This is a brochure I wrote to sell a new kind of sewage pump. Not very glamorous, but pretty exciting, because it's really a better pump for municipalities and developers.

Collects, Grinds, Disposes

PowerSewer

PowerSewer™
An economical alternative to gravity sewers and septic tanks.

Municipalities and residential developers are faced with the challenge of providing cost-effective collection and treatment of wastewater. The traditional systems of gravity and septic are all challenged to provide answers to many small communities everywhere.

Obstacles for installing gravity sewers include low-density housing, rocky soil, high groundwater, infiltration, unfavorable topography requiring deep trenches and numerous pump stations. Performance obstacles for septic tanks include high groundwater, tight clay-like soil that slows absorption and overly porous soil that allows effluent to flow freely into groundwater without sufficient treatment.

The PowerSewer™ System
Interon™ introduces the PowerSewer™ system, the next generation in residential wastewater collection technology. The PowerSewer system is a low-pressure sewer system that collects, grinds and pumps residential wastewater. The unit is slightly larger than a hot water heater and typically installs in the yard close to the house. Sewage from the house flows into the underground collection tank and is cut into slivers, creating a slurry that is pumped through small diameter piping. The piping is installed in narrow, shallow trenches that follow the contour of the land.

The PowerSewer:
A Preferred Sewer System
The PowerSewer is designed to provide years of trouble free performance, have low energy consumption and be visually and physically unobtrusive.

Low Pressure Sewers:
An Alternative Sewer System
The low pressure sewer concept was conceived in the mid-1960's. Since then, over 250,000 units have been installed, establishing pressure sewers as a proven alternative to gravity sewer systems and septic tanks. The PowerSewer incorporates many innovative features that provide a product capable of reaching a wider market acceptance.

With so many new features and benefits, the PowerSewer™ is in a class of its own.

Lift handle
Quick disconnect
Cast discharge

Low Maintenance
Advance technology and modular construction make the PowerSewer™ system easy to maintain. A non-contact, solid-state level control sensor eliminates the frequent maintenance associated with mechanical level control systems. The grinder pump can be quickly removed for maintenance without using tools. The modular construction allows for simple, lower cost field service.

Low Operating Costs
The electrical costs required to operate the PowerSewer are usually paid for by the homeowner. PowerSewers typically use about the same energy as turning on a 100-watt light bulb for three hours per day. This graph compares the annual energy consumption of typical household appliances with the PowerSewer.

$12 PowerSewer 140 kwh
$12 100 watt light bulb 141 kwh
$22 coffee maker 258 kwh
$114 refrigerator 1331 kwh
$187 range 2190 kwh
$489 hot water heater 5754 kwh

Easy to Install
The PowerSewer is shipped from the factory complete, eliminating costly guesswork during installation. The product is very easy to install and has been designed to significantly lower installation times.

Homeowner Friendly
Designed specifically for residential use, the PowerSewer displays a unique balance between performance, aesthetics, safety, and ease of use. Quick access to the collection tank is protected by a lockable low profile fiberglass cover. The PowerSewer can be installed directly in the lawn or hidden within landscaping.

The system monitor is a small, attractive wall-mounted enclosure. All of the user-friendly controls are discretely placed behind a transparent door.

Designed to solve problems, not create them.

(side bar column)
PowerSewer benefits
Engineer
Provides an improved and affordable sewer solution

Predictable performance in all types of terrain
Eliminates problems created by infiltration and inflow
High head pressure capabilities

Community
Protects public health and service
More economical than conventional sewer systems
Electrical power costs paid by direct user
More environmentally safe for rivers and lakes

Developer
Deferred costs, only pay when lots are sold
Property values increased by centralized sewers
Ability to develop previously unsellable lots

Contractor
Lower labor and material installation costs
Flexible piping is fast and easy to install
Safer site conditions with shallow, narrow trenches
Complete system

Residents
Lower energy and maintenance costs
No modifications to household plumbing required
Less disruptive to existing landscaping and roads
No on-site drainage field

Features & Benefits

1. RTM or Fiberglass Cover
The low profile RTM or fiberglass cover is rated for a 2500-pound live wheel load. Six bolts are used to secure the watertight cover. Optional, lockable, internal tether prevents unauthorized access.

2. Ultrasonic Level Control
The level controller is a non-contact sensor with no moving parts, is virtually maintenance-free with million-cycle reliability.

3. Flex Connector
A four-foot flexible polyethylene pipe compensates for misalignment between tank and service line and protects the service line connection from frost heave and tank settlement. The connector is fitted with swaged-on PVC couplings, providing for a solvent welded transition to PVC pipe, valves or fittings.

4. Anti-Shear Discharge
Integrally molded, reverse boss protects the discharge service line from the shear forces generated by backfill and tank settlement.

5. Vertical Inlet
The vertical inlet allows for easy up and down and side-to-side inlet pipe adjustments. The downward inlet also stirs up any solids on the bottom of the tank and directs solids to the grinding plane.

6. Electrical Conduits
Flexible PVC electrical conduits are factory installed to meet the National Electrical Code for direct bury cables.

7. Shallow Dry Well
Integrally molded dry well houses the electrical and sensor junction box, isolation valve and ultrasonic level sensor. Sealed vacuum-formed lid prevents exposure to sewage and odors.

8. Control Box
Electrical connections for the pump and level sensor are protected by a NEMA 4 fiberglass enclosure with a clear lid for viewing the system status LED's.

9. Roto-Molded Tank
The large capacity, polyethylene tank provides additional reserve capacity during power outages and requires fewer pump starts, thus maximizing pump life. The integrally molded tank has no welded seams to fail and eliminates the need for fastener penetrations.

10. Pump Quick Disconnect
The quick disconnect system for easy pump removal includes the lift handle, guide rail and hydraulic sealing flange.

11. Grinder Pump
Self-regulating two HP centrifugal grinder pump is non-overloading and fully functional from minus 60 to 106 feet of head pressure.

The PowerSewer™ centrifugal grinder pump has unmatched grinding capabilities combined with terrific pumping power.

The PowerSewer™ centrifugal pump represents a new direction in grinder pump technology. All assumptions and conventional designs were set aside in a total re-engineering effort. The result of this effort was a new and better way to grind and pump residential sewage.

The grinder pump assembly includes a grinder pump connected to a plumbing tree having a hydraulic sealing flange, self-cleaning check valve and anti-siphon valve.

The pump itself has a self-regulating motor which is fully functional from minus 60 to 106 feet of total dynamic head pressure. With this kind of pumping performance, the PowerSewer minimizes or eliminates the need for costly lift stations.

This two horsepower pump motor has a short shaft design to minimize shaft deflection, improve grinding and keep cutters sharp longer.

The illustration below demonstrates how the PowerSewer is applied as the sole means of sewage collection in rocky soil, dense clay and high ground water conditions.

The graph shows pump performance of 45 gallons per minute at minus 60 feet to 10 gallons per minute at 100 feet of dynamic head pressure.

With this amount of pumping power, there is little need for costly pumping stations.
Wastewater Treatment Plant
Pressure Main Groundwater Impermeable Clay Bedrock

PowerSewer Pump Benefits
Fully operational from minus 60 to 106 feet of head pressure
Reduces or eliminates costly lift stations
Compact and light, weighs only 75 pounds
Non-overloading design, capable of handling negative head
Deflection resistant, short motor shaft keeps cutters sharp
Two vane, angle face, non clogging, balanced impeller
Built-in thermal overload protection prevents head damage
Self regulating performance, absorbs peak flow conditions.

User Friendly System Monitor
The system monitor is a small, attractive wall mounted enclosure. All of the user friendly controls are behind a clear swing open door.

System Monitor Features
The system monitor features visual and audible indication of system status and alarms. The alarms include maintenance required, high tank level, control system failure, and pump power failure. The system monitor features a stop button to silence the audible alarm while the system condition is being evaluated. It also features a test button to test the alarm lights and horn. The system monitor also displays the status of the optional ESP monitoring and maintenance program.

UltraSonic Level Control
Eliminates sticking floats and costly service calls.

The Interon™ sensor offers a significantly new and better way to control grinder pumps without contacting the wastewater. The ULC-1601 combines maintenance-free ultrasonic level measurement and comprehensive pump control in a compact, self-contained unit. The self-contained design simplifies installation, configuration, and service. All level settings and user selections are remotely entered so the changes to pump control functions can be made without opening or entering the PowerSewer wet well.

Features & Benefits
Non-contact level measurement
No moving parts to stick or fail
Built-in microprocessor allows for remote control
Self-testing circuitry verifies proper operation
Resets itself after power loss or other fault
Grease build-up is reduced by random on, level staggering
Million cycle reliability

Ships complete… Easy to install

Anticipate problems before they occur.

ESP Program
Interon™ offers four maintenance programs for the PowerSewer™. Each of these options are designed to anticipate failures to limit the possibility of homeowner inconvenience.

ESP I: Data Acquisition and Field Service
This program is custom designed software that permits a field service technician to access performance data directly from the PowerSewer into a personal computer. The ability to download the Power Sewer performance data provides a means of collecting information for analysis and troubleshooting. ESP-I software also allows field adjustment to the PowerSewer Control System.

ESP II: Monitoring Service*
This program is a monitoring service provided by Interon. The PowerSewer is equipped with the modem module to transmit (via telephone line) any alarm conditions or performance data to the Interon Service Center. Here, trained technicians will analyze the transmitted data and make an attempt to correct the condition by transmitting a series of commands. If the alarm condition cannot be remedied by telephone, a field service technician will be dispatched.
*requires modem

ESP III: Maintenance Service*

This option is like that of the ESP II contract service except that Interon would take total responsibility to prevent and to satisfy any alarm condition from a PowerSewer. This service is designed to eliminate the need for the homeowner and/or municipality to be involved in the event of a PowerSewer equipment failure.
*requires modem

ESP IV: Self-Monitoring*
This option allows a municipality or a service company to monitor and provide service for a large network of PowerSewers. This service option requires the purchase of the PowerSewer Modems and Monitoring Software.
*requires modem

ESP Routine Reporting
In addition to reporting alarm conditions, the PowerSewer is programmed to periodically transmit all performance conditions to the Service Center for a system performance evaluation. This predictive maintenance monitoring program can diagnose the condition of the PowerSewer system and determine if any field service calls will be required in the near future. This performance evaluation will minimize system interruptions and inconvenience to the homeowners.

ESP Service Agreement
The ESP II & III service programs require the signing of a service agreement between Interon and the homeowner or local municipality. This service agreement contains the following general duties of Interon to the PowerSewer owner:

ESP II: Monitoring Service
Continuous monitoring of the PowerSewer
Contact authorized service provider as required
Annual PowerSewer Performance Report as requested

ESP III: Maintenance Service
Continuous monitoring of the PowerSewer
Periodic predictive maintenance
PowerSewer service and repair
Replacement and installation of faulty equipment
Annual PowerSewer Performance Report as requested

ESP Benefits
Homeowner Benefits
Problems can be solved with no service calls
Minimal homeowner inconvenience
Servicemen can be dispatched automatically
Problems can be resolved before they happen
Continuous monitoring program

Predictive maintenance limits future problems

Builder Benefits
No lot discounts because of sewer system
Satisfied homeowners
Less expensive than gravity sewer systems

Municipality Benefits
Known budget maintenance costs for sewers
Ability to monitor a large network of PowerSewers
Eliminates spare parts inventory and personnel
Problems can be resolved before they happen

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