



VACUUM SEWERAGE SYSTEM FOR HARBOURS AND MARINAS



WHY VACUUM OPTION?

Flovac system is the best new concept for sewerage at sportive ports, marinas and harbours. Installing a Flovac vacuum sewerage system allows you to manage the port sewerage and, at the same time, it collects waste water from ships or singular points.

At every collection point vacuum system just need a Flovac vacuum valve, with no power supply, with no expensive devices. It is possible to install a multiple or extra collections points along the vacuum net.

Flovac's flexibility products can give a wide range of solutions for all kind of installations: buildings, offices, restaurants, gas stations, suck-outs...

It is possible to design just one or more SUCK-OUT points where to discharge ships waste water. To discharge bilge water you can choose the Flovac single option or the Flovac net option.



SMALL CARBON FOOTPRINT

All pipework can be buried into narrow and shallow trenches reducing any environmental risks.

No change of sewage spills as all pipework operates under a negative pressure. Any break in the pipework suck air into the system which can be easily repaired.

Sealing at vacuum net allows keeping a low salinity level inside pipes. It saves future complications on periodic controls.

Optional PE Flovac pits with rubber o-rings joints are completely sealed and they avoid rain, water table and tide infiltrations.

Single point of power and no power within the reticulation network allows for reduced energy costs.



USER PAYS AND ENVIRONMENTAL CERTIFICATES

Environmental regulators now require many boats owner to provide MARPOL certificate from the marina showing that they have discharged their wastewater at the marina and have not dumped it at sea or in the harbour.

A vacuum system can easily monitor volumes and can also arrange for metering of discharges to generate revenue for the marina.



EASY INSTALLATION

Introduce a Flovac vacuum sewerage system at the harbours and Marinas has a minimum impact on daily operations.

All components are supplied at site (prefabricated vacuum station, preassembled suck-out points...) and they are installed by Flovac professional operators.

Vacuum pipes have small diameter and they are installed on shallows trenches. Pipework lifts are used to not affect other services (like communications, electrical supplies, etc...).

Pits with Flovac valve are buried but, suck-out points could install buried, on surface or mixed solution.

Flovac single point for waste water, bilge water or dual service can be also installed on conventional sewerages. These equipment have a reduced size with multiple hose connections.



LOW MAINTENANCE

The Flovac vacuum station is reliable because its equipment are specially designed and modified for vacuum sewerage system.

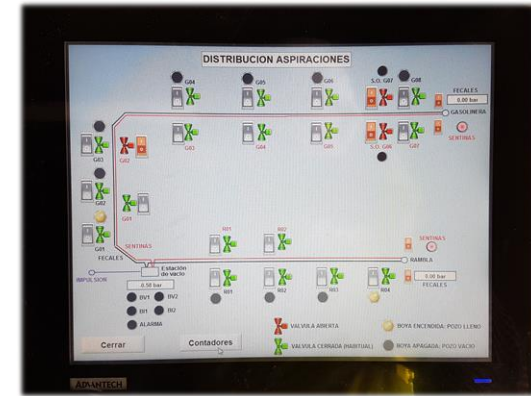
Flovac system does not need registration points because every collection point is an access to inspection vacuum lines.

Vacuum high speed on pipework is the warranty to avoid clogging lines.

The automatic Flovactronic software manages all motors, sensors, indicators and alarms in vacuum station.

On Flovac systems there is no room for odours or any other discomforts.

Flovac vacuum valves supplied have a 10 year warranty.



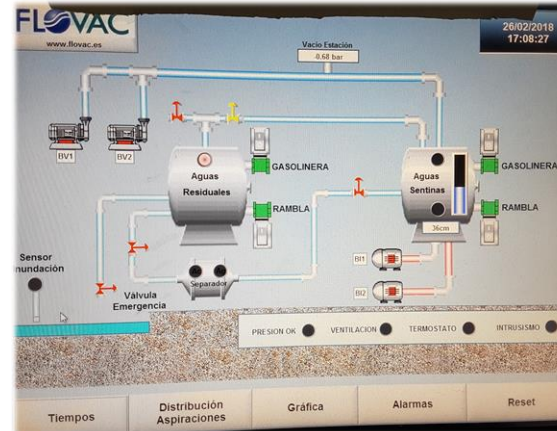
LOW COST

Prefabricated vacuum station and preassembled pits and suck-outs save execution costs and reduce execution times.

Narrow and shallow trenches are needed to install vacuum pipes, saving high expensive shoring and rock diggings.

There are no grinder pumps required for distant points. Power is only required at vacuum station.

The standard Flovactronic for vacuum lines allows controlling all the system. With upgrading the software you could control every single user parameters.



HOW IT WORKS – THE COLLECTION POINT

Sewage drains via gravity from facilities to a collection pit. Normally these facilities are built up above ground structures so there will be room for gravity flow to occur.

If a Flovac single point solution is installed, there will be a small discharge into conventional gravity system.

The collection point pit importantly houses the vacuum interface valve which interfaces between the gravity side of the collection system and the vacuum side being generated by the vacuum pumps at the station.

No power is required at this point as all action is pneumatic. Once sufficient water has entered the sump the valve will open and all sewage will enter the vacuum mains at a high velocity.

At SUCK OUT points waste water or bilge water are sucked out by handle activation of Flovac vacuum valve when a Flovac net option is used.

If a Flovac single option is used, waste or bilge water will be sucked out handle activation of Flovac vacuum-discharge pump.



HOW IT WORKS – THE VACUUM MAINS

The pipes running from the collection points (sumps or suck-outs) to the vacuum pump station are called the vacuum mains.

Vacuum mains installation is very flexible due to its small diameter and accessories like lifts that could save other services. With these Flovac system advantages, the vacuum lines could reach lengths over one kilometre.

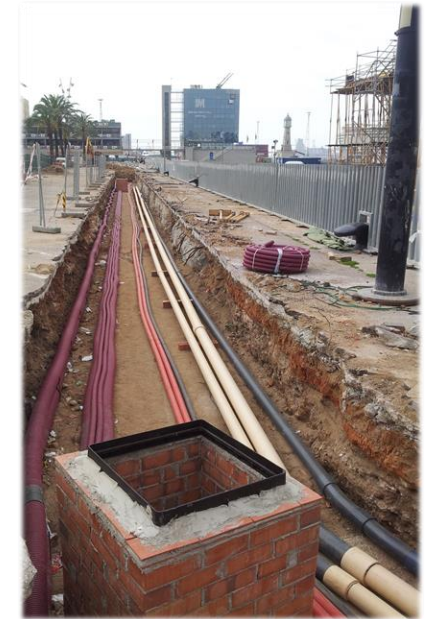
In much branched nets or very long nets, it is possible to install isolate valves to improve the management when a problem is detected. If there is a break in the pipe it can be easily fixed and no sewage will leak out into the environment.

As the whole system is air tight there is no odour which is very important for the marinas.

Vacuum lines must be correctly protected when they are buried under a traffic zone. (reinforced concrete protection is used at heavy traffic zones).

At singular installations, vacuum lines have been hanged under the wood or concrete dock.

Flovac supplies certified pipe and accessories.



HOW IT WORKS – THE VACUUM STATION

The standard vacuum station houses a collection tank made out of stainless steel. Also 2 vacuum pump and 2 sewage pumps providing a duty and standby capability the same as in municipal system.

There is also a control panel (Flovactronic) that operates the pumps and has emergency alarms which can alert an operator of any failures.

Vacuum station is usually situated near the final discharge point. It can be constructed or installed on surface, underground or mixed option. The vacuum tank, the vacuum pumps and the discharge pumps are proportionally at the vacuum net size.

Optionally, a small treatment plan or an oil separator can be joined to vacuum station to complete waste cycle.

All bilge water installations, an accredited company must collect periodically the special waste form the oil and hydrocarbons separator.

All Flovac equipment meet the health and safety regulations. Inside vacuum station there is no contact with waste water and all pumps are dry installed.

Flovac equipment are also designed to reduce odours and level noise.



LIST OF FLOVAC SPAIN PORT FACILITIES

- Moll adossat – Barcelona Port (Barcelona, Spain)
- Maremagnum - Barcelona Port (Barcelona, Spain)
- Arenys de Mar Port – (Barcelona, Spain)
- Vilanova i la Geltrú Port - (Barcelona, Spain)
- Port de Roses – (Girona, Spain)
- Port Tarraco – Tarragona Port (Tarragona, Spain)
- Mega Yates Jetty America's Cup – Valencia Port (Valencia, Spain)
- North Dock – Valencia Port (Valencia, Spain)
- South Dock - Valencia Port (Valencia, Spain)



LIST OF FLOVAC SPAIN PORT FACILITIES

- Marina Barcelona 92' – Barcelona Port (Barcelona, Spain)
- Marina di Pisa (Pisa, Italy)
- Marina Port Vell – Barcelona Port (Barcelona, Spain)
- Canouan Marina – (Canouan, St. Vincent and the Grenadines)
- Marina Vela – Barcelona Port (Barcelona, Spain)
- Ana Marina – (Nha Trang, Vietnam)



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FLOVAC
SYSTEMS

THE GREEN FUTURE OF SEWERAGE