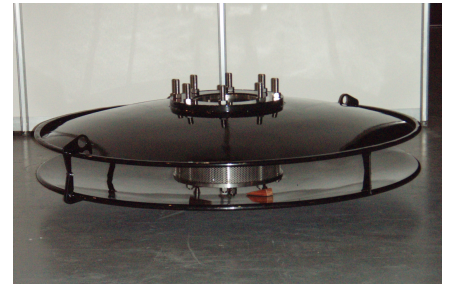




Mussel pumping technology
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2" side-entry unit complete with inlet pipe.



10" top-entry unit with high-flow footvalve

We performed a flow simulation of the M120 Mussel fitted to a suction pipe versus a standard open pipe with no Mussel. The Mussel dramatically reduces the amount of turbulent energy at the pipe inlet. Comparative measurements of the turbulent kinetic energy and associated pressure drops shows a 40% improvement in terms of energy losses in the system when the Mussel is attached.

Michael Roomina, PhD. Fluvius Pty Ltd. NSW.

On our GAAM 4" it doubled what we could previously run at pressure mode; it allowed us to run two 950Ltr branches with 2 metre lift, with our old setup we could only ever run one branch. At volume mode it increased pressure 57%; the delivery pressure with our original inlet was 70kPa, with your Mussel package it was 110kPa. There is also much less strain on the operators; your unit offers added safety.

Bob Potter, Wandin RFB, Victoria

We have the large 10" unit in and working, there was no problem with installing it in the shallow area. We picked up an 18% improvement in discharge pressure and the boys at the wash plant reckon the discharge pipes are flowing more full.

Mick Dickinson, Southern Pacific Sands, QLD.

Delivered capacity was about 15-20% more than calculated. This allowed us to throttle back the diesel motor about 300rpm, a big saving in fuel. If we knew about this before installation we would have opted for a smaller pump and motor.

Andrew Schult. Holbrook, NSW

Improve pumping efficiency by up to 57%*

* The actual benefit achieved will depend on your pump, hoses and other variables.

Around any pump inlet there are large swirls and turbulences as the fluid suddenly tries to enter the pipe at high speed. These turbulences create large energy losses in the system. Pumps have to work harder to pull through the turbulent drag.

The patented design and shape of the Mussel shells eliminate the turbulence and reduce the energy losses. The hydrodynamic "shell effect" is similar to the aerodynamic "ground effect" well known by aircraft pilots.

- The device greatly expands the pipe intake area to a very wide, horizontal area. This slows the fluid inflow velocity, neutralising turbulences and radically lowering suction forces.
- The flow velocity slows even more in the expansion envelope where velocity energy is converted to pressure energy, gently "pressurising" the inlet.
- The overall effect is to minimise entrance losses in the system and increase pump efficiency.

Works with any size or type of pump, and with any fluid

Mussel technology will work with centrifugal, positive displacement, vertical turbine and submersible pumps of any size.

The Mussel is made from two specially shaped domes, or 'shells', that enclose or replace standard pump suction inlets.

Each Mussel model has been carefully designed to optimise fluid flow dynamics into and inside the device. The area of the inlet distribution gap, the angle of the diffusion shells and the volume of the expansion envelope are all designed to work together to deliver optimum efficiency.

Mussels are available in side-entry or top entry configuration and made from durable materials to withstand harsh environments. Choose from galvanised steel, #316 stainless steel, anti-porous thermoplastic coatings or customised materials.

Specially designed inlet pipes are available, and Mussels can be fitted with a premium high-flow, low head-loss footvalve if required. No other footvalve can match the flow rates possible from the unique hydro-flow design.



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In our exploration drill pits we used to service our pumps twice per day. Since using the Mussel our pump service intervals have gone out to once, at most twice, per month.

Richard Borgas. Heathgate Resources. SA

Even in very thick reeds and shallow water, we could get approximately 40 to 50% more flow through both the 65mm and 38mm suction hoses on the respective pumps. This enabled us to have an extra 10 meters reach on the water jet through the discharge hoses. To fill our tank took 1 minute 30 seconds, usually with old strainer and float it took around 3 to 4 minutes.

Brent Williams. Minimbah Fire Brigade. NSW.

Since installing the Mussel package onto our hydro electric generator system there has not been a single blockage, previously these were a daily occurrence. Most amazingly is the large improvement in the performance of the marine generator. We have had to turn back the regulator three times now due to the large increase in power generation. Magic.

Stan Aarts, Daintree. QLD

After having trialled your unit on one pump station for over a year, we now wish to install the system on our remaining 15 stations. The cost of the package is unimportant to what they do – we'll recoup the costs in less than a year.

Rob Jaeschke. Clare, SA

Our mining and exploration business depends on constant and reliable water supply for processing and drilling and we were forever fiddling with the pumps and their suction to achieve this. Since your Mussel arrived we haven't been anywhere near the pumps except for scheduled servicing. Of all our plant, the Mussel is one of the most valuable pieces of equipment we own.

Peter Moran. Black Opal Mining and Exploration, Lightning Ridge, NSW.

Extract from difficult environments

Mussel pump intakes don't suck in weeds, sediment or air.

- They can successfully operate in very shallow depths or weed infested areas.
- Premature equipment breakdowns are all drastically reduced.
- The extremely low suction velocities minimise environmental damage around the intake.



This 3" Mussel is working at full flow with zero blockages. The negative suction pressures around the intake gap are so low that weeds are not sucked onto the inlet protected inside the shell. The pump was up and running within one minute of arrival and filled tankers all day long without a single blockage. Small tadpoles swam around the device, unaffected by the flow suction!

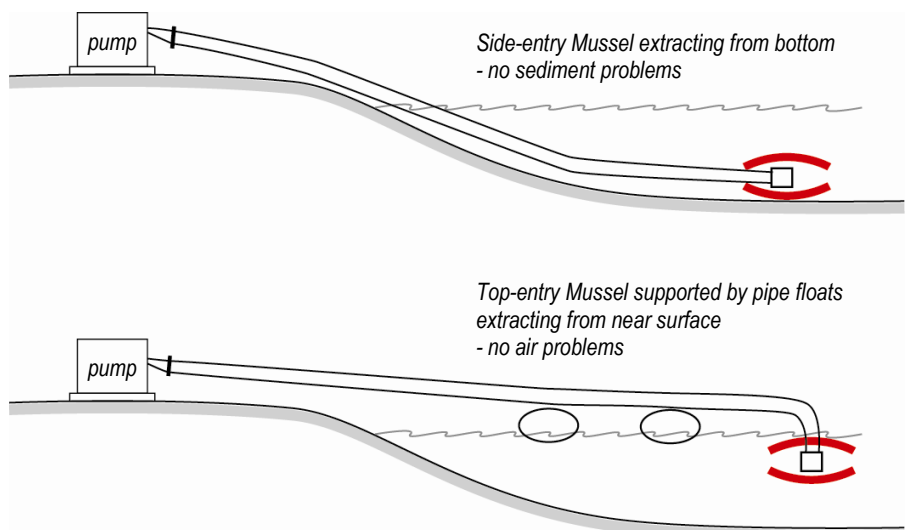
Safe, simple and rapid installation

Side-entry Mussels lock onto and swivel on the end of the suction hose. They can be placed in position, pushed in by the pipe or simply thrown in. The domed shape naturally swivels and slides to rest on the bottom of the fluid body.

Top-entry Mussels securely attach to the pipe with any connection of choice. They can be suspended to extract from any desired level.



A 2" Mussel installed in water so shallow that the top shell is exposed. At nearly 500 litres/minute there is zero turbulence. No mud streaming into the inlet and no air-pulling vortices. The flow velocity is so slow that sediment is not mobilized into the flow and air vortices do not form, even in water a few inches deep.



Mussel — more efficient pumping without weeds, sediment or air