



Vacuum collection system

Wärtsilä Water Systems has supplied wastewater treatment systems to the marine & offshore market for over 40 years.

Our operational experience and market-led innovation and technology means that we can deliver a range of unrivalled wastewater treatment products. Mindful of the environment, we work to ensure that all our products meet the highest standards of compliance.

The Wärtsilä vacuum collection system uses differential air pressure to transport sewage from the toilet bowls, and other sanitary fittings, to the Super Trident Sewage Treatment Plant (STP) or independent collection tank.

OPERATION

Each waste water stream is connected directly to the vacuum main via integral toilet discharge valves or vacuum interface valves (VIVs).

Vacuum is created by recirculating the sewage through one or more venturi ejectors and is maintained by pumps automatically controlled by vacuum switches on the incoming vacuum mains. An ejector valve shuts when the vacuum pump(s) stop running maintaining vacuum in the piping system.

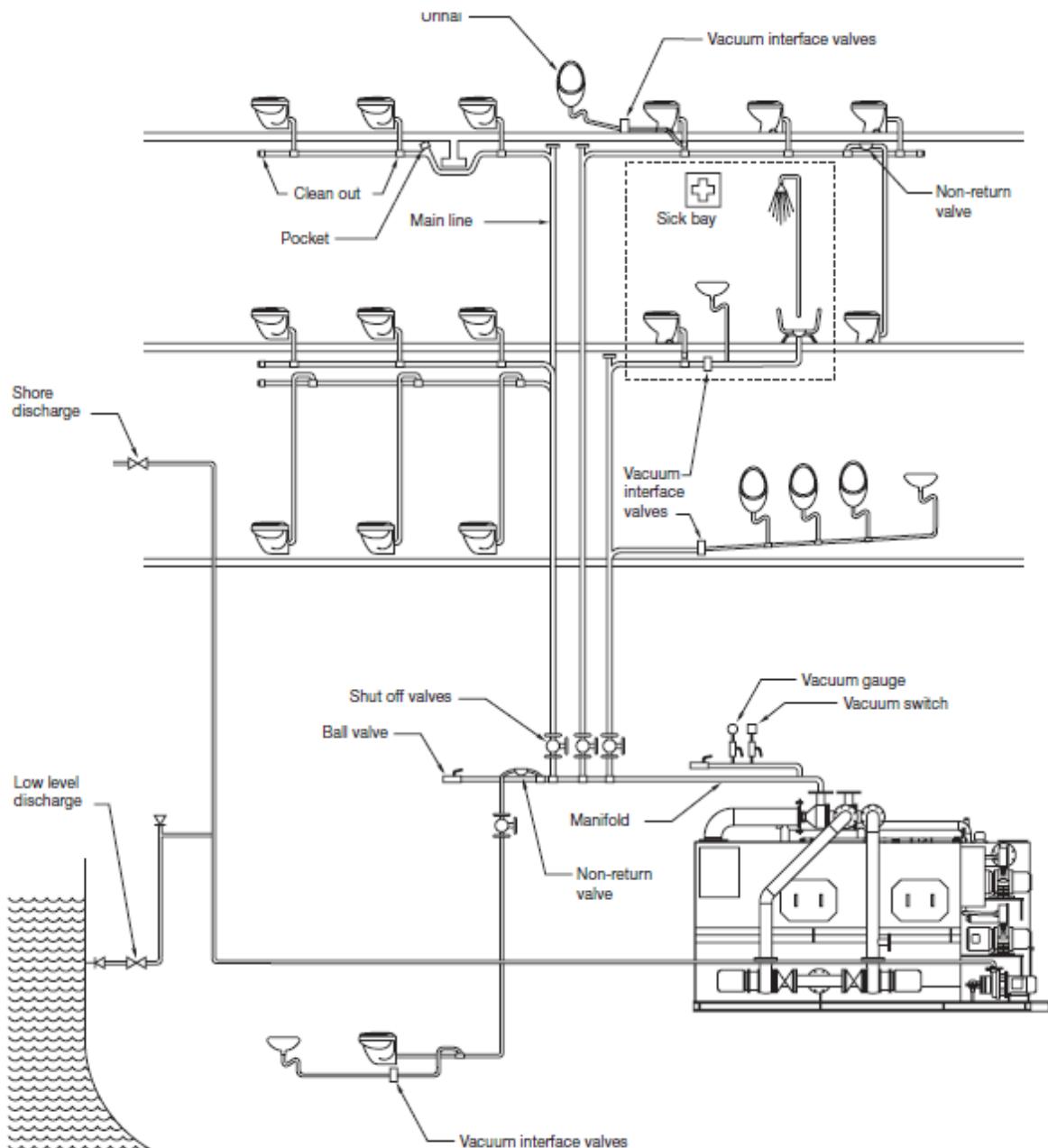
Vacuum is generated only in the piping system, the treatment plant or collection tank remains under atmospheric pressure. This allows the STP or collection tank to be any shape or even built into the vessel's structure.



STANDARD FEATURES

- Ejectors can be mounted direct to the STP for modular construction without the need for a separate collection tank
- Only a small amount of flush water is needed compared to conventional gravity systems
- Vertical Lift capability
- Smaller diameter piping, independent of slope
- Reduced peak loadings allow use of smaller sewage treatment plant than for gravity systems
- Ejector performance optimised using Computational Fluid Dynamics (CFD)

Fig. 1 Vacuum collection system schematic



SYSTEM SIZING

Multiple ejectors would be selected dependant upon the number of facilities and length of pipe runs.

OPTIONAL FEATURES

- Grey water vacuum collection to separate grey water collection tank(s)
- Retrofit to existing tanks
- Foam suppressant
- PLC interface with data logger
- Overboard discharge from vacuum circulation pump
- Controlled feed/transfer equipment