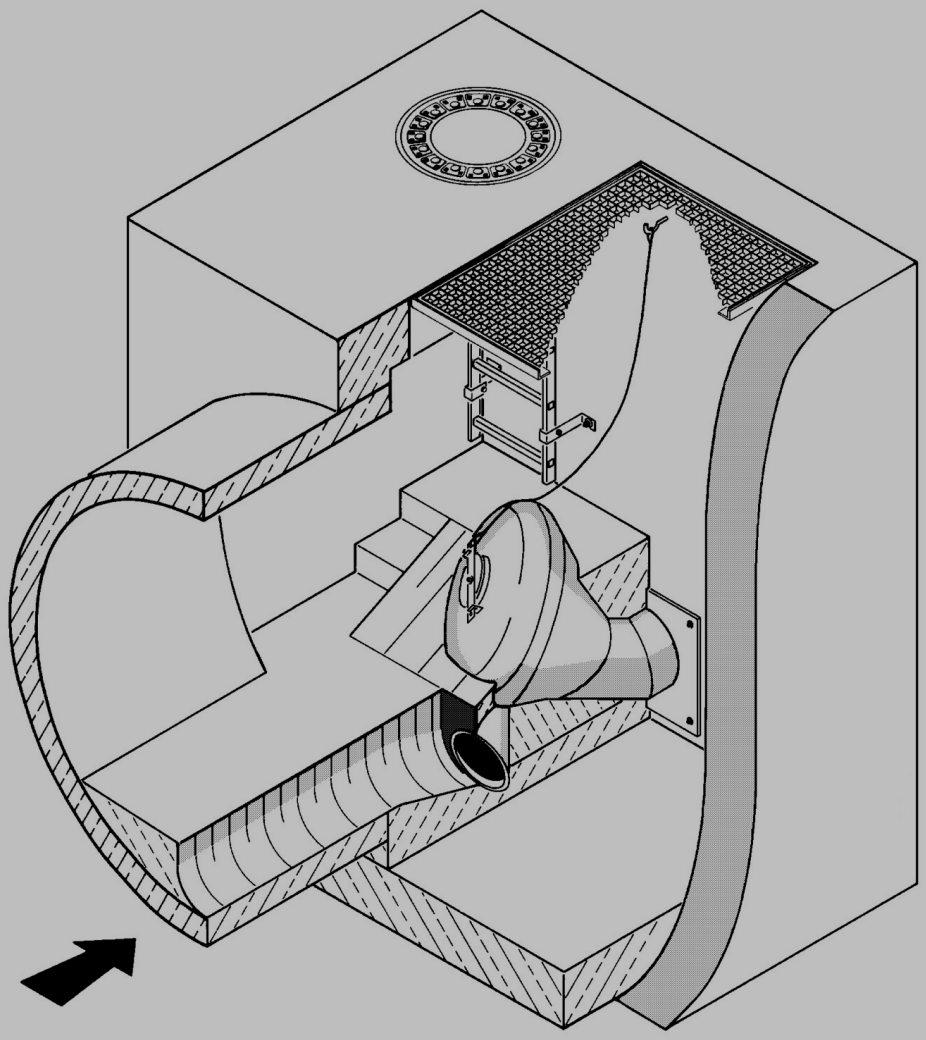

VEOLIA

HYDROVEX® IHV EURO VORTEX FLOW REGULATOR

CSO, SSO, Stormwater Management

WATER TECHNOLOGIES

HYDROVEX® IHV EURO Vortex Flow Regulator

Application

Precise and reliable flow control in collection systems is of utmost importance to be able to properly divert and convey storm water, sanitary and combined sewage. Flow control solutions with large cross sections are vital to avoid blockage due to debris and sediments found in the sewers. Precise flow throttling is also required during a storm event to protect the treatment plant from large flow surges. Many flow control devices use moving gates and parts to accomplish this; however these devices are prone to continuous blockage and increased maintenance.

The HYDROVEX® IHV EURO Vortex Flow Regulator is a vortex throttle designed to limit flows from storm overflows, retention basins, combined and sanitary sewers. By using the proven and reliable vortex technology, the HYDROVEX® IHV Euro Vortex Flow Regulator controls flow without moving parts or external energy.

Operation

The HYDROVEX® IHV EURO Vortex Flow Regulator has a rigid housing with no moving parts. Water enters the regulator housing tangentially through the inlet pipe and exits through the outlet orifice. During dry time flow conditions, the regulator presents practically no resistance to the incoming flow because of the large cross sections.

As flow increases, tangential velocities in the regulator increase and eventually lead to the creation of an air-filled vortex core. The latter obstructs most of the outlet orifice without physically reducing its size. As a result, the HYDROVEX® IHV EURO now becomes an ideal throttle.

The discharge from a HYDROVEX® IHV EURO is equivalent to an orifice 4-6 times smaller due to the air-filled vortex core. This allows the vortex regulator to have much larger openings, greatly reducing the likelihood of blockage.

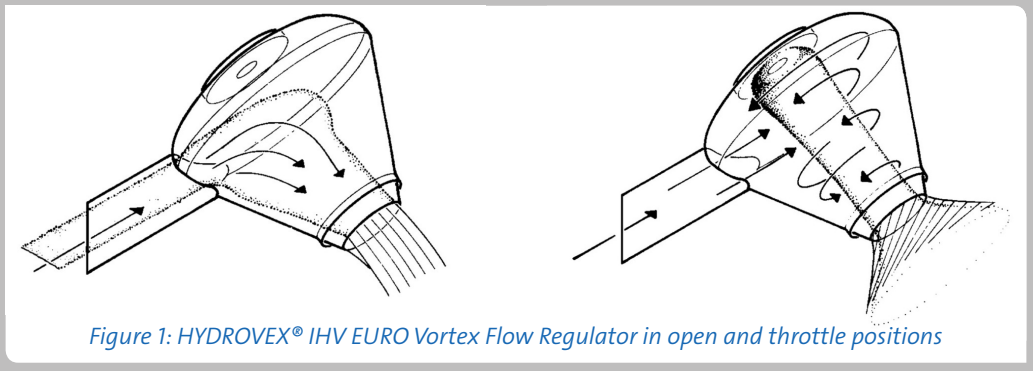

Figure 1: HYDROVEX® IHV EURO Vortex Flow Regulator in open and throttle positions

Advantages

The HYDROVEX® IHV EURO Vortex Flow Regulator has many advantages which are mostly due to its simple design. Some of these advantages include:

- No moving parts
- No external energy required
- High resistance to wear
- Large inlet/outlet openings
- Corrosion resistant stainless steel construction
- Precise throttling (± 5%)
- Small head loss during dry weather flow
- Simple and easy installation
- No additional concrete chamber

Flow Characteristics

The HYDROVEX® IHV EURO Vortex Flow Regulator has an "S" shaped flow curve. The lower portion of the curve is representative of dry weather flow when the flow is governed by the outlet orifice of the regulator. The steeper top portion of the curve is representative of vortex flow.

Flow characteristics of the HYDROVEX® IHV EURO Vortex Flow Regulators are the product of the pressure on the inlet side and the following parameters:

- inlet diameter (DN)
- housing or body diameter
- inclination angle (45º or 60º)
- outlet diameter (DO)

HYDROVEX® IHV EURO Vortex Flow Regulators are manufactured with standard nominal inlet diameters (DN) ranging from 100 to 1,000 mm (4" to 40"). Based on the above parameters, there are several hundred possible configurations for these regulators. The HYDROVEX® IHV EURO family of vortex flow regulators covers a very large flow range with high accuracy (±5%).

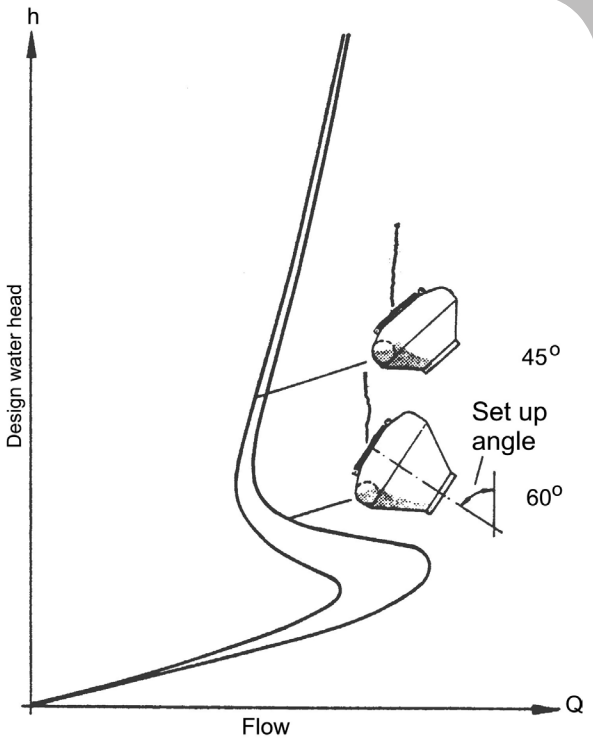

Figure 2: Influence of unit angle on the flow curve

Installation

HYDROVEX® IHV EURO Vortex Flow Regulators are designed to be installed in a wet well. As a result, the regulator is not accessible when water is stored in the well during an event. For this reason, the unit is supplied with an emergency bypass cover. In case of a blockage, the operator can pull on a cable mounted on the unit's cover which is accessible from the ground level. This will release the cover latches and the cover can be pulled out of the well (Figure 3). This effectively creates a bypass where the stored water can flow through. Once the wet well drains completely, the cover can be put back onto the regulator.

The HYDROVEX® IHV Euro Vortex Flow Regulator is shipped factory calibrated and ready for installation. The unit's back plate is anchored into the concrete and directly in front of the outlet pipe. Grout is then poured around the unit to properly direct the incoming flow towards the inlet of the regulator.

If a dry chamber installation is preferred, please refer to the HYDROVEX® IHV Vortex Flow Regulator product brochure.

Figure 3: HYDROVEX® IHV EURO Typical Installation

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