



ELIQUO | HYDROK

ALPHEUS[®]-AH

Rivers & large waterways flow control

The universal flow regulators for constant flows



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Rivers and large waterway flow control regulators

Automatic blockage release

THESE SYSTEMS STORE EXCESS FLOW DURING STORM EVENTS AND REGULATE THE WATER FLOW HELPING TO ALLEVIATE FLOODING. THE FLOW RATE NEEDS TO BE CAREFULLY CONTROLLED TO AVOID HYDRAULIC OVERLOAD OF THE DOWNSTREAM SYSTEM

Climate change is having an increasing influence on the weather, which is reflected by heavier and more persistent rainfall, combine this with impermeability of the ground is causing more frequent and greater flood events. It is therefore necessary to protect populated areas by natural or engineered flood protection measures. These systems store excess flow during storm events and regulate the water flow. The flow rate needs to be carefully controlled to avoid hydraulic overload of the downstream system. It is important that the flow from these systems remains constant irrespective of the water head. This is achieved by installing flow regulators such as the non-powered ALPHEUS-AH or the electric powered ActuSlide. In addition to this, flood protection measures like non-return gates and penstock systems on outlet structures are proven solutions of flood protection on rivers.



ALPHEUS-AH

The ALPHEUS-AH range of flow regulators are frequently used in the control of flows from rivers, streams and attenuation dam structures. It will control flows to the desired pass forward flow rate (PFF) throughout the head range. This optimises downstream capacity and minimises upstream attenuation volumes. The control can also help simplify dam wall structures reducing cost of construction. The proven ALPHEUS series has been adapted for the specific requirements of flow and water level to ensure a reliable and constant drain of the detention basin without electrical power. If an electrical powered solution is required, then the ActuSlide system which uses ultrasonic level sensors to detect changing water levels is available.

OPERATING PRICIPLE

Installed in front of the discharge orifice the designed discharge rate is accurately controlled – irrespective of the water level.

Accurate control, irrespective of head, is achieved with the help of a float, which is located inside the ALPHEUS' housing. The key design feature is that the housing is designed as a submersible bell: i.e. it is open at the bottom but is otherwise hermetically sealed. Consequently air is trapped within the housing and the water level inside the bell rises less than the level in the retained storm water because of the air pocket. The benefit of the differential pressure is that the unit needs less travel to achieve full regulation. A further important advantage of the submersible bell housing over other designs is that the control mechanism lies inside the air zone, i.e. outside the storm water, remaining 'dry' and reducing the risk of blockages.



STORM WATER FLOW

When storm water flows into the system under storm conditions, flow passes through the ALPHEUS-AH but due to the higher volume the level in the chamber rises. As it does so the level will rise within the unit itself, if the level reaches the float in the ALPHEUS-AH housing the control mechanism commences. As the float rises it causes the orifice plate to lower over the outlet thereby reducing the cross sectional area.



AUTOMATIC DE-BLOCKING

It is possible that blockages at the inlet control plate occur and will hinder storm water from entering the unit. In this case the water stored already in the unit discharges through the outlet, the float falls due to its own weight and in turn the inlet plate opens. As the inlet plate opens or, after it has completely opened, the solids can pass unrestricted into the unit, the water level rises quickly and returns the inlet plate to its regulating position.



The float activated mechanism, designed to maintain
a constant discharge without the use of external
energy sources.

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