

Well Dewatering Pumps Powered by the Sun Increase LFG Production

As part of SWANApalooza

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Introduction

- Landfill leachate generation
- Well flooding causes
- Effects of well flooding
- Methods of Controlling Liquids in Wells



Liquid Removal Issues

- Pump infrastructure
- Leachate Removal
- Continuous Operation
- Reliability



Pump Types – Pneumatic Submersible

- Pneumatic Pumps
- Many Available Sizes
- Entire Pump Downhole
- Require Compressed Air Production and Distribution



Pump Types – Pneumatic Submersible

- Pneumatic Pump Limitations
- Compressed Air Production
- Compressed Air Distribution



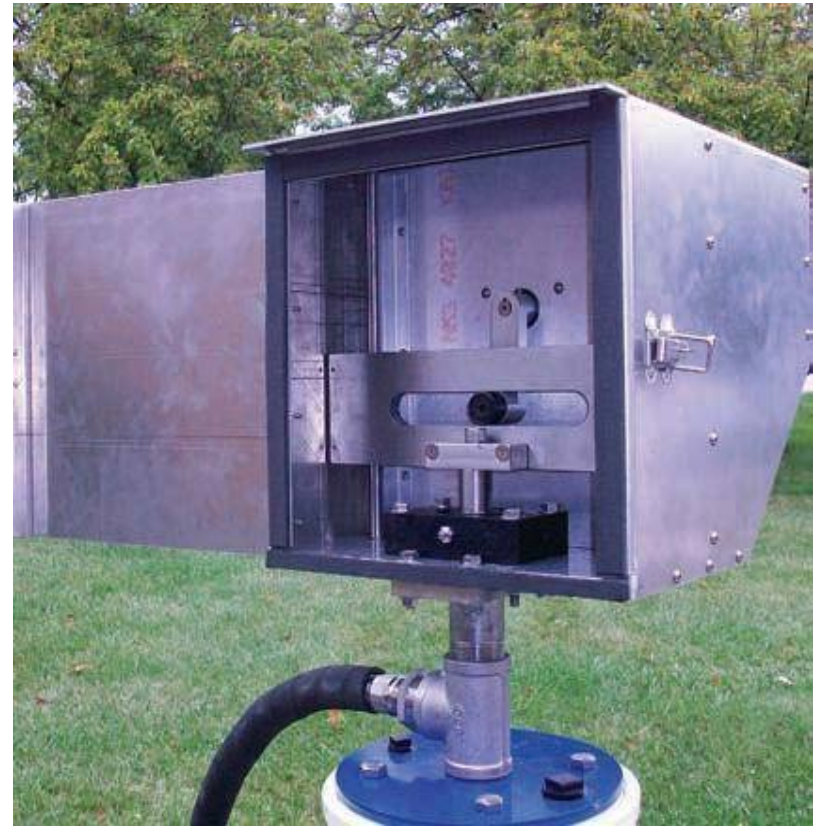
Pump Types – Electric Submersible

- Electric Submersible Pumps
- Limited Available Sizes
- Energized Pump Downhole
- Require High Voltage Electrical Production and Distribution



Pump Types – Electric Piston Pump

- Electric Piston Pumps
- Limited Available Sizes
- Limited Downhole Parts
- Require Electrical Lines
- All Motive Components Above Ground-Not in Well



Pump Types – All Electric

- Electric Pump Limitations
- Power Feed(s)
- Power Generation
- Power Distribution



Pump Types – Solar Electric Piston Pumps

- Solar Electric Pumps
- No Power Feed
- Self Contained
- Unattended Operation



Pump Types – Solar Electric

- Solar Electric Pump Advantages
- Remote Location Possibilities
- With or Without Batteries



Case Study

- Well Flooding
- Pathways for Leachate
- Immediate Need
- No power or Compressed Air Available
- Abundant Sunshine
- Choice of Solar Powered Pumps

Observations

- Ease of Placement of Pumps in Wells
- Compact Solar Panel and Electrical Arrangement
- Unattended Operation
- Minimal Maintenance
- Reliable Operation

Conclusions/Operations Updates

- Successful Project
- Continuing Well Dewatering
- Reliable Operation
- Minimal Maintenance
- Compact Footprint
- Unobtrusive

