

Package Wastewater Treatment Plant

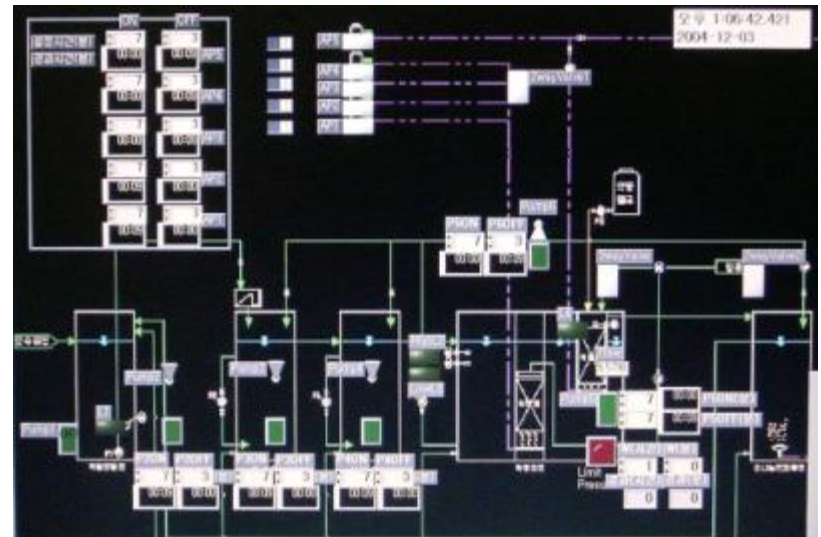
May 6, 2009

Centennial Technology, Co



Centennial Package Wastewater Treatment Plant

- Small-scale plant for individual onsite or clustered wastewater treatment system processing 5,000 to 40,000 gpd
- Pre-engineered & fabricated, then delivered, minimizing installation costs
- Simple operation, minimum maintenance & attendance requirements
- Remote monitoring and control by internet
- Small foot-print, containerized, mobile and factory tested
- Cost effective solutions



Pre-engineered & fabricated, then delivered to the site

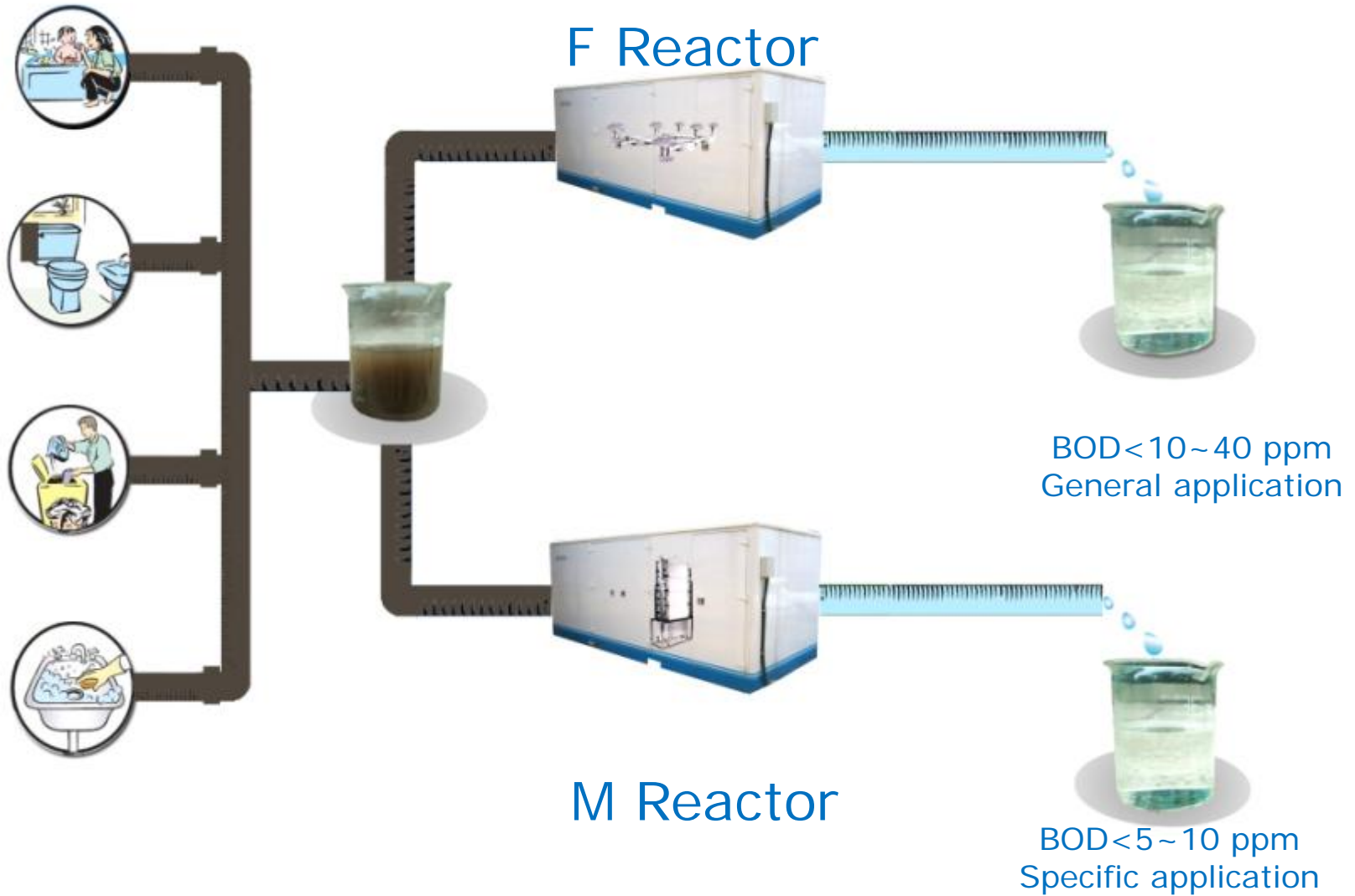


Field Operation 2005 – 2008



Performance

Two types of treatment systems according to water quality discharge requirements



M Reactor

Submerged Block Membranes

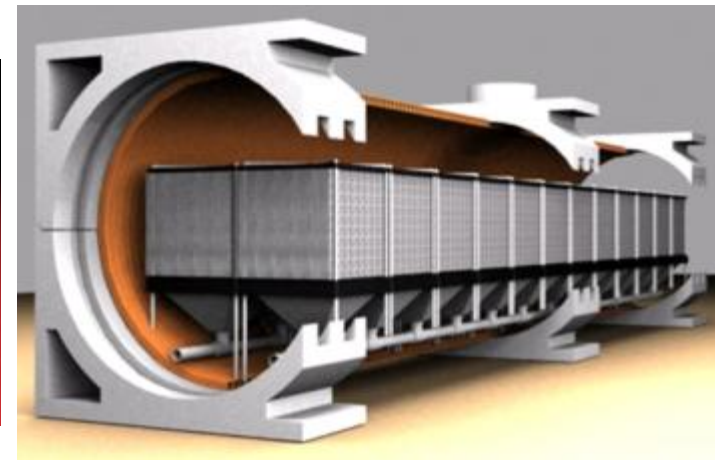
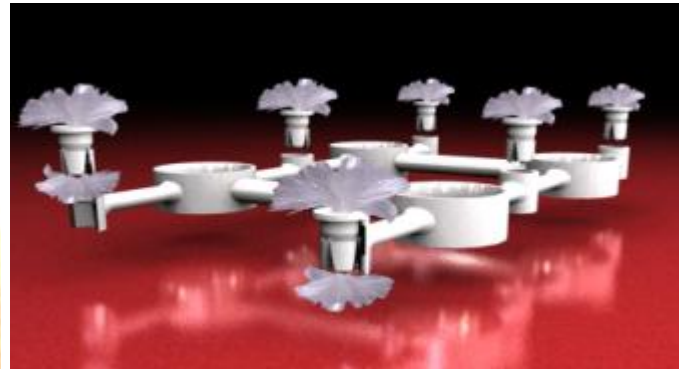
- Modular block-type membranes for submerged flat membrane bioreactor
- Automated in-situ and in-line chemical cleaning may eliminates frequent intensive manual cleaning in place.
- High effluent quality ($BOD_5 < 5\sim 10$ ppm)



F Reactor

Modular Surface Oxidation Unit with Artificial Grass

- Modular fixed-film reactor with the bundles of grass-like fibers inside the honeycombs to increase surface area
- Mimics the sediment trap and biological oxidation processes of vegetation in natural streams
- Reduces BOD5 and TSS to levels that meet local environmental standards (BOD5 < 10~40 ppm)



Water Quality



Target Markets

- Decentralized sewage treatment for new suburban new development
- Oil fields
- Construction sites
- Disaster recovery site
- Military camps and parks
- Hotels, resorts, restaurants and apartments
- Passenger ships, cruise vessels & remote islands

IP Status

- Submerged Block Membrane patented in Korea and filed PCT and Japan. (10-0722332, PCT/KR2007/002410)
- Modular fixed-film reactor patented in Korea (10-0662483, 20-0405655, 10-0845081)
- Some improvements are patent pending.

System Costs

Type	Discharge (ppm)	Flow (gallon/day)	Cost (USD)	Unit Cost (USD/gallon)
M-Reactor Package Plant	BOD < 5 TSS < 1 TN < 3 TP < 0.5	6,500 (20', 16 homes)	150,000-250,000	23.0 – 38.5
		13,000 (40', 32 homes)	250,000-400,000	19.2 – 30.7
F-Reactor Package Plant	BOD < 20 TSS < 20 TN < 10 TP < 3	18,000 (20', 45 homes)	150,000-250,000	8.3 – 13.9
		40,000 (40', 100 homes)	300,000-400,000	7.5 – 10.0

Development Status

- Commercial MBR package plants with NP removal processes successfully operating in field since 2005.
- Submerged flat membranes installed and tested at over 100 field sites.
- Complete plant tested in two sites for three years achieving strong results.
- Manufacturing molds for plastic components of modular fixed-film reactor made in 2007.
- Automated in-situ and in-line cleaning method for SBM in testing and available this year.
- New exterior design with wood siding to be introduced 2009.

Team Status

Company	Name	Position	Experience	Role
Centennial Technology	Mr. S M Kim	Chairman	40 years in financing	Management and Financing
	Dr. E H Kim	CEO	15 years in environmental science	Management and Promotion
	Dr. S H Kahng	CTO	24 years in water pollution control	Strategic planning and R&D
	Dr. K S Park	Tech Director	27 years in electronic & control	System design and production
	Mr. I S Choi	Tech Director	20 years in wastewater treatment	System design and production
	Mr. N S Kwon	Sales Director	23 years in sales & marketing	Sales & marketing
Pure EnviTech	Dr. J Y Jang	CEO	25 years in membrane technologies	Membrane technologies
	Mr. K M Jang	Tech Director	25 years in membrane technologies	Membrane technologies