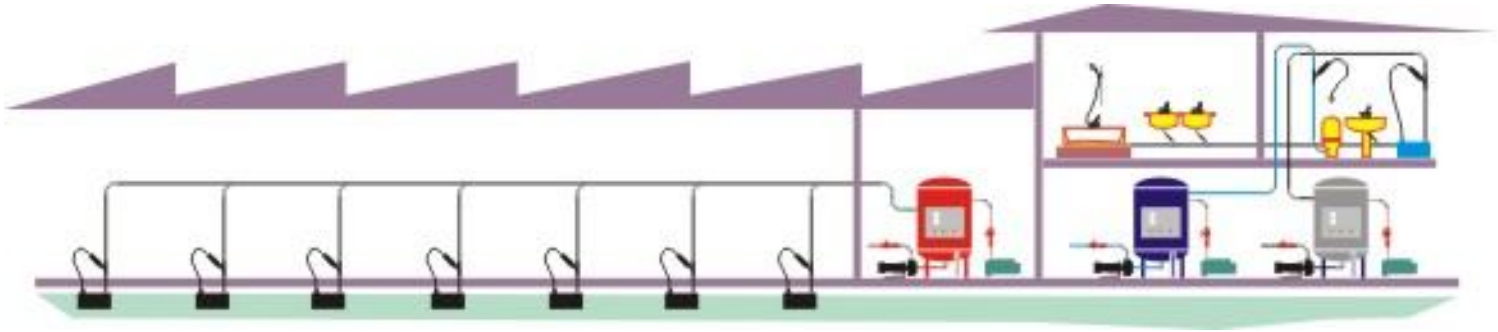

epVAC.HIS
Horizontally Integrated Vacuum
Sewage Collection & Transfer Systems
for Indoor Appications
for
Factories,
Supermarkets,
Slaughterhouses,
Railway Stations,
Stadiums,
Airports,
and.....more
epeco

epVAC.HIS, the Technology

epVAC.HIS, the Horizontally Integrated Vacuum Wastewater collection & transfer systems from **EPECO** is designed and engineered for indoor flat & horizontally extended indoor applications.

Among the epVAC.HIS users are:

Factories-floor cleaning wastewater is collected in multiple drains within flat wide areas. Collecting wastewater by gravity pipe network will require large diameter pipes & fittings with deep slopes. Due to architectural constrains, manholes and possibly lift stations might be needed. The risk of clogging, blocking and odor and smell is to the maximum. In many cases, the floor wash water is contaminated and needs safe disposal with no precipitation in an isolated network (pharmaceuticals, chemicals, food processing...and similar). **epVAC.HIS** is an ideal solution for these problems. Gray water-from floor washing, sinks and showers are collected-under vacuum- in a fully isolated pipe network with small diameters . The high flow speed will minimize the clogging or blocking potential. No smell or odor is allowed as no man holes or openings of any kind are used.
In factories, it's common to separate graywater (showers, sinks, floor wash) from blackwater (toilets, urinaries & Bidets). In industries with hazardous or heavily contaminated wastewater discharge (pharmaceuticals, chemicals,...) further networks are utilized to separate the waste waters quality-prior to treatment & disposal.



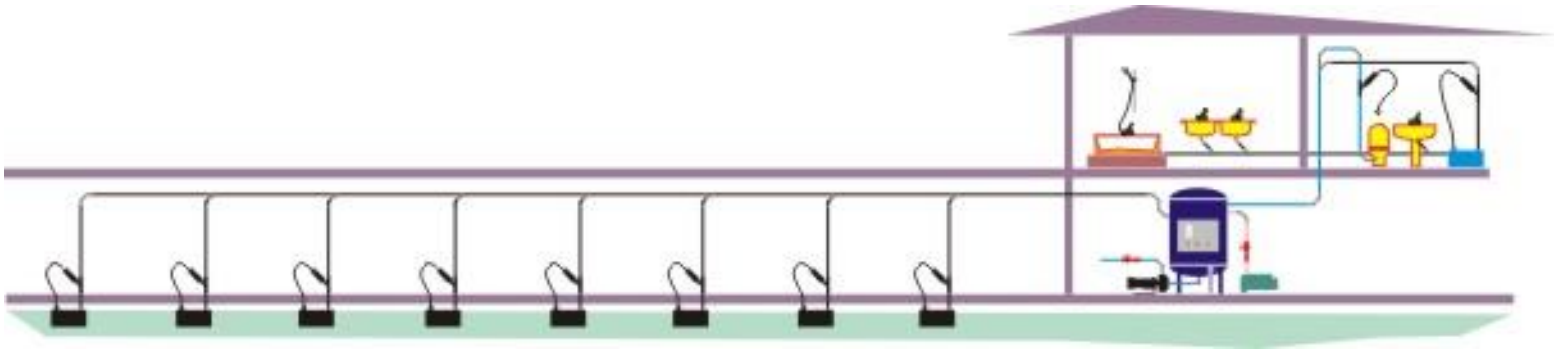
Supermarkets- Modern large supermarkets, are installed out-skirts of cities & towns. Collecting wastewater from floor cleaning & processing points by conventional gravity networks is not cost effective anymore. are collected and transferred to disposal or treatment points. Implementing vacuum sewer collection and transfer network in a supermarket will minimize the capital investment and will allow economical separation of gray & black water streams for efficient treatment & reuse.

Slaughterhouses-floor cleaning and industrial processing wastewater are normally collected and transferred separately. Clogging, blocking and leaking of gravity pipe networks are common problems in slaughterhouses. Due to the high content of biomass in slaughtrhouse wastewater, the risk of microbial contamination in an open gravity network is high. Multiple vacuum wastewater collection & transfer networks is an attractive solution to slaughterhouses wastewater collection & transfer problems.

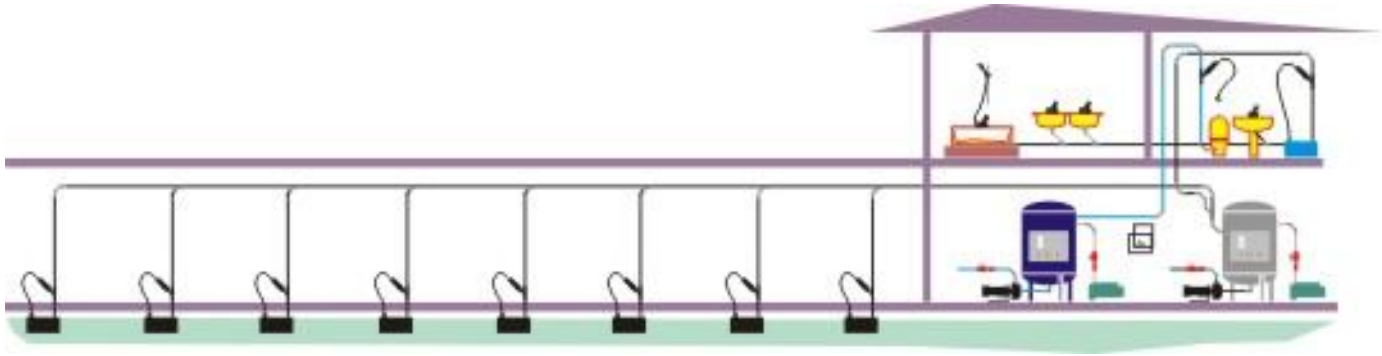
epVAC.HIS How **it** works?

epVAC.HIS systems are available in Three configurations:

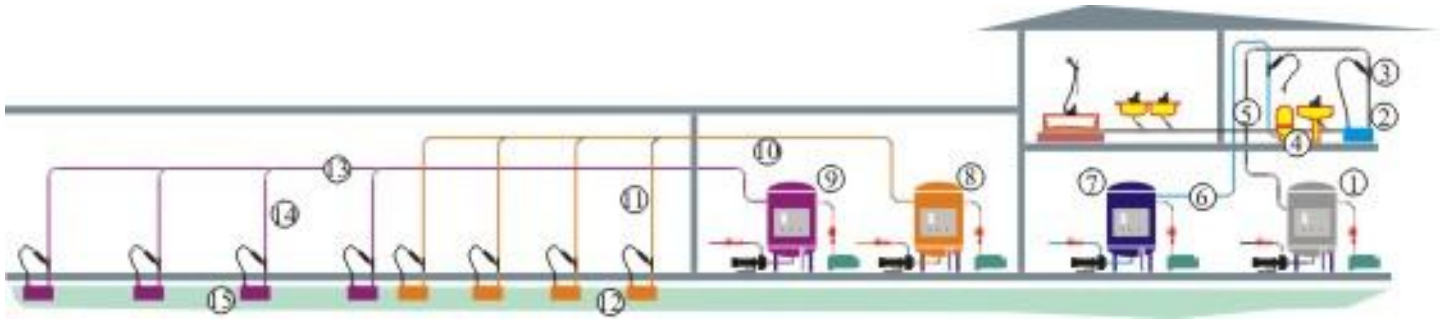
Combined black and gray water networks- Liquid flows by gravity from baths, sinks, and floor drains to the valve package/Auxiliary Collection Basin **ACB**. Liquids & solids from toilets, urinators and bidets flow under vacuum directly to the Combined Vacuum Power Pack **CVPP**. In wide areas, wastewater central main can be split into branches, connected directly to the **C**VPP.



In the **independent gray and black water networks**- black water is directly transferred under vacuum to the Blackwater Vacuum Power Pack **BVPP**. Graywater is collected under gravity in the Auxiliary Collection Basin **ACB,** thereafter transferred under vacuum in an independent network to the Graywater Vacuum Power Pack **GVPP**.



In case of heavily contaminated wastewater (such as slaughterhouses, dairy & milking, food processing....etc.) or hazardous wastewater (chemicasl, pharmaceuticals, detergents, ...etc.) multiple black water networks can be implemented. Black water is directly transferred under vacuum to the Blackwater Vacuum Power Pack(s) **BVPP**. Graywater is collected under gravity in the Auxiliary Collection Basin **ACB,** thereafter transferred under vacuum in an independent network to the Graywater Vacuum Power Pack **GVPP**.



1 GVPP-Graywater Vacuum Power Pack
2 GACB-Graywater Auxiliary Collection Basin
3 IV-Interface Vacuum Valve
4 Vacuum Toilet
5 Graywater Vacuum Transfer Network
6 Black water Vacuum Transfer Network
7 BVPP-Blackwater Vacuum Power Pack
8 HVPP-Hazardous Wastewater Vacuum Power Pack
9 BVPP/H-Heavily Contaminated Wastewater Vacuum Power Pack
10 Hazardous wastewater Vacuum Transfer Network
11 Hazardous wastewater Vacuum Terminal
12 HACB-Hazardous Wastewater Auxiliary Collection Basin
13 Heavily Contaminated Wastewater Vacuum Network
14 Heavily Contaminated Wastewater Terminal
15 GACB/H-Heavily Contaminated Wastewater Auxiliary Collection Basin

As the graywater level in the Auxiliary Collection Basin **ACB** rises, the air pressure increases against the pneumatic sensor. At a preset level, the sensor actuates the controller and the Interface Valve **IV** is opened. The graywater will either be transferred-separatly-under vacuum, to the Graywater Vacuum Power Pack **GVPP** or alternatively through common network to the Combined Vacuum Power Pack **CVPP**.

Interface Valves **IV** of the vacuum toilets are manually operated. **IV** valves for urinrators are either manually or automatically (infra red switch) operated. As soon as the **IV** opens, the liquid is transferred under vacuum, directly either to the Blackwater Vacuum Power Pack **BVPP** or to the Combined Vacuum Power Pack **CVPP**.

Vacuum Tank+Discharge Pumps

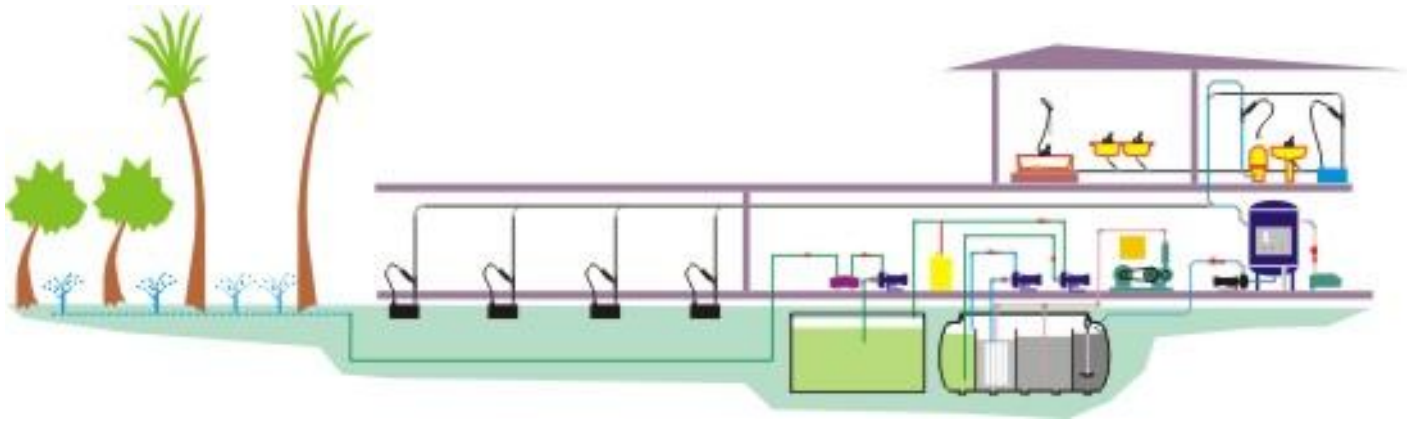
Vacuum Pumps

Interface Vacuum Valve

Vacuum Power Pack

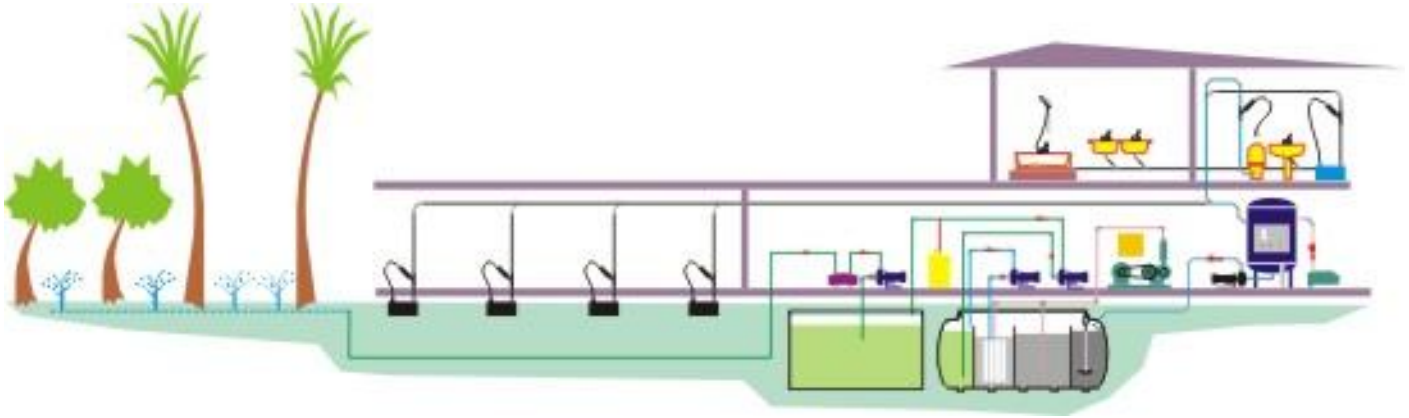
epVAC.HIS, Applications

In combined wastewater collection systems, where black & gray waters are transferred and collected in a Combined Vacuum Power Pack **CVPP**, it can be treated & reused for irrigation.

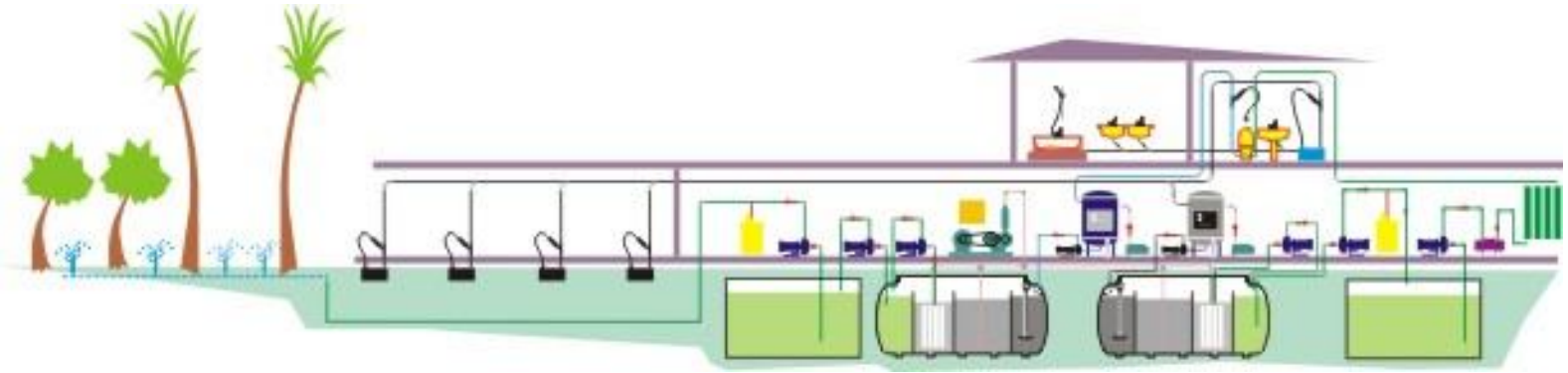


Combined Gray & Black Water Collection & Transfer
Treatment & Reuse of Treated Effluent for Irrigation

Separate Gray & Black Water Collection Networks
Disposal of Blackwater to Municipal Sewer Line or Septic Tank,.....etc.
Treatment & Reuse of Graywater in Toilet &
Urinators Flushing, Floor Cleaning, ... etc.



Separate Gray & Black Waste Water Collection Networks
Reuse of Treated Blackwater in Irrigation.
Reuse of Treated Graywater in Toilet &
Urinators Flushing, Floor Cleaning ... etc.



epVAC.HIS, why

- CONSERVING the fresh water resources by reducing toilet flushing water to 1-2 liters per flush. The average daily fresh water consumption per capita is reduced 30-35%. Treatment & reuse of black & gray waters may save 65% of the conventional daily fresh water consumption.
- Low CONSTRUCTION COST of wastewater plumbing works due to utilizing small diameter Polyethylene uPVC pipes & pipe fittings (32-90 mm).
- High RELIABILITY of the wastewater plumbing network-no leakage, no blockage and no clogging.
- ECO-FRIENDLY process-aerobic wastewater collection and transfer-no smell and efficient pretreatment for the following wastewater treatment process.
- VERSATILITY- allowing for many plumbing configuration options: -combined or separate gray & black water collection & transfer. Several disposal options are also possible: discharge to municipal network or septic tank, treatment & reuse of mixed wastewater for irrigation, treatment and reuse of graywater for plumbing network flushing, floor cleaning, fire fighting, cooling,...etc. Many other combinations are also available.

epeco

10, Taiaran Str., Raba’a al adawia,Nasr City
Cairo 11371, Egypt

Tel: +20 2 2401 2488 Fax: +20 2 2401 6626
e.mail:magdi@epeco.com www.epeco.com