



A French innovation helps operators bypass traditional potholes associated with lifting stations

Lift stations are a key link in the chain of wastewater collection and treatment. Traditional lift stations use submersible pumps in a wet well, which are activated by float switches when the water reaches a preset level. The pumps then run at full speed to empty the wet well.

A primary issue with submersible pumps in wet wells is clogging with wipes and other flushable materials. The float switches are subject to fouling with fats, oils, and grease and may require frequent cleaning to keep them operable. In addition, wet wells occasionally have to be cleaned out, typically with a vacuum truck. Then there is hydrogen sulphide gas that can corrode electrical components, anything made of steel or iron, and even concrete.

These pump clogging issues experienced in many countries today were addressed and resolved by French innovator Stéphane Dumonceaux. His company, S.I.D.E Industrie, patented and installed its first DIP System in 2003 and since then more than 1,500 of these systems have been utilised in locations throughout France – for example in Disneyland Paris – as well as in the US, Canada, Cambodia, Portugal, Ivory Coast, and the Caribbean Islands.

Based on practical expertise in the field, the development of the company's product range – 56 models with flow rates

from 20 to 10,000gpm/unit and heads from 3 to 300ft – is a result of 30 years of research and from listening to the daily concerns of its 1,500 users worldwide. This has allowed S.I.D.E to develop a modern alternative to wastewater lift stations that saves time and money.

Developing the DIP

In 2002, the DIP System was patented and found its first application and use at a bypass on an existing pumping station that needed to be renovated and recovered. Several "big names" in French regional water agencies, such as Veolia, Suez, and Saur, have since then adopted the system to bypass lift stations of various size in the context of major works during several weeks, and later several months between 2002 and 2005.

The DIP System works without the operator having to set up a provisional station, which was the only solution its introduction. Residents

living close to the works where the DIP System has been used have appreciated the absence of noise and odours of the bypass system provisory in place, so much so that some regretted the end of works and the removal of the DIP as these nuisances returned when the brand new submersible pump unit was started.

With the DIP System, the wastewater remains inside the piping and the pump, creating a clean and dry environment. As the DIP system pumps are directly connected to the lift station inlet and outlet, a wet well is not necessary. The



Sidinix prefabricated lift station fitted with the DIP System



The DIP System's reversing impeller shreds material caught in it



A DIP System installed in Portugal

pumps operate continuously and are controlled by a variable frequency drive, which ensures that they run at the speed necessary to handle the flow. By lifting gravity effluent directly from effluent downstream without water charging or a collecting tank, the DIP System eliminates all the main problems of retained volumes of effluent, such as dangerous gases (hydrogen sulphide), odours, sand and grease accumulation, equipment corrosion, clogged floaters, and offers access safety.

Applications worldwide

The DIP System is a suitable solution for communities that want to modernise or extend their wastewater collection networks, as it makes it possible to design durable and economical pumping stations with no wet well. The absence of a collection tank eliminates costly cleaning operations of traditional units and eliminates at the same time both the complaints from residents living close to an installation producing unpleasant odours and the risks for maintenance technicians.

The DIP System has many applications and is particularly suitable for treatment plants, sanitation, and public works, but also for pumping washing water, industrial effluent, wastewater, and sea water with the stainless steel version 1.4404. For example, in the beginning of 2015, S.I.D.E.'s distributor Robert Brown Associates Pumps won a deal to supply a DIP11-4VVIX-1.5kW system to Merck Pharma to pump its industrial wastewater with a high pH at high temperature.

Indeed, Merck Pharma was looking for a solution able to handle its industrial wastewater for injection with chemicals from washdown, and required the system to be a non-submersible duplex pumping

system. It had to be small enough to be hidden in a small bucket, fully made of stainless steel 316 to handle high pH due to chemicals at a high temperature of 82°C, and equipped with a special "anti-fibrous materials" impeller. The DIP11/4VVXI, manufactured from stainless steel 316 and featuring the DIPCut impeller was the suitable solution.

The DIP pump is also self-cleaning and uses a special impeller design. When the torque increases, the pump senses that it is becoming clogged. It then automatically slows down, stops, and reverses direction. When this happens, knives on the impeller pop up and slice up any caught rubbish. When the pump senses that it is running free again, it slows down once more, stops, and returns to the normal pumping direction. All this happens without operator intervention.

An eye on itself

The self-cleaning pumps are connected to and can be monitored and managed with a smart phone, tablet, or a desktop computer from anywhere in the world with the help of the OmniDIP web assistant. OmniDIP is a self-monitoring system designed to be used alongside the DIP System. It checks automatically and continuously all the processes through 230 parameters per pump in order to guarantee optimal operation and to avoid any unnecessary interventions. The analysis it provides is so precise that it allows forecasting and optimising instead of only informing when there is a technical fault. Plant staff can

also check and update the system via OmniDIP, as well as automatically handle preventive alerts sent by the DIP System.

Some automatic process checks of the DIP System, such as automatic clearing, automatic cleaning, or inspecting the level set-point can be performed through OmniDIP. This allows operators to know the state of the sensor and the motor and test the automatic reversal. If anything out of the ordinary is detected, a summary report is sent to the operator and in the event a physical intervention is required, a S.I.D.E technician will contact and guide the user. The Customer Access feature allows displaying the current condition of the DIP System and to edit summary reports delivered over a chosen period of time. This allows operators to directly check the average consumption, pumped volumes, runtime, and optimisation measures taken by the self-monitoring system. ■

For more information:

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The DIP System can be monitored through online tools