

AQSEPTENCE GROUP

JOHNSON SCREENS® PASSIVE INTAKE SYSTEMS

ADVANTAGES

- Highly efficient
- Custom-designed and engineered
- Low operating costs
- Low capital costs
- Environmentally-friendly:
EPA Rule 316b-compliant and also compliant with
UK fish protection laws
- Low head loss
- Proven technology for shallow water
resources
- No waste stream

JOHNSON SCREENS® high capacity passive intake screens provide uninterrupted water withdrawal from lakes, rivers and oceans. With over 30 years of intake screen experience and thousands of installations covering a variety of conditions, application engineers from the Aqseptence Group can provide design and application assistance. From shallow rivers to deep oceans, the passive intake screen systems can meet site requirements anywhere in the world.

To provide maximum efficiency, the JOHNSON SCREENS® passive intake screens are custom designed and engineered to each unique environment, resulting in a system which costs less to install, operate and requires less maintenance.

The JOHNSON SCREENS® high capacity passive intake screens are constructed using non-plugging vee-Wire® with a patented internal dual flow modifier that creates a nearly uniform low flow velocity through the entire screen surface. This significantly reduces impingement and entrainment of debris while protecting aquatic life. Passive screens are designed to meet regulatory requirements for a maximum slot velocity for both entrainment and impingement. This velocity is typically 0.15 m/s which is the maximum velocity at which a juvenile fish can turn around, swim away and not be impinged onto a passive screen but the screens can be designed to the velocity requirements of the application. This, combined with a wide range of slot sizes (typically between 2 - 10 mm) determines our screen sizing. Furthermore, the large open area and low velocities result in a very low head loss in all applications, providing low overall operating costs.

Key Features

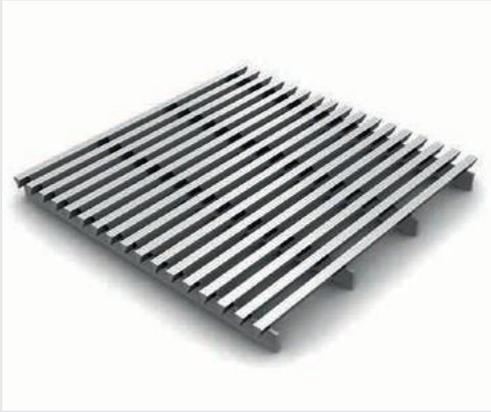
- Low capital costs and no moving parts, no power consumption, and low maintenance needs.
- Environmentally-friendly – this approach meets the US EPA's 316b regulations for fish protection.
- No waste stream – there is no debris brought to the surface to be handled or disposed of.
- Easy cleaning – with a periodic blast of compressed air using our Hydroburst™ system.
- Three standard configurations – drum, tee and half screens.
- Selection of materials – 304 stainless steel for fresh water and Z-alloy (CuNi) for repelling zebra mussel attachment and anti-bio fouling in seawater.
- Seawater applications – higher corrosion-resistant materials such as 316L, along with cathodic corrosion protection and duplex steels.
- Dual-flow modifier – provides low and even slot velocity (CFD modelling is available on demand).
- Patented internal flow modifier.



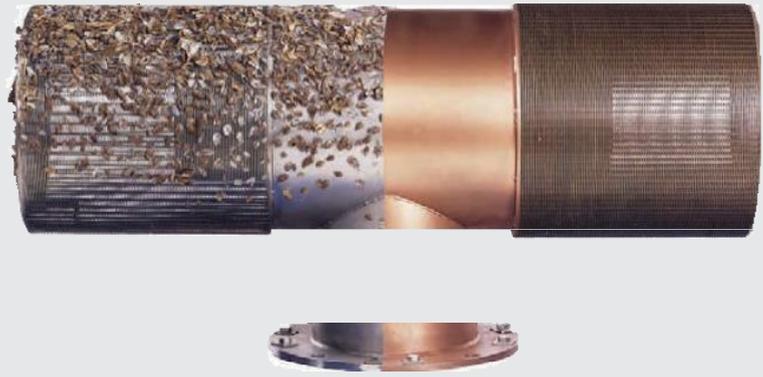
**Aqseptence
Group**

Brand. New. Start.

Bilfinger Water Technologies has become Aqseptence Group.



JOHNSON SCREENS® Vee-Wire®



JOHNSON SCREENS® Passive Intake Screen Z-Alloy (CuNi) to avoid zebra mussel growth

Internal Dual Flow Modifier

Early flow modifier designs, which included restrictive pipes using slots and holes, plugged easily and experienced a very high pressure drop across the screen surface area. The JOHNSON SCREENS® passive intake screen systems have an open pipe design that is much more effective, and is now the industry standard.

The key component of an intake screen system is the internal dual flow modifier. The even flow raises the overall efficiency of the screen to over 90 percent, which means more compact screen cylinders and Hydroburst™ components can be used.

The low pressure drop across the screen surface and through the screen body (lower head loss) reduces the amount of energy required to pull water through the screen, creating significant savings on operating costs.



Half Intake Screens: For Shallow Water

As water demands increase for cities, towns and industry, shallow water resources previously hard to withdraw from due to their lack of depth, have become a more viable option.

Our patented half screen has all the same attributes (low slot velocity, Hydroburst™ option, Vee Wire®, Dual flow modifier, etc.) as the standard passive intake screens but can operate in a much lower depth of water. Our standard passive screens require approximately half a diameter clearance around the screen. The half screen sits flat on the bottom and only needs the top clearance.



Hydroburst™ Air-Backwash System: Maximizes Intake System Efficiency

The Aqseptence Group developed the Hydroburst™ backwash system especially for conditions in which intake screens may need regular cleaning due to areas with high concentrations of debris or areas that are difficult to access.



Hydroburst™ with Surface Blast

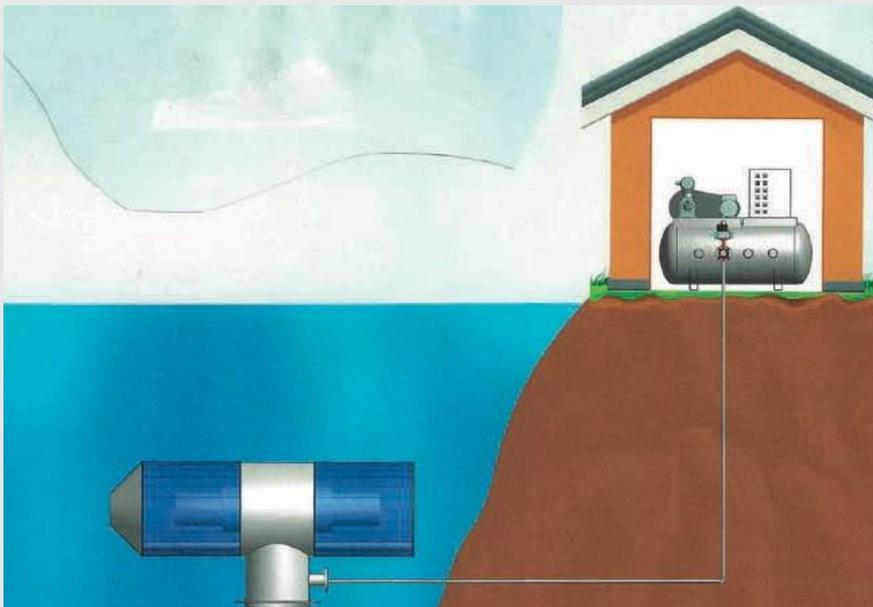
The process flushes the debris away from the screen surface by releasing a large volume of compressed air through the bottom of the screen within a few seconds. The typical backwash procedure cleans each water intake either sequentially or at regular intervals.

The Hydroburst™ basically consists of four main components typically pre-assembled on a skid:

1. A modern control panel, for manual or automatic operation.
2. A high-capacity receiver tank that stores the compressed air.
3. A high-capacity compressor, which supplies compressed air, needed to recharge the receiver tank.
4. Valves.
5. An optimized air distribution pipe assembly and nozzles inside the screen for even and efficient air distribution.

Hydroburst™ Air-Backwash System: Mode of Operation

With time, general debris will gather on the outer screen surface and will need periodic cleaning to keep the screen functioning continuously and properly. Our Hydroburst™ system offers an efficient method of regular cleaning without having to send divers in to clean the screens.



The Complete Hydroburst™ System

Our Hydroburst™ system is designed to deliver a sufficient volume of air in 3–5 seconds time – a real solid blast of air that has proven to work in all types of applications and conditions. This volume of air comes out from the bottom of the screen, and as it rises and expands, grabs and carries impinged debris away from the screen surface, returning the screen to a clean and efficient operating condition. Our application engineers evaluate screen size, depth and distance away in order to deliver the correct amount of air. Systems vary from operating a manual valve, to using a programmable timer system or automated PLC system that communicates to a central data control system / SCADA system for control.



JOHNSON SCREENS' Passive Intake Installation: Drinking Water Plant in South Carolina, USA



JOHNSON SCREENS' Passive Screen Installation for WE Power at Lake Michigan



Transport of JOHNSON SCREENS' Passive Screens to the Santa Maria Power Plant at a Site in Chile

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