



Raw Sewage Pumps
Sludge Pumps
Effluent Pumps
DAF System Pumps
Aeration Systems

HYDRO
INNOVATIONS

Municipal Wastewater Pumping Equipment

Venturi
eration, Inc.

ragazzini

GORMAN-RUPP
PUMPS

RamParts®
Pumps

EDUR®

Hydro Innovations

Hydro Innovations was formed in 2008 to be the Gorman-Rupp pump distributor for Australia.

We have since grown our "stable" of pump manufacturers to include RamParts of USA, EDUR of Germany, and Ragazzini of Italy.

We have also added an Aerator to our product offering, from USA manufacturer "Venturi-Aeration Inc".

They offer easy to maintain, safer aeration, in keeping with Hydro Innovation principles.

We have been very particular in selecting manufacturers to represent, wanting only the best in each class to offer to our customers.

The Hydro Innovations team is small, but dedicated to delivering excellent products and services to our customers.

Our main market areas are municipal and industrial wastewater, food process, utilities companies, and paper manufacturing.

We promote self priming pump systems because they are much safer for operators and more cost effective for asset owners. We believe the use of quality self priming pumps can reduce civil costs, reduce maintenance costs and greatly improve safety.

Our capabilities have grown over time and now include CAD, 3D modelling, and finite element analysis.

We have developed our own pump bases which have been specifically designed for use with self priming pumps, and with input from EDUR, are developing pumping systems for DAF plants.

"Hydro Innovations helped us solve some safety issues connected with the operation of the submersible wastewater pumps we had. We now have Gorman-Rupp self priming wastewater pumps in that application and our safety issues have been substantially reduced. We have no hesitation in endorsing Hydro Innovations."

Chris Schumacher,
Director of Works & Engineering, Oberon Council

"Another big plus with the Gorman-Rupp pump is that if you do get a malfunction occurring in the motor you can just replace the motor. This isn't possible with submersible pumps. If there is a motor problem you have to change the entire pump. As an engineer I grew up on submersible pumps but having now been exposed to an above ground centrifugal pump I'd say they have a lot to offer and should be seriously considered as a pump option in a wastewater treatment plant."

Adrian Harper,
Senior Engineer Wastewater Treatment Group,
Moe Wastewater Treatment Plant,
Gippsland Water

"Inghams Enterprises Pty Ltd have used Gorman-Rupp pumps for over 20 years. Gorman-Rupp pumps have provided reliable, dependable wastewater pumping service for our waste treatment processing plants in this time. Based on this experience we had no hesitation selecting Gorman-Rupp Pumps for a new trade waste treatment plant at one of our NSW plants."

David Jessup, Group Executive General Manager, Inghams Enterprises Pty Ltd.

Testimonials

"It's great to see that there are still suppliers out there who will stand behind their products and let you trial them before buying. If Hydro Innovations hadn't let me trial the pump I doubt I would have bought it upfront because I have been burnt so many times before. After all my negative experiences, the Gorman-Rupp T2A3-B is far more than I hoped for."

Mat Collier,
Principal Partner and Manager
of Midwest Piggery

"Choosing to partner with Hydro Innovations was the right decision. They grasped what was required immediately, have a very good understanding of their products and their backup service has been excellent."

Grahame Dunstan,
Co-ordinator for Wastewater Services for
Cairns Regional Council

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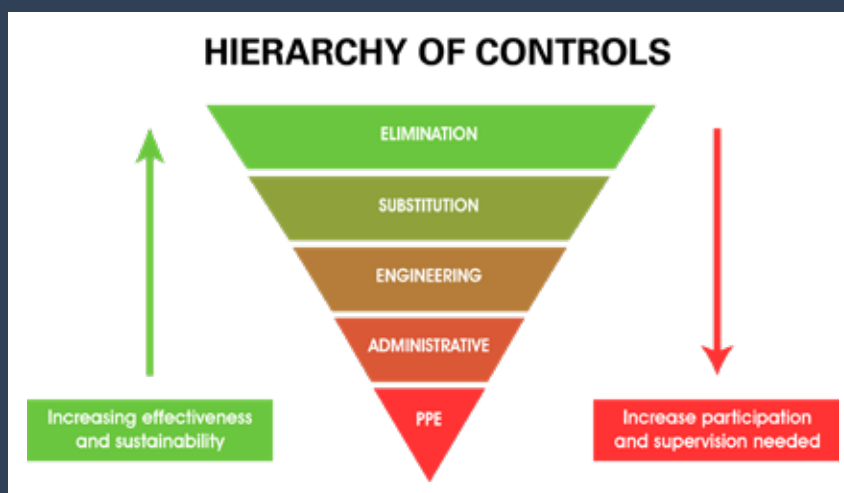


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Safety and Economy by Design

Because Gorman-Rupp sewage pumps are mounted at surface level [above the wastewater pit] many of the risks normally associated with maintaining wastewater pumps is virtually eliminated. These risks normally include: working over water; working at heights; working with heavy swinging weights, working with cranes; and working in confined spaces.

By eliminating the risks instead of having to manage them by increased participation and supervision, the chances of a mishap decreases along with the costs of maintaining systems associated with these risks. When these risks are eliminated, many ancillary costs and systems can be reduced or eliminated. The likes of rated lifting chains and the need to regularly inspect and replace them, height safety gear and the need for inspecting and replacing these and the need for training and keeping registers for all this equipment is all greatly reduced when the risk is eliminated.



Safer, Reliable, Cost Effective Self Priming Sewage Treatment Pumps

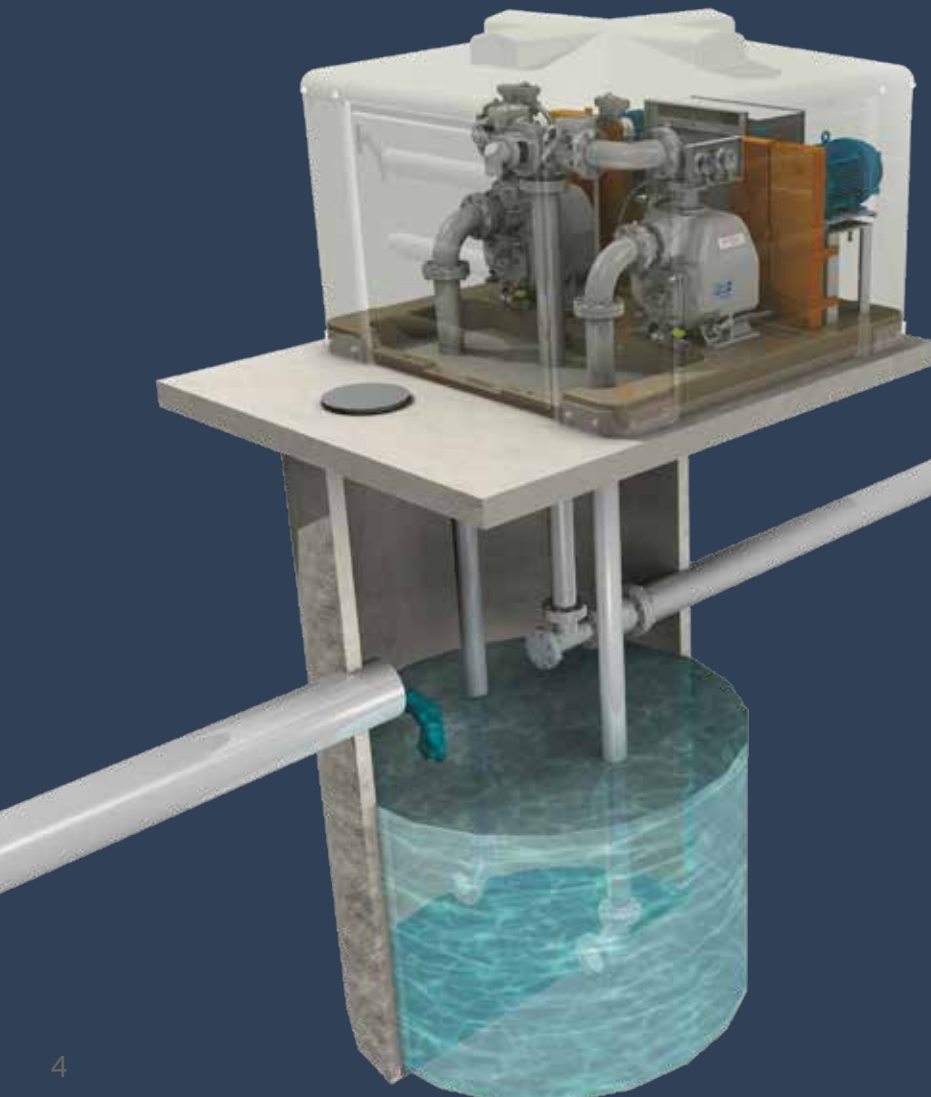
Gorman-Rupp self-priming centrifugal pumps are easy to install and easy to service. Operators can expect numerous benefits by going "High and Dry"

- Self-priming to 7.6 metres
- Safest pump to service
- Easiest pump to service
- Large Inspection Cover
- Most advanced servicing features
- No need to enter the wet well
- Eliminate confined spaces for pump service
- Self-cleaning wear plate system
- Flows from 4L/s to 200L/s
- Heads to 95 metres
- Low cost of ownership
- "Eradicator" minimises blockages by rags and stringy materials
- Hardened Materials for abrasive service
- 316SS for corrosive service
- CD4MCu for abrasive and corrosive service



Applications:

- Raw sewage
- Return Activated Sludge [RAS]
- Waste Activated Sludge [WAS]
- Grit



GR[®]
GORMAN-RUPP
PUMPS

Economical Pump Operation and Service

Gorman-Rupp's patented external shimless adjustment design doubles the life of the impeller and wear plate

Gorman-Rupp's Ultra V and Super T Series pumps offer a shimless system for adjusting the clearance between the impeller and wearplate. The unique collar and adjusting screw allow for incremental adjustments of the wearplate clearance to allow operators to keep the pump at peak operating efficiency for the life of the installation.



Once adjustments have been made, the collar locks in place, maintaining the clearance setting even if the coverplate is removed. Coverplate and rotating assembly clearances double the life of the impeller and wearplate.

Easily Removable Coverplate

The removable coverplate with easy-grip handle and pusher bolt capability provides quick and easy access to the pump interior [except T10].



Easy to Remove Check Valve

The flap valve is a breeze to change in Gorman-Rupp's Ultra V series pumps. It also has a "blowout" centre that limits excessive volute pressure, protecting the pump.



Removable Rotating Assembly

The entire rotating assembly can be removed without disturbing pump volute or piping. Pusher bolt holes are provided to assist with removal. A spare rotating assembly can be easily installed, resulting in less downtime.

Solids-Handling Impeller

Two-vane, ductile iron, semi-open solids handling impeller handles up to 76mm diameter solids, depending on model. Pump-out vanes on the impeller shroud reduce foreign material build-up behind the impeller and reduces pressure on the seal and bearings.



Gorman-Rupp Cartridge Seal

Exclusive double-floating, self-aligning, oil lubricated mechanical cartridge seal with stationary and rotating face of silicon carbide or tungsten titanium carbide is specifically designed for abrasive and/or trash handling service. Consult factory for additional seal configurations.



Dual Bearing Protection

Atmospheric barrier along with two lip seals provide additional protection of bearings. This unique design also allows external monitoring.

Improved Solids Handling - Eradicator

Deal With Tough Solids Applications

- Superior pumping of rags
- Pump wet wipes without choking
- Pass stringy materials
- Pump plastic bags, rope etc



Design Features

- Aggressive self-cleaning wear-plate incorporating notches and grooves
- A patent-pending lacerating tooth to help clean the impeller vanes and break up stringy materials
- A special cover-plate featuring a small lightweight inspection hatch
- Increased opening for easier passage of solids



System Benefits

- Easier access to impeller
- More uptime and less downtime
- Reduced maintenance costs
- Lower life-cycle costs
- No expensive chopper blades
- Available in steel, hardened steel and stainless steel
- Available as a retrofit kit on all Gorman-Rupp Super T Series pumps.



ERADICATOR[™]
Solids Management System

Water Re-Use (High Head Transfer)

Using self-priming pumps for water reuse applications can reduce capital costs, reduce maintenance costs and improve safety.

- No need for a dry well
- No lifting chains or guide rails to replace or maintain
- Reduced infrastructure costs
- Easier access

Ideal pumps are either Gorman-Rupp's Super U Series, or EDUR's SU Series



Gorman-Rupp Super U Series

- Self-prime to 7.6 metres
- Hydraulic Efficiencies to 78%
- Easy and safe for operators to access and maintain
- No Confined spaces
- Complete service without disconnecting pump from piping
- Large removable inspection cover-plate
- Adjust clearances in under 5 minutes [not hours]
- Keep pumps in peak operating efficiency
- Flows to 85 L/s
- Pressure to 56m



EDUR SU Series

- Self-prime to 7.6 metres
- Hydraulic Efficiencies to 70%
- Easy and safe for operators to access and maintain
- No Confined spaces
- Flows to 60 L/s
- Pressure to 160m



Sludge with High % Solids

When sludge solids concentrations become high [in excess of 6%], positive displacement pumps provide a good solution, as centrifugal pumps start losing efficiency at or above this level of solids concentration. Single acting diaphragm pumps and peristaltic pumps offer a solid solution to these pumping duties.

Ramparts Diaphragm Pumps

Ramparts "P Series" pumps offer features designed to deliver superior sludge pumping. These include:

- Self-priming to 6m allows flexibility in design
- Adjust suction and discharge pressures independently to tailor pumps for smooth operation
- Run dry indefinitely to prevent damage and save costs
- Quick and inexpensive to repair vs other technologies
- Easy clog/blockage removal
- Extra thick cast iron pump casings for a long service life
- Only 3 moving wetted parts
- Diaphragm materials to suit abrasive or corrosive media
- Flows from 500 LPM to 80m³/hr
- Pressure to 65m



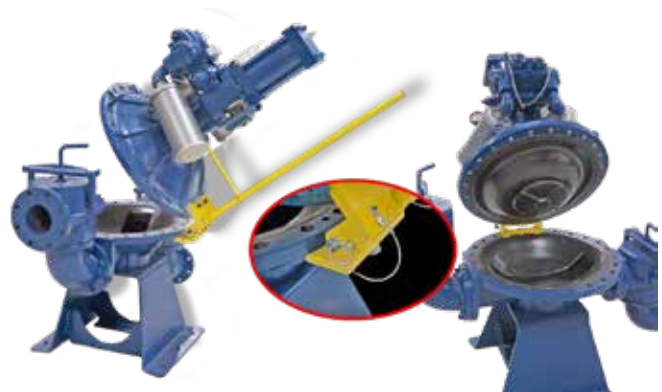
Simple Design with easily accessed parts



Several diaphragm materials



Rugged Construction for Tough Applications



Sidekick provides easy access for diaphragm changes

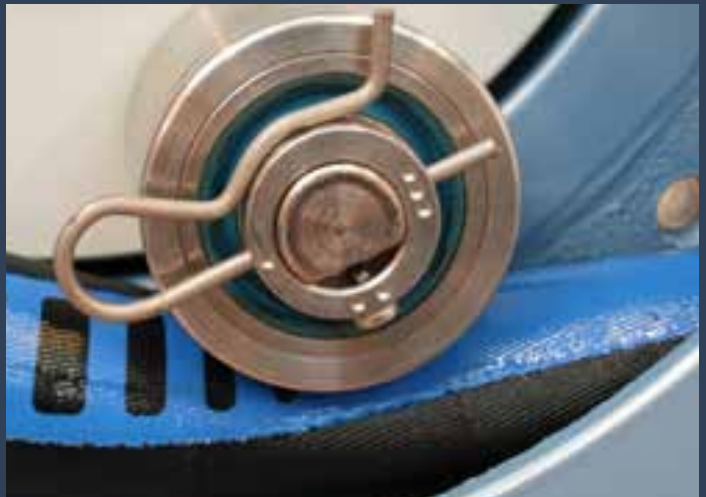
Ragazzini Peristaltic Pumps

Ragazzini peristaltic [hose] pumps are also excellent for pumping sewage sludge. They use a roller on bearing design, so do not need their casings full of lubricant. They have distinct advantages over other technologies for the pumping of sludge:

- Only one part [the hose] comes in contact with the sludge
- They can run dry without damage.
- They have no seals or valves [less to go wrong]
- They are self-priming to 8 metres, providing flexibility in design
- A leak detector provides early indication of hose failure
- A complete overhaul [hose replacement] can be done quickly and cleanly
- No oil filled casing
- Optional with automatic Retractable Roller
- Flows from 3 litres per hour to 180m³/hr
- Pressures to 15 bar



A Ragazzini at work at a treatment Plant



Roller on Bearing Design = No Messy casing Lubricant



Leak Detector System



Retractable Roller System

Aeration (Venturi)

Venturi-Aeration units are the safe and efficient way to aerate tanks, lagoons, basins and oxidization ditches.

Units are paired with Gorman-Rupp self priming pumps, so all of the aeration equipment can be mounted on the bank and not on the water surface. The Venturi-Aeration unit uses the "Venturi" effect to draw in atmospheric air.

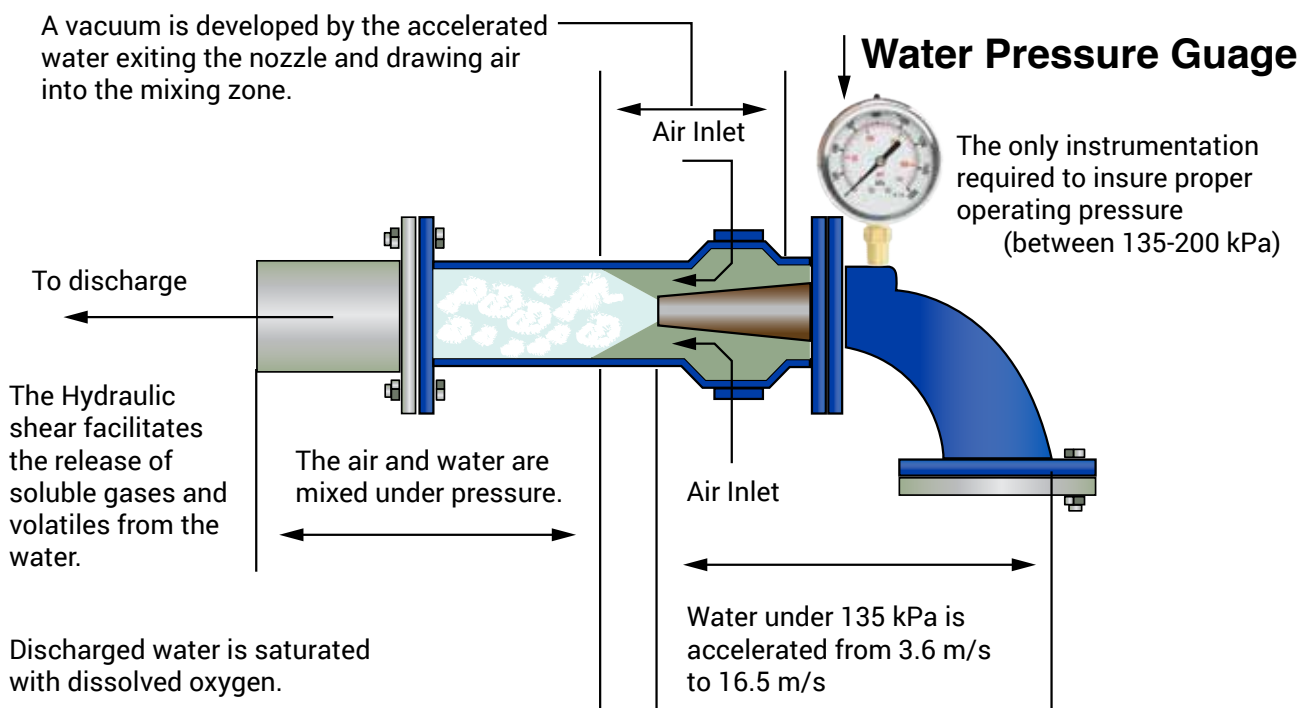
Water is primed from the water source by the Gorman-Rupp self-priming pump, and "fed" under pressure into the Venturi-Aerator (V-A). The water is accelerated through a nozzle in the V-A which is specifically machined to suit each application. Air is drawn in via the venturi effect and the air and water are mixed under pressure. The water is then discharged, where "hydraulic shear" facilitates the release of soluble gasses and volatiles from the water. The discharged water is saturated with dissolved oxygen.

Advantages

There are many advantages to the Venturi-Aerator. Some of these include:-

- Bank Mounted for safe and easy access
- Not having to use blowers or compressors
- Reduction in WHS issues because operators can quickly and safely access the Venturi-Aerator and pump for monitoring and/or maintenance
- No gearboxes to maintain or service
- No need for cranes or row boats to access equipment
- Easy to service and conduct routine maintenance

A vacuum is developed by the accelerated water exiting the nozzle and drawing air into the mixing zone.



Efficient

Just because the Venturi-Aerator is more convenient to access, and safer for operators, does not mean users need to accept lower efficiencies. Venturi-Aerators can produce an S.O.T.E. (standard oxygen transfer efficiency) of up to (and in some cases exceeding) 1.86kgO₂/kWh

Model	Flow Range (L/s)	Max. Dissolved Oxygen/Hr
VA-100	4-11	4.6kg
VA-250	12-22	9.2kg
VA-500	25-47	19.8kg
VA-800	50-88	37.0kg

The Venturi-Aerators need to then be paired with the most efficient pump to deliver the best S.O.T.E.

Applications for the Venturi-Aeration systems are many, and include:

- Odour control, corrosion control and BOD reduction at Sewage Pumping Stations
- Odour control and pH improvement at Food Process Plants
- Sludge separation to enhance settling and performance of the primary clarifier at WWTP's
- Septage Receiving - for odour control, BOD reduction, degassing H₂S and "shearing" organic materials
- Mixing and Equalization
- Supernatant aeration from digesters
- Landfill leachate aeration prior to head-works
- Oil & Grease Recovery
- Effluent aeration to streams or wetlands
- Stripping PCE, TCE, etc. from industrial waste streams and groundwater
- Lagoon aeration with two zones
- Stripping CO₂ to raise pH, allowing for nitrification (pH >6.8) to begin

DAF System



EDUR has been manufacturing high quality centrifugal pumps in Germany since 1927. Each pump is manufactured to exacting standards and subject to a computer controlled final inspection and 100% testing to DIN EN 9906.

- The EDUR DAF pump can replace all of the equipment in the "conventional" pump/air system, reducing capital cost and maintenance cost. The EDUR system:
- Replaces the conventional pump
- Eliminates the need for a compressor
- Eliminates the need for an air saturation vessel
- Eliminates complicated controls.
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- The advantages to the asset owner are many:
- Less components in the system
- No maintenance on a compressor
- No maintenance on the air saturation [pressure] vessel
- No on-going re-certification of the pressure vessel

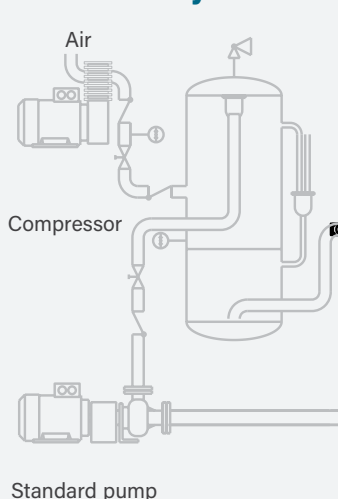


The EDUR DAF pump is specifically designed to handle air. A valve on the suction line creates a negative pressure so that the pump can draw atmospheric air through an air valve.

A valve in the discharge line allows the pump to develop maximum pressure [up to 10 Bar] to "force" the air into solution. When the water enters the lower pressure of the DAF tank, the air comes out of solution, forming 30-70µm micro bubbles that float the fats, oils and grease to the surface.



Conventional System



Improved EDUR System

Advantages:

- Reduce energy costs
- Reduce maintenance costs
- No compressor
- No air saturation vessel
- No complicated controls

EDUR Multiphase Pump

Emergency Sewage Bypass Pumping

A permanently installed emergency sewage bypass pump is ideal for preventing overflows during power outages ensuring risks to the health of residents and sensitive environments are minimised. The unit consists of:

- A self-priming sewage pump sized correctly for the station
- Flows from 5 L/s through to 200 l/s
- A diesel engine to drive the pump
- Equipment mounted in an acoustically rated steel enclosure
- Controls that allow the pump to run only when sewage needs to be pumped [at the "on level"]
- The advantages of using a permanent bypass pump include:
 - Provide sewage pumping during a power outage
 - Provide pumping capacity if the submersible pumps fail
 - Provide pumping capacity if submersible pump controls fail
- The engine only runs when pumping is required, not for the full time the power is out
- The emergency pump can act as the standby if one of the electric pumps needs to be sent away for repair

A Gorman-Rupp Bypass Unit installed at WR1 in Cairns

Packaged Self Priming Pump Stations

Gorman-Rupp is the world's leading manufacturer of self-priming centrifugal pumps and the main producer of packaged above-ground pumping stations.

With thousands of installations over the past 40 years in the USA, and a growing population in Europe, these stations are a key solution for industrial and municipal wastewater pumping applications.

Not only are they quick and easy to install with minimal environmental impact, the pumps require minimal, safe and simple maintenance, which means these above-ground pump stations offer a whole range of advantages over submersible or dry-pit pump stations.

Gorman-Rupp self-priming centrifugal sewage pumps are located at ground level to allow operators easy and safe access for service and maintenance.

They can operate on suction lifts to 7.6 metres, can deliver flows to 200 litres per second with a single pump, and deliver heads to 95 metres.



- Located at ground level, Gorman-Rupp packaged sewage pump stations offer a safe and easy to maintain solution for the transfer of domestic sewage.
- Safer and easier for operators to access
- Robust construction for a long service life
- Easy to maintain and keep pumps at peak operating efficiency
- Servicing can be done SAFELY by one operator
- Located up to 7.6m above water level in the wet well
- Pumps can "self-clean" the wet well
- Wet well safety covers never need to be opened
- No guide rails or discharge bends ever need replacing
- No need for a separate valve chamber
- No need for rated lifting chains and their re-certification and regular replacement
- No working over water, working at heights or working with cranes
- Wet wells can be smaller, because only the suction lines need to be in there
- Are the perfect choice for upgrading flow or pressure at existing pump stations
- New self-priming pumps can be mounted in existing buildings or new fibreglass or acoustic metal enclosures
- The entire station [pumps and valves] can be tested to site conditions at the factory for peace of mind.
- The entire station is built, assembled, tested and warranted by the manufacturer.

Self Cleaning Sump Design



The SCS is a revolutionary concept designed to replace the conventional cylindrical sewage station wet well. When used with self-priming pumps, the SCS concept has been designed to:

- Eliminate blockages caused by the build-up of stringy materials, rags and wipes
- Eliminate sediment build-up
- Eliminate fat and grease build-up
- Eliminate air entrainment
- Reduce energy consumption
- Reduce gases and odour
- Eliminate the need for "well washing"
- Greatly reduce blockages in the pump
- Greatly reduce maintenance costs
- Reduce civil costs

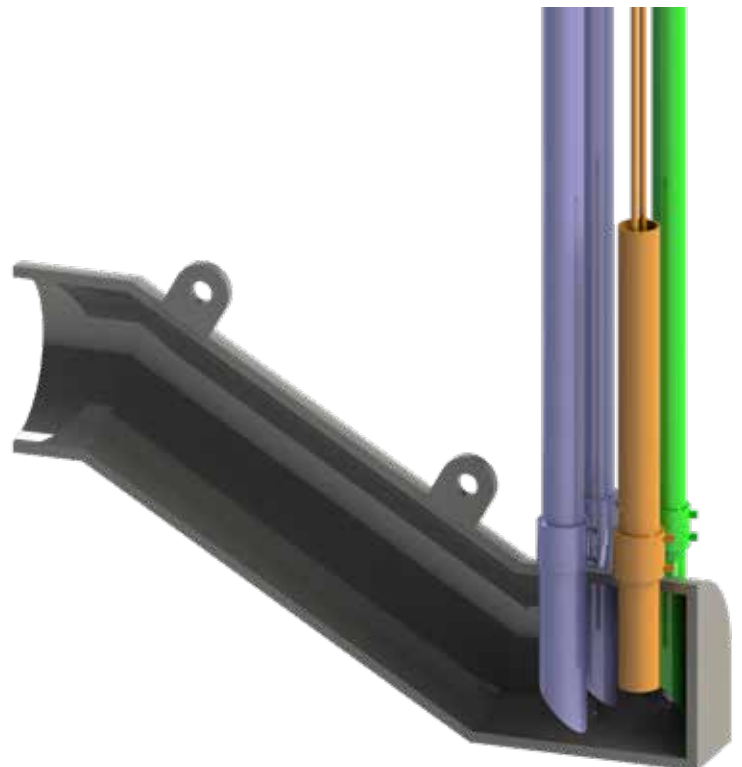
The premise is simple.

Keep the fluid moving as long as possible, not giving the solids [sediment, rags and fat] any time to settle out.

- When the fluid is moving, pump at a level that produces the best "cleaning effect"
- Keep "non-pumping" times short.
- Use equipment that is easy and safe to access, reliable, and easy to maintain.

The complete system consists of the following:

- A short sloping collector pipe in HDPE [which replaces the conventional concrete wet well]
- A modified maintenance/man hole [with sloping bottom to direct flow to the SCS]
- A Gorman-Rupp self priming packaged pump station with VFD controls
- An operating procedure designed to clean solids out with every cycle



“Above ground pumps are safer and more cost effective”



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