



**inVentures
Technologies
incorporated**

**Creating
Value
Through
inNovation**

www.gasinfusion.com

The iSOC™ *Advantage*

What is iSOC™?

- An innovative bioremediation technology
- Accelerates natural attenuation
- Currently operating in more than 25 states on 100 sites
- Approved in many states for petroleum and drycleaning sites
- Pay-for-performance technology (fixed costs & high performance)

How Does The Technology Work?

- Will infuse any gas into a liquid
- Infusion occurs when pressure of the gas is less than the pressure of the liquid
- Transfers gases into the ground water, without creating bubbles
- Supersaturates the ground water with low decay gases
- Oxygen concentration can range from 40 to 200 ppm depending on iSOC depth

Co-inFusion (Cometabolic treatment by direct infusion)

- For use in the bioremediation of chlorinated solvents
- Infuse oxygen and alkane gases (methane and propane) in same well
- Minimize competition for enzymes between the substrate and target contaminant
- No production of recalcitrant daughter products from cometabolic bioremediation
- Improve bacterial growth and rapid biodegradation of target pollutants

Site Compatibility

- Use as primary remediation strategy to attack the source
- Use to polish off low level contaminated sites
- Use as curtain to stop off-site plume migration
- Easily moved to new injection point or new site
- Can be used on petroleum or chlorinated solvents
- Not bothered by high levels of iron, BOD₅ or COD

Radius of Influence

- Typically 10-15 feet: Higher in tight soils due to molecular dispersion
- Primarily depends on ground water velocity and the oxygen demands of the aquifer
- Can be installed at any depth -- the deeper the water column the higher the gas infused
- Infuses 4 to 10 times more dissolved gas than any competitive technology

Installation

- Installs in a few hours
- Will work in a 2 inch monitoring well or larger
- The unit measures 1.62 inches by 15 inches
- 0.25 inch outside diameter ployflow tubing connects all parts
- Setup requires: iSOC™ unit, control panel, two-stage low flow regulator & gas cylinder

Turning The System On

- Turn the regulator counterclockwise to make sure the pressure of the regulator is at zero
- Open gas valve on the tank and make sure there is no gas flow (none when set at zero)
- Connect all equipment with ployflow tubing
- Calculate injection well head pressure and adjust to operating pressure following the installation instructions accompanying your iSOCs or refer to our website for the iSOC User Guide or contact your iSOC sales representative who will answer your questions
- Set inlet gas pressure slightly higher than well head pressure
- Pressurize the system, set rotameter to 25 cc/min and then install to bottom of well/or target point
- Set rotameter to 15 cc/min (rotameter acts as mini-regulator too)
- Leak test all fittings

Operation & Maintenance

- Very low cost O&M technology
- Has no moving parts and does not require electricity
- Oxygen transfer efficiency is nearly 100%
- 5 iSOC set up annual operating cost is between \$400 and \$800
- One iSOC unit will use 0.77 cubic feet of oxygen per day
- A typical 40 cubic foot cylinder (7 x 18 inches) will last approximately 50 days per iSOC
- Site visits: Change out tanks and do regular sampling

Case Studies

- Gasoline constituents reduced by 95–100% within 10 months of installation
- Pilot study ran 132 days. Benzene reduced between 54% and 100%
- Heterotrophic bacteria plate count increased in most wells by between 470% to 8000%
- Elevated levels of ferrous iron, BOD5, & COD did not inhibit aerobic bacterial degradation

2003 Price Schedule:

iSOC™ unit: US\$3,500.00

1-unit control panel: US\$495.00

3-unit control panel: US\$995.00

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For your nearest *iSOC*[™] sales and technical representative please refer to Sales and Inquiries on the *iSOC*[™] page of our website