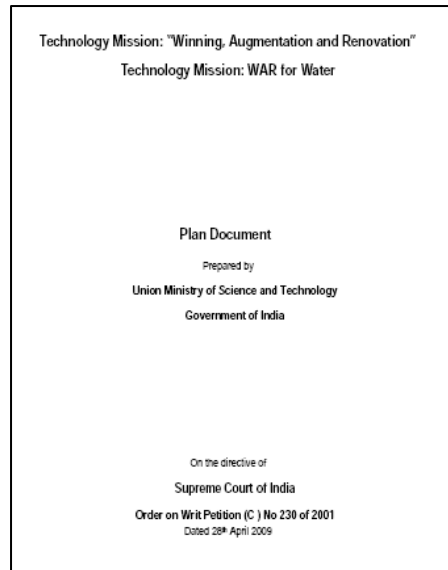
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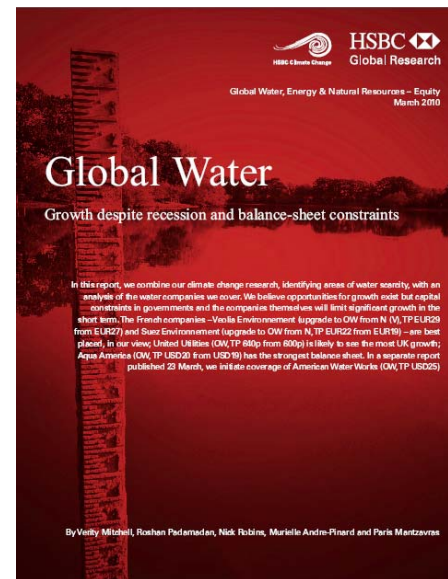
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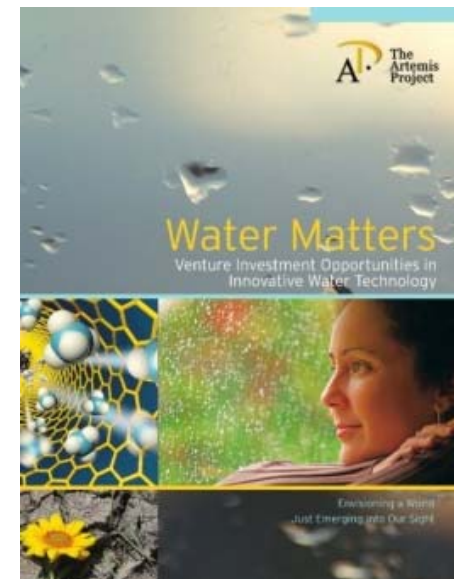
McKinsey



DST

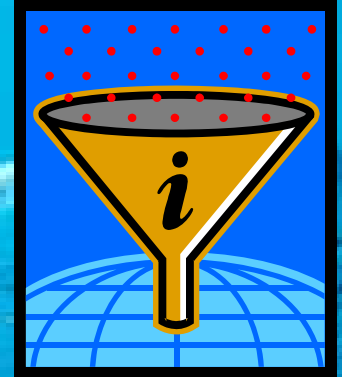


HSBC



Artemis Project

Thank You.



water@venturecenter.co.in

Slides:

<http://venturecenter.co.in/research.php>