

SINTEF Technical Approval

TG 20740

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 Provided listed on
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SINTEF confirms that

Jets Vacuum system

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document



1. Holder of the approval

Jets Vacuum AS
 Myravegen 1, 6060 Hareid
www.jetsgroup.com

2. Product description

Vacuum sanitary systems are suitable for use in everything from small cabins to larger buildings. Jets vacuum sanitary systems transport wastewater from sanitary appliances to a central vacuum pumping station (Vacuumarator), utilising the difference between atmospheric pressure (higher pressure) acting against a vacuum/lower pressure in pipework system. Vacuum sanitary systems can discharge to municipal sewerage network or local collection facilities.

Main components included in the approved system are listed in table 1.

The system can be supplied as a VOD (Vacuum on Demand) or CVS (Constant Vacuum System) system.

- The VOD system is suitable for 1-4 appliances.
- The CVS system can be used to operate any size installation.

The Vacuumarator can also operate greywater tanks for use with wash basins, showers, wash basins etc.

3. Fields of application

Jets Vacuum sanitary systems can be used as drainage installations:

- in residential dwellings and cabins,
- commercial, institutional, industrial and mixed-use buildings
- to accept discharges from gravity drainage sanitary appliances (washbasins, showers, sinks, urinals etc).
- Greywater and wastewater interface units are used to accept connections from gravity appliances like wash basins, showers etc.

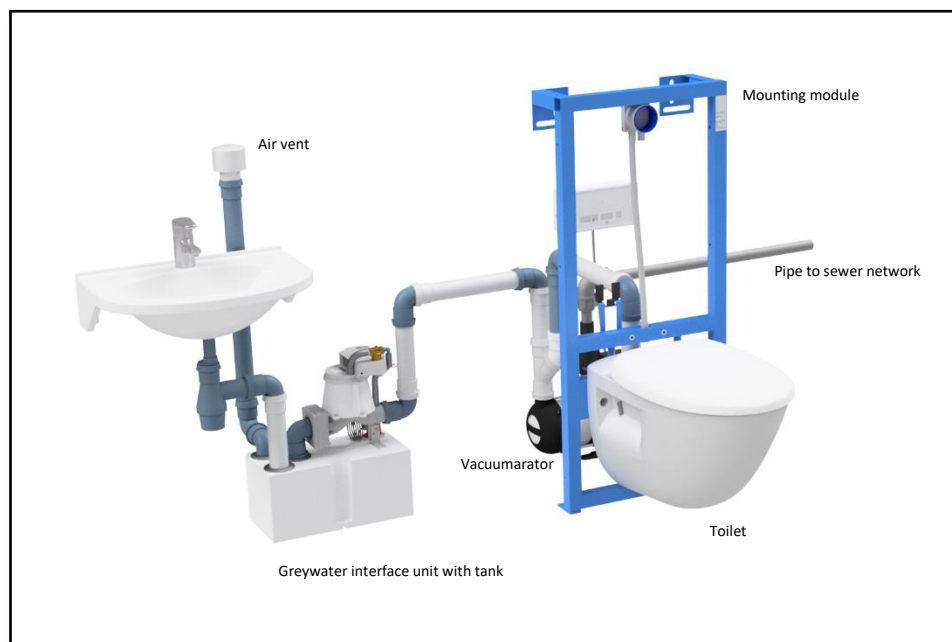


Fig. 1
 Jets vacuum system – simplified schematic
 Figure: Jets Vacuum AS

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4. Properties

Operation

Main functionality is compliant with EN 12109, *Vacuum drainage systems inside buildings*.

Back-flow prevention

The toilet's water supply must be secured against backflow in accordance with EN 1717. This can be satisfied using a DC pipe interrupter, compliant with EN 14453, *Devices to prevent pollution by backflow of potable water*, such as the JETS DC Pipe Interrupter for use in vacuum drainage systems.

If the pump discharge line is connected to a drain line or tank located two meters or higher than the pump, a non-return valve is required to be fitted on the discharge line, see additional information in the installation instructions.

Flushing properties

The toilet's flushing properties are compliant with EN 997:2012, *WC pans and WC suites with integral trap*.

Water tightness

Shut-off valve is compliant with EN 13828, *Building valves – Manually operated copper alloy and stainless steel ball valves for potable water supply in buildings -Tests and requirements*.

Supply hoses are compliant with EN 13618, *Flexible hose assemblies in drinking water installations – Functional requirements and test methods*.

Drain pipes are compliant with EN 1451, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure – Polypropylene (PP)*.

Note: Alternative, certified pipe systems are acceptable where suitable for vacuum drainage systems.

Acoustic properties

The product has not been verified for noise performance. Vacuumator should be located in an acoustic enclosure if required, or technical room.

Loadability

The mounting module for wall mounted toilets is rated to withstand a load of 400 kg.

Table 1
Main components

Component	Model
Control panel	Jets VAC Controller /Jets Control Cabinet
Backflow prevention	Jets DC Pipe interrupter
Toilet	Jets Charm Jets 61SS Jets 50M Jets 59M Jets Jade Jets Pearl
Pump	Jets C200 Ultima Vacuumator/ Jets Edge Vacuumator
Supply hose/valve	Jets Hose w/ball valve
Waste pipe	Polo-KAL NG
Wall mounting module	Mounting Frame Multi MF691MS
Gravity connection of wastewater	Jets Grey Water Interface Unit

5. Environmental aspects

Substances hazardous to health and environment

The product contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

The health and environmental assessment does not include electrical and electronic components

Waste treatment/recycling

The product shall be sorted as porcelain, metal and residual waste. The product shall be delivered to an authorized waste treatment plant for material and energy recovery.

Electrical and electronic components shall be delivered to a facility authorized to handle EE-waste

Environmental declaration

No environmental declaration (EPD) has been worked out for the product.

6. Special conditions for use and installation

Design considerations

Jets Vacuum VOD systems are suitable for installation in houses and cabins. The system can serve 1-4 sanitary fixtures. The maximum horizontal pipe length is 12 meters on the vacuum side of the system.

Jets Vacuum CVS systems are suitable to serve any size building.

Installation

Jets Vacuum system and its components must be installed in accordance with the manufacturer's installation instructions, and the applicable building code. In Norway, the national building code (TEK), requires sanitary fixtures to be placed in a room with a floor drain, or with a leakage stopper. A leakage stopper will shut off the water supply in case of any leakage associated with the equipment. Toilets and components must be easily accessible for maintenance and replacement from the room where it is located.

Maintenance

The vacuum toilet bowls can be used and cleaned as traditional toilets. No access to pipe system should be performed via toilet (no rodding through toilet) as this could damage the toilet interface valve. Maintenance of the pump must be undertaken when the pump is isolated from the system and electrical supply. Refer to the manufacturer's supplementary maintenance instructions.

Frost protection

Jets Vacuum AS prepared a guidance document on system and component frost protection. This manual must be followed to avoid frost damage in areas where the product is exposed to external ambient conditions.

Fire resistance

Installations to be compliant with the requirements of Fire Safety Regulations. Penetrations of fire barriers must be carried out in accordance with Byggforskserien 520.342 to ensure continuum of fire resistance for all installation components.

7. Factory production control

Jets Vacuum system components are produced by Jets Vacuum AS, Myravegen 1, 6060 Hareid.

The holder of the approval is responsible for the factory production control to ensure that Jets Vacuum toilet is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product(s) and the manufacturer's system for factory production control (FPC) is subject to continuous audit in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality system that is certified in accordance with EN ISO 9001 and an environmental management system that is certified in accordance with EN ISO 14001.

8. Basis for the approval

The evaluation of Jets Vacuum system is based on reports owned by the holder of the approval.

9. Marking

Subcomponents must be marked with the manufacturer, product name/quality and time of production.

Vacuumarator is CE-marked in accordance with the machinery directive.

The approval mark for SINTEF Technical Approval TG 20740 may also be used.

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402.

for SINTEF



Hans Boye Skogstad
Approval Manager