

Humes Effluent Management System

Increase efficiency and profit on your farm



Managing dairy effluent is a key environmental concern and is subject to regional council and industry regulations.

The Humes Effluent Management System has been carefully designed, using a unique pump system and automated controls, to efficiently manage animal effluent.

The system features a high quality designed stone trap and pump chamber, with a unique Mono® VSE-061 vertical spindle pump. The system is operated by a sophisticated electronic control programme.

The Humes Effluent Management System returns nutrient-rich animal effluent to the pasture. Washed down effluent enters the pump station via the stone trap. When the specified level is reached in the chamber, the pump will automatically operate. The effluent is then thoroughly mixed as it is pumped to a travelling irrigator, for distribution onto grazing pastures.

Features

- Automated electronic operating controls
- 4kW Mono® VSE-061 vertical spindle pump
- No pump seals
- Safety grate covers and perimeter fences
- ABS mixer

Benefits

- Excellent utilisation of natural fertiliser
- Controlled management of dairy farm effluent
- Reduced energy costs
- Low maintenance requirements
- Meets independent health & safety recommendations
- Environmentally friendly

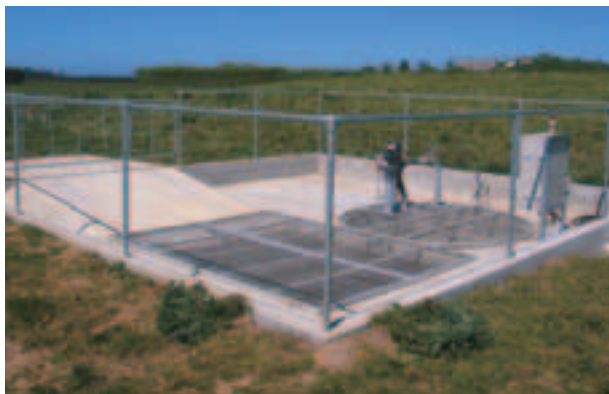


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System design

The picture below shows the standard Humes Effluent Management System layout. If Regional Council guidelines request greater storage capacity, the Humes Effluent Management System can be designed to accommodate this requirement for your farm.



The process

Raw effluent and wash water flows from the milking shed's pit or yard through the farm drainage system into the stone trap. At this stage stones or gravel that might damage the pump settle out. The effluent flows, via a weir, into the pump chamber.

When the sump fills to a pre-set level, a float toggle switch triggers the automated cycle.

The Mono® VSE-061 pump is always primed. Mixing begins and after approximately 10 seconds, the pump starts. At the end of the mixing cycle the sump wash is automatically triggered.

The mixing and pumping process operates as long as it takes to empty the sump. This depends on how much inflow is taking place at the same time.

The effluent is stored for a minimal time, usually pumped out as it collects and is spread on the pasture in low enough concentrations to ensure that there is effective uptake of nutrients and minimal run-off into farm waterways.

The components

All of the components in the Humes Effluent Management System have been developed in conjunction with our suppliers. The focus has been to produce a premium product engineered to the highest possible standard.

The pump and ABS mixer

Humes Pipeline Systems and Mono Pumps (NZ) Ltd. have jointly developed the Mono® VSE-061 effluent pump.

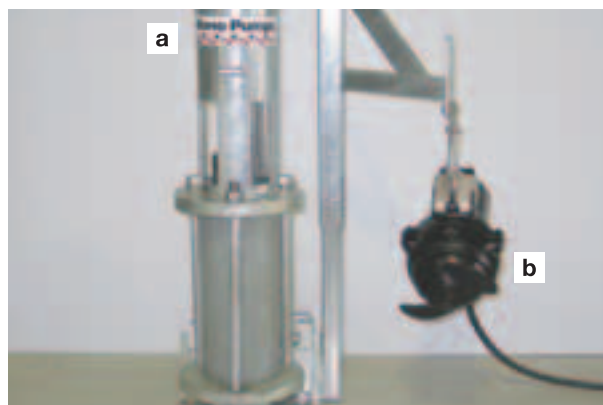
The positive displacement action of the pump offers several advantages over alternative technologies:

- The pump is capable of handling a wide range of solids and delivering these at relatively high pressures
- Hydraulic losses within the pump are minimal, especially when compared to centrifugal pumps
- Higher operating efficiencies allowing the use of smaller capacity motor (4kW) to achieve the same performance

The pump is a true seal-less pump, as the new design has eliminated the need for a mechanical seal or gland packing. Being vertically mounted in the chamber on a coupling allows an easy removal if required.

The pumping element consists of a nitrile rubber stator and a hard chrome plated rotor, selected for high wear resistance. The pump speed and pressure capability have been chosen to provide optimum life and performance.

An ABS submersible mixer is an integral part of the system and is strategically located in the sump. This very efficient mixer ensures that the pump is always fed with a high quality effluent while preventing deposition of material in the wet well.



a The Mono® VSE-061 pump

b The ABS submersible mixer

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System controls

For the Humes Effluent Management system to run at optimum performance Humes have designed a unique software package that controls the operation.

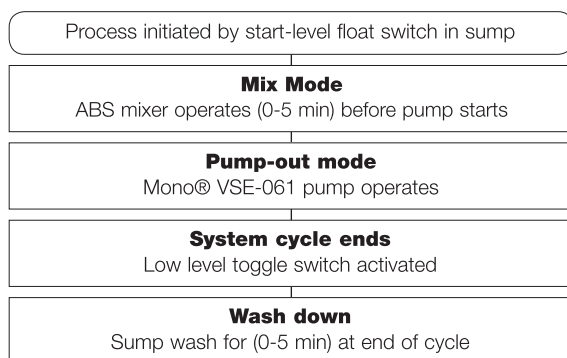
This VYSTA® software controls the pump, the mixer and the wash down function. A key benefit for the farmer is a quick diagnostic of any operational faults and the ability to change the parameters to suit the farm's requirements.

The software is installed in a robust PDL Elite Series V.S.D. control unit specifically designed for industrial environments.

The diagram below illustrates how the software controls the system process.

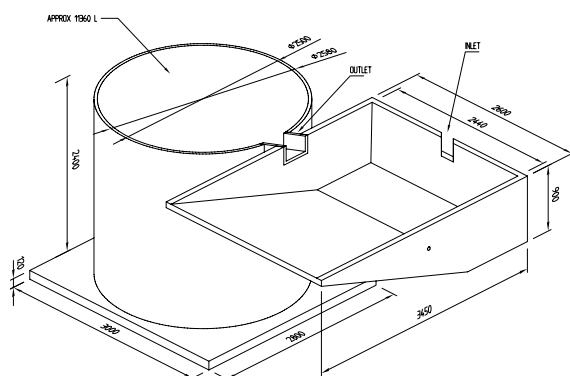
Humes Effluent Management System Control Flow Diagram

(Timers and parameters will vary between systems to meet individual requirements)



Stone trap and sump chamber

Manufactured by Humes, the stone trap is reinforced concrete and has a 2.4 metre entry to enable tractor buckets to clean with ease.



With this new enhanced design, incoming wash down enters the stone trap on an angle and exits into the sump via the weir concept. These two features contribute to slowing down the velocity of the incoming flows allowing more time for stones and gravel (that might damage the pump) to settle out.

To ensure the stone trap works effectively in its primary function regular maintenance must be carried out.

The Humes precast sump unit comes with a reinforced concrete base that has been designed to provide a solid and durable platform for the sump units.

The base has a "no float" capability, making it ideal for areas that have high water tables.

Galvanized steel safety grates are supplied for both the sump chamber and stone trap.

Effluent pipe and fittings



Humes have a range of effluent pipes and fittings to suit your farm. The main pipeline is 90mm diameter polyethylene and can be either surface laid or buried. Joiners are required at approximately 100m intervals and are smooth bore "Plasson type".



A 90mm Plasson connector

Hydrants

Unique polyethylene Hydrants have been developed by Humes to avoid durability problems associated with galvanized steel hydrants. Hydrants are designed with no internal obstructions, hose tails or cross-section reduction.



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The travelling irrigator

To complete the package, Humes provide the ACM travelling irrigator for distributing mixed effluent onto grazing pastures.



The irrigator discharges the effluent in a circular spray pattern of up to 35 metres diameter depending on system pressure. While it is rotating it winches itself across the ground on a wire, stopping automatically when it reaches the adjustable cable stop.

Constructed from hot dip galvanized steel and stainless steel the ACM irrigator is light enough to be manoeuvred easily and with the tow bar attachment can be towed by a quad bike or other farm vehicles.

[Refer the Humes Travelling Irrigator brochure for more details]

Installation

One of the most important considerations when purchasing an effluent system is peace of mind in terms of installation.

Humes work with rural contractors who are experienced and able to deliver quality workmanship.

Humes has developed an installation programme that has been engineered, tested and documented to provide consistency in quality and output.

Maintenance

The Humes Effluent Management System is designed to operate with the minimum of supervision, however, as with all mechanical equipment, regular maintenance and inspection will help to ensure long and trouble free service.

Safety



Operating the Humes Effluent Management System is safe and simple – the electronic control system has been designed with the farmer/worker in mind with all day to day operations appearing on the PDL ELITE drive display unit.

The pump station has been designed with safety in mind – the stone trap and the sump chamber are securely covered with galvanized steel grates and a perimeter fence and gate is installed to prevent stock from wandering on the concrete bunded area.

How to find out more about the Humes Effluent Management System

- Contact your local Humes Sales Centre or Humes Rural Territory Manager
- Ask about Humes free on-site consultation by your local Humes Rural Territory Manager
- Additional information including case studies and testimonials is available on our website: www.humes.co.nz/rural

Buyers and users of the products described in this brochure must make their own assessment of the suitability and appropriateness of the products for their particular use and the conditions in which they will be used. All queries regarding product suitability, purpose or installation should be directed to the nearest Humes Sales Centre for service and assistance. © Fletcher Concrete and Infrastructure Limited 2006. Printed 05/06.



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