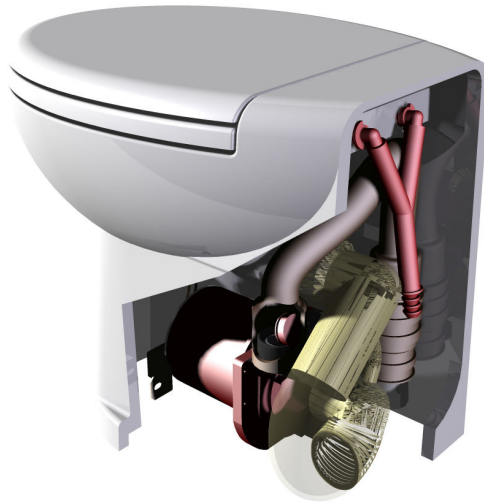


THE VORTEX PUMP

Mr Marco Giovannini, president of Planus S.p.A., devised and constructed the first toilet with the Vortex system for marine application in 1988. Lately he found and owned Tecma till 2004, when the company has been sold.



The Vortex is basically a centrifugal turbine pump with open impeller that has been updated over the years.

Organic residuals and tissue are easily broken up by the high spinning of the impeller while they pass through the pump.

For better working with other extraneous harder materials, a series of 4 stainless steel knives are placed on the cover of the pump (housing).

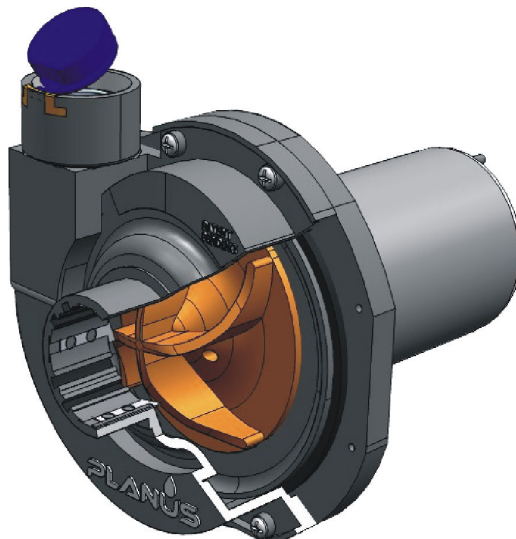
The way these knives are placed creates a limited passage between them and the blades of the impeller.

Then this “macerating area” uses efficiently the torque and the speed of the motor.

Harder materials are restrained in the “macerating area” till they have sufficiently been broken up.

The suction of the housing has been designed to have a series of “drainage water channels”, where the water could pass through even if there’s a large solid residual restrained. In this way, the pump is any case primed and it could continue its breaking up operation.

This layout make the pump really reliable against clogging.



FURTHER DEVELOPMENT

As the boat builders were always asking for something better, specially about the complete reduction of noise, we improved the Vortex pump once again.

Being the Vortex a centrifugal turbine pump, it is not self-priming.

For this reason, to make the pump working properly, it must be well filled with water before its activation, ejecting all the air.

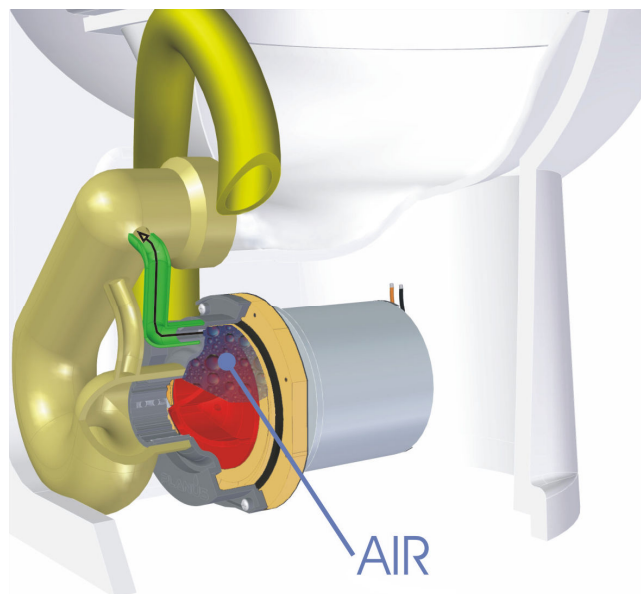
At the end of each flush sequence, the pump sucks a certain quantity of air from the ceramic bowl.

Due to the way the pump is installed and to the necessary presence of a one-way valve, the sucked air can't go out freely and could not be immediately ejected at the activation of the pump. This issue, called cavitation, causes noise and vibrations. In addition to that, the cavitation issue reduces the performances. Depending by the head at the discharge, the loss could be really impressive.

For the above problems, the mission was to realize not a copy of the products designed like in the past, but something really better.

Founding Planus, we designed and patented a solution to automatically discharge all the air present inside the pump. In this way, the Vortex pump can work properly.

This solution completely eliminated noise and vibrations, and provided also a good performance increase.



ADDITIONAL IMPROVEMENT

In order to provide a complete noiseless sanitation system, PLANUS implemented a water hammer arrestor as a standard for its solenoids and designed its ceramic bowls to remove the annoying water jet and have a noiseless draining water inlet.



TECHNICAL DETAILS:

Power absorption:

Planus toilets are available in 12Vdc(40A), 24Vdc (25A) and 230Vac(3A).

For flushing the toilet, is possible to use indifferently fresh or marine water.
Planus supply solenoids or inlet pumps for this duty.

The most common solution is to use fresh water, then it's only needed to connect the cold water line to the bowl with the addition of a solenoid.

The electronic Control Panel of the toilet will activate the solenoid during the flush sequence.

Advantages of the innovation:

- The most silent marine toilet in the market
- Increased performances in terms of flow and head

Other advantages of the Planus toilets:

- Wide range of fine ceramic bowls
- Each toilet is independent and very easy to be installed: there are no centralized vacuum pumps or similar to be managed.

Once the piping is prepared, the whole installation of the toilet requires to hold the hose clamps (for the inlet and for the discharge), plug in the power connectors and screw the bowl to the floor.
Then the wall switch (controller) has to be fixed on wall and power connected to the line and to the toilet and the water inlet (solenoid or pump)

ANOTHER APPLICATION FOR THE VORTEX PUMP: AUTOMATIC GREY WATER PUMPING UNITS PRO-LIFT

As the usage of this kind of product is getting more important, PLANUS developed the Pro-Lift units. These units, realized in stainless steel, have reduced dimensions and operates with the Vortex pump. Thanks to the patented solution for the cavitation issue, the Pro-Lift units are really noiseless. This fact allows the complete freedom in choosing where to place the unit. Pro-Lift is the only grey water unit that, thanks to a patented solution, able to guarantee the automatic reset of proper working levels even in case of long periods of inactivity.

