

Flovac Vacuum Sewer System

Introduction

Vacuum sewer systems have been accepted in over 40 countries since the 1960's as a low cost environmentally friendly method of transferring wastewater from houses to treatment plants.

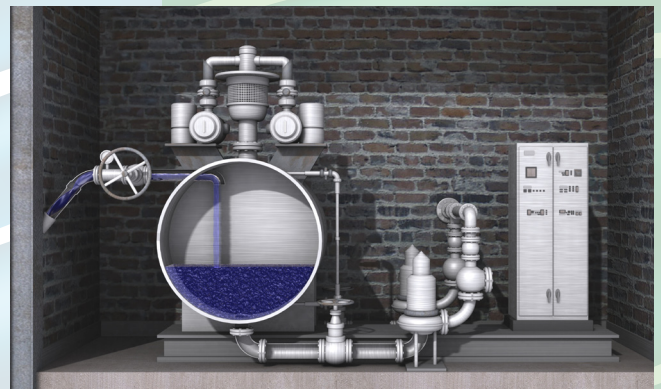
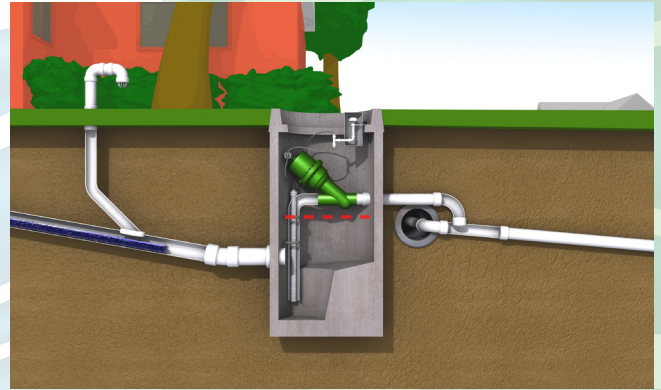
Vacuum systems are an alternative to traditional deep gravity sewer networks, multiple pump station or grinder pump systems. Vacuum systems utilise a central pump station that creates a vacuum in the shallow pipe network. A series of valve pits collects the sewage from multiple homes and this sewage is propelled to the central pump station where it is transported to the Wastewater Treatment Plant for treatment.

Applications

Vacuum Systems are ideal for sewage reticulation systems where infiltration is a concern, flat areas with a high water table or areas with difficult ground conditions.

Features and benefits

- Shallow trenching
- Lower cost installation
- Small diameter pipes
- Easy maintenance
- Environmentally friendly
- No infiltration, inflow or exfiltration
- Low initial capital costs
- No operator exposure to raw sewage
- Aeration of sewage
- No power required at the home



How It Works

Differential air pressure is the driving force in Flovac vacuum sewer systems. The vacuum sewer lines are under a vacuum of -50kPa to -70kPa created by the vacuum pumps located at the vacuum pump station.

The pressure differential between the atmospheric pressure and the vacuum in the sewer lines of 50kPa – 70kPa provides the energy required to open the vacuum interface valves and to transport the sewage.

Sewage flows by gravity from homes into a collection sump. When 40 litres accumulates in the sump, the vacuum interface valve located above the sump automatically opens and differential air pressure propels the sewage through the valve and into the vacuum main. Sewage flows through the vacuum lines and into the collection tank at the vacuum station. Sewage pumps transfer the sewage from the collection tank to the wastewater treatment facility. There are no electrical connections required at the home. Power is necessary only at the vacuum station.



FLOVAC VACUUM SYSTEMS

Cost savings

A vacuum system almost always costs less to install than a gravity flow system because our vacuum system uses small pipe in shallow, narrow trenches, and there are no manholes. Once installed, it continues to save money because the system eliminates inflow and infiltration. This is even more important if you are charged by the litre when treatment is by others.

Installation

Vacuum sewer lines are installed in narrow trenches in a saw tooth profile. This profile keeps sewer lines shallow and is designed to ensure that sewage will not block the pipe at low flow periods when the sewage is at rest. Lifts minimise trench depth. A lift is simply two 45-degree elbows and a straight piece of pipe. Sewage will lie at these low spots until other valves upstream open. Vacuum lines are slightly sloped (0.2%) towards the collection station. Unlike gravity sewers that must be laid at a minimum slope to obtain a 0.6m/s scouring velocity, vacuum has a flatter slope since a high scouring velocity is a feature of vacuum sewage transport.

Line Sizes – The vacuum service line from the valve to the main in the street is 90mm diameter. The vacuum mains are MDPE PN8 or PN 10 or PVC Class 9 or Class 12.

In general, a potential vacuum loss is associated with every lift. This limits the length of each vacuum line to about 3 to 5 km in flat terrain. Elevation changes can extend or reduce this range. Longer distances are possible depending on local topography.

State-of-the-art Technology

Vacuum sewer systems are used all over the world and their use has risen dramatically over the past ten years. Many now view vacuum as the system of choice because initial costs and on-going operating expenses are low.

The system requires no manholes and eliminates exposure



FLOVAC VACUUM STATION: A compact system delivered pre-assembled.



INSTALLATION: Shallow trenches ensure low installation costs.

of operators to raw sewage. With minimal disruption to the surrounding environment during installation, the technology is also starting to gain world wide recognition for its low carbon footprint.

Design Expertise

Flovac are experts in solving difficult wastewater engineering problems in unique geographic areas or in environmentally sensitive areas. All Flovac Vacuum Systems are designed to meet Australian and New Zealand Standards. Flovac works closely with engineering consultants and water authorities to cater for individual site-specific needs.

Maintenance

Extremely low breakdown, callout and maintenance costs have made Flovac system's the industry leader in the whole of life cost for sewerage systems. The valves have been designed to be extremely robust and therefore come with an unprecedented 10 year warranty.

FLOVAC SYSTEMS Hynds Environmental is the official New Zealand distributor for Flovac Vacuum Systems PTY LTD.

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