A new way to lift raw effluent

Rehabilitation of lift stations with DIP Systems

SIDE Industrie, a family company that has specialised for 30 years in solutions for the pumping of difficult fluids, invented a new clean and safe way to lift raw effluents through the concept of Direct In-Line pumping with no wet well, also known as wastewater circulation, patented and called DIP Systeme.

Based on practical expertise in the field, the development of the company's product range is the result of 35 years of research, and from listening to the daily concerns of users and designers, enabling the company to offer innovative solutions which are both simple and complete. Many have already been standard use in Europe for several years now.

By lifting gravity effluent directly at the point of entry, without water loading or a wet well, the DIP Systeme overcomes the drawbacks of retained volumes of effluent such as: dangerous gases (H2S), odours, sand and grease accumulation, equipment corrosion, structural erosion, clogged floats; and offers access safety.

The DIP Systeme is the ideal solution, then, 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 the costly cleaning operations of traditional units as well as the complaints from residents living close to an installation that produces unpleasant odours. Just as importantly, it also eliminates the risks for maintenance technicians.

The DIP Systeme allows lift stations to be designed in small spaces and so enables civil engineering costs to be significantly reduced. A single equipment size can respond to multiple cases with the same construction.

In the case of a lift station rehabilitation, DIP is adaptable to all existing lift station forms. It allows for increased flow capacities or discharge pressure that becomes too weak, without engineering modifications.

Simple conversion

A current wet well can be converted to a clean, dry DIP Systeme lift station without the expense of corrosion resistant materials. As part of a new lifting station installation project, the DIP Systeme enables engineering costs to be significantly reduced: Site work requires, at least, 1 metre (3 feet) less in foundation depth and concrete, and takes up less space than a traditional station. The structure's shape can be either round or square, and commercially available ducting and pipes pre-fabricated in concrete are more than adequate to contain the DIP equipment and the valve systems. Dry installation enables the single gate valve and check valve to be assembled in the same location as the DIP Systeme without the need for a separate valve chamber. A single hatch is required. For

Step by step

The DIP Systeme can be installed above the existing pumps while still operating

1 Use pipeplug upstream. Install the wall flange + the knife valve open (downtime : 1hr) Then release the flow.
2 It is now possible to control the flow with the knife valve.
3 Install the DIP with the stone trap open. The flow can go through! (downtime : 1hr) Then release the flow.
4 Connect the discharge pipe to one of the existing pump gate valves. Connect one DIP unit to the supply power even in direct start. (downtime : 2hr)
5 Ready to switch. A last deep cleaning, fill up the bottom with concrete or resin floor, do not forget a pit for the sump pump, and that's it.

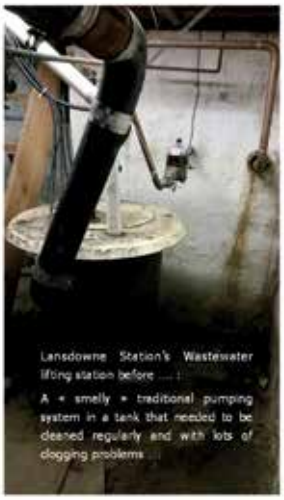
The existing pump system can keep operating until the final switch.
Hundreds of wet well stations have been transformed to a clean, dry & safe DIP room this way, and saved money.

inlet levels which are not very deep, the equipment room can even be constructed out of concrete blocks as there is no "pit" to be flooded, and it is therefore watertight. During station renovation, the DIP Systeme adapts to any type of currently available pipework; so precise positioning of input/output pipes is no longer required. The discharge head can be positioned at any angle through 360°.

One of the biggest problems with rehabilitation is downtime. When the flow cannot be stopped or bypassed easily, the DIP design and its accessories allow the existing lift station to be transformed in five steps in less than 2 hours.

Case studies

Here are some examples of rehabilitations made with different DIP systems in different countries all around the world:



SEPTA (Southeastern Pennsylvania Transportation Authority) chose and ordered via SIDE's distributor in Pennsylvania, USA, Robert Brown Associates, a DomoDIP and a DipCut to rehabilitate their wastewater pumping station at Lansdowne.

The main asset of the DomoDIP is that it is a direct in-line pumping system totally safe and clean with no wet well, which also means no more odour. Combined with SIDE's DipCut technology this pump system is the best solution to a clogging problem, which is why SEPTA chose the technology. After the success of this first installation at Lansdowne station, SEPTA installed two other DomoDIPs and two SIDINOXs (pre-piped and packaged duplex units) for similar cases in different stations.

In countries with hot climates the same problems arise: a lack of drinking water and too long a retention time in sanitation causing problems such as odours and emanation of H2S.

In 2015, in the Ivory Coast, the DIP Systeme technology was chosen for the rehabilitation of a lift station in St Jacques because it allows the reduction of retention time and the aeration of the effluent while pumping in order to fight against H2S.

The PUIUR (Projet d'Urgence d'Infrastructures Urbaines) then chose to rehabilitate the St. Jacques lift station by replacing three submersible electro-pumps groups with only one DIP 151/4VV - 55kW (75HP) designed for a flow of 400m³/h (1761gpm) at 42m (138ft) of head for each pump. The DIP System has been installed by the company Águas em Processo, and is operated by Sodeci.

In 2011, the company Águas em Processo was commissioned by Águas do Centro Litoral for the rehabilitation of the pumping station of Fontainhas. This lift station was initially equipped with three submersible pumps but showed operational problems causing odour troubles and weekly clogging. After replacing those three pumps with only one DIP 151/4VV-45Kw (designed for a low of 300m³/h (1320gpm) at 42m (137ft) of head) this lift station now operates at full capacity without any trouble and Águas do Centro Litoral noticed as well a large decrease in operational costs.

More than 30 DIP Systemes now operate in Portugal. All are clean and safe, as shown in the pictures below:

It can be seen how the lift station of the Dorons in Moutier (in the French Alps) is after its rehabilitation with two DIP systems. This lift station with a diameter of 4.5m (15ft) and a depth of 8m (26ft) for a total flow of 1200m³/h (5285gpm) at a head of 16m (52ft) has been installed by the company SOC for the Syndicate Eaux de Moyenne Tarentaise and is operated by Veolia. ▮

Before

After

For more information:
This article was written by Valérie Joguet, Marketing manager at Side Industrie.
Visit: www.side-industrie.com