

A modern alternative

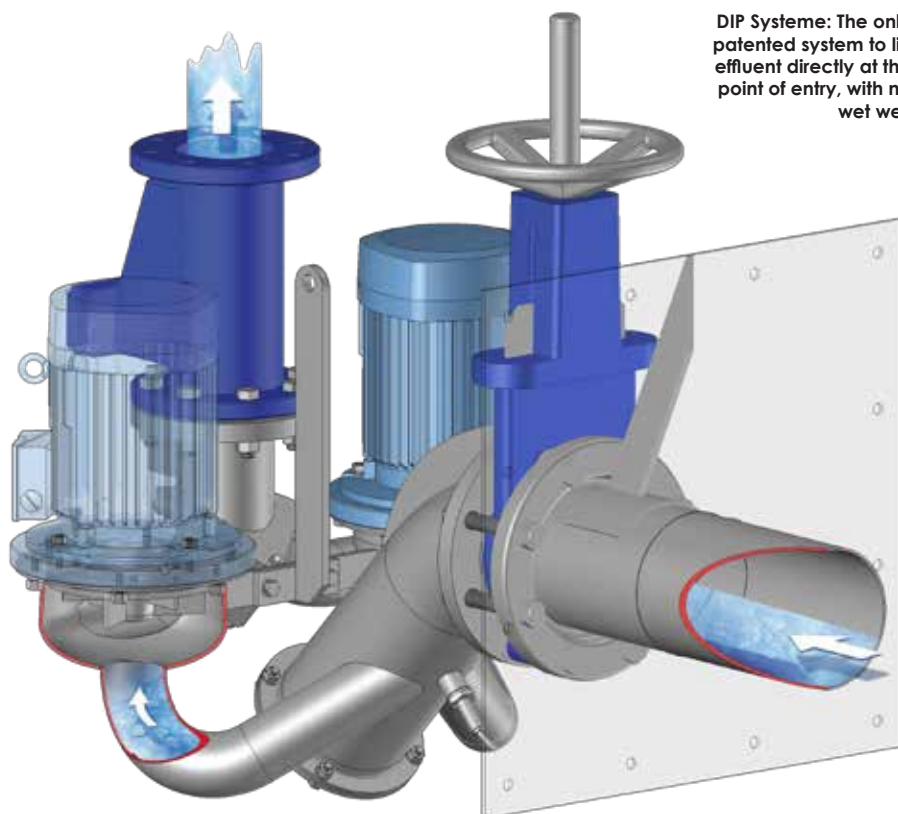
SIDE Industrie has invented a new, clean and safe way to lift raw effluents through direct-in-line pumping with no wet well

Traditional lift stations use submersible pumps in a wet well. The pumps are activated by float switches when the water reaches a preset level, and 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. Another major issue is hydrogen sulphide gas, which can corrode electrical components, anything made of steel or iron, and even concrete, as well as cause odours that inevitably lead to complaints.

These pump clogging issues, which are experienced in many countries today, were addressed and resolved years ago by French innovator Stephane Dumonceaux, general manager of SIDE Industrie and inventor of the DIP System. The first DIP System was patented, installed and proven successful in 2003 and since then there have been more than 1,500 of these systems in use in municipalities throughout France (for example in Disneyland Paris), as well as in the USA, Canada, Cambodia, Portugal, the Ivory Coast, and the Caribbean Islands.

Based on practical expertise in the field, the development of SIDE's product range (56 models with flowrate from 2 to 2000m³/h (20 to 10,000 gpm)/unit and head from 1 to 110m (3 to 300 ft)) is the result of 35 years of research, and listening to the daily concerns of its 1500 users worldwide, enabling the company to offer a modern alternative to wastewater lift stations that saves time and money by logically solving issues such as dangerous gases (H₂S), odours, sand and grease accumulation, hazardous access, variable flow and clogging.

How? Because the DIP System lifts and boosts variable flows from the sewer line invert to the discharge pipe with no need of any wet well. By lifting gravity effluent directly at the point of entry



DIP System: The only patented system to lift effluent directly at the point of entry, with no wet well

without water loading or a wet well, the DIP System overcomes the drawbacks of retained volumes of effluent such as dangerous gases (H₂S), smells, sand and grease accumulation, equipment corrosion, structural erosion and clogged floaters while also offering access safety.

The absence of a collection tank eliminates the costly cleaning operations of traditional units and at the same time eliminates the complaints from residents living close to an installation that produces unpleasant odours. Additionally, it removes the risks for maintenance technicians.

A change in direction

In today's global and throw-away society, the "enemy" is fibrous waste such as wipes, therefore in 2012 SIDE Industrie designed a special impeller called DIPCut, a patented impeller that becomes a "shredder" when it changes direction of rotation. DIPCut combines the



pumping function



shredding function

DIPCut: Automatic double function impeller for self-cleaning operation



Left: Norton's lift station and its electrical cabinet fitted with remote management system OmniDIP

Right: Rehabilitation of Norton's wastewater lift station with a DIP101

DIP Systeme in action

At the end of 2015, SIDE's distributor C&B Equipment won a tender from the state of Kansas to install a DIP101 at the Norton Correctional Facility in Kansas. The Norton project was a special one as it used a fibreglass tank with the pump pre-installed prior to shipment. The installation involved replacing an old dry pit system that continually clogged. The entire installation process was completed within only three days.

The chosen contractor excavated, poured concrete footer, lowered the tank with the DIP inside into the excavation, connected inlet and discharge, backfilled, connected cables to the provided cabinet and started up the DIP System.

One of the main reasons why the DIP System was chosen for this project is that it is designed to make wastewater lift stations much less maintenance intensive while effectively dealing with the trash, wipes and clothing that clog pumps and sewer lines. The DIP System automatically shreds these materials, allowing uninterrupted flow. This also eliminates the labour and costs associated with physically removing and disposing of the materials.

With the "old dry pit system", the maintenance team of the Norton Correctional Facility had to unclog the pumps every day. Municipalities and facilities converting

their existing wet well pumping stations to the DIP Systeme have obtained several key benefits. They include:

- The system is self-sufficient and can adapt speed automatically to flow intake
- The system can be managed remotely, eliminating the need to send a crew to the site
- Reduced manpower is required to remove and reinstall clogged pumps
- Rapid installation and less excavation needed for new construction.

These benefits have all proven true for the Norton Correctional Facility in the five months since installation. "Our application here at our facility is a little unique. We never know for sure what's going to get flushed down the wastewater system," explains Joel Hrabec, deputy warden of the Norton Correctional Facility. "We absolutely have not had to shut our sewer system down to repair, pull pumps, to unclog pumps – none of that has happened since installation ... I would recommend the DIP System wholeheartedly."

A video by C&B Equipment detailing the results of the Direct-In-Line Pump System installed at Norton Correctional Facility is available on the Fluid Handling International website ([www. http://fluidhandlingmag.com/videos](http://www.fluidhandlingmag.com/videos))

advantages of the conical Vortex impeller when pumping sand, gases or big solid wastes and a shredding function, cutting long fibrous materials into shreds. When the torque increases, the pump senses that it is becoming clogged. It then automatically slows down, stops and reverses direction. When it does that, knives on the impeller pop up and slice up any trash. When the pump senses that it is running free again, it slows down, stops and returns to the normal pumping direction. All this happens without operator intervention. Indeed, these self-cleaning pumps are connected and can be monitored and managed with a smart phone, tablet or desk top from anywhere in the world thanks to the included web assistance OmniDIP.

OmniDIP is a self-monitoring system dedicated to the DIP System. It checks

automatically and continuously all the processes through 230 parameters per pump in order to guarantee optimal operation for as long as possible and avoid any needless intervention from a technician. It analyses so precisely that it allows forecasting and optimisation, and not just to inform when there is a technical fault or to log data. The factory service also checks and updates the system via OmniDIP and will automatically handle preventive alerts sent by the DIP System. Thanks to the OmniDIP remote control system, the DIP System solution brings comfort, safety and long term savings, including significant reductions in energy usage.

Assuming that cleaning out a traditional pumping system costs on average \$350 (€293.70) – equivalent to an electric

consumption of 3.500kW/h, DIPCut can prevent those clogs while using less power. Unlike grinders or shear and cut pumps, the DIPCut impeller keeps its high hydraulic pumping efficiency. Moreover, while shredding all the power of the motor is used only by the four "knives", which use little energy. The result is double the efficiency of other pump systems, in turn preventing motor oversize.

The DIP System has many applications and is particularly suitable for treatment plants, sanitation, and public works, as well as for pumping washing water, industrial effluent, waste water and sea water in the stainless steel version L316. ■

For more information:

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