

BASIC DESIGN PRINCIPLES FOR HOUSING COLONIES-

Basically, there are two different designs for a vacuum toilet system:

- 1- The constant vacuum system
- 2- Vacuum on demand system.

Which one will be applied depends on specific framework conditions.

1- The constant vacuum system:



This is the better solution for larger buildings. Virtually, it is possible to add an unlimited number of toilets and the system can be expanded later on.

If there is a permanent vacuum, the risk of a leakage is very low. However, energy requirement is generally high in order to maintain the vacuum constantly.

It depends on the manufacturer, but normally a constant vacuum system functions as follows.

Step 1: The user pushes the push-button, the interface valve is opened, and the wastewater is evacuated. Air, which also helps to transport the waste, is also sucked into the system. At the same time, the clean water valve is opened and rinsing water is sprayed into the bowl.

Step 2: The vacuum valve is closed but the water valve remains open. A small amount of fresh water is sprayed into the bowl.

Step 3: The water valve is closed; a small volume of clean water is retained in the bowl and the toilet is ready for use again.

2- Vacuum on demand system:

Vacuum on demand systems produce a vacuum only at the moment the toilet needs to be flushed.

The system also uses air together with water for transport of sewage, as opposed to conventional flush toilets,

which use water only. The VOD toilet evacuates air from the drainpipes automatically upon activation of the activator button.

A valve opens in the toilet, and the difference in air pressure that results causes the sewage to be flushed.

Due to lower energy requirement,

Costs Considerations

As it is a high-tech system, it is expensive. But in comparison with a common flush-toilet system,

it can be slightly cheaper, because piping costs are lower (the dimensions are smaller, 50 to 75 mm) and on-site treatment system can be more easily installed.

Also, the installation can be cheaper because piping is independent from the building structure.

Vacuum lines may be installed vertically into the suspended ceiling as waste can be lifted.

