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Aqseptence Group

## Johnson Offshore Intake Systems (JOIS™)

Johnson Offshore Intake Systems™ (JOIS™) provide uninterrupted water withdrawal from lakes, rivers and oceans.



With 50 years of intake screen experience and thousands of installations covering a variety of conditions, application engineers from Aqseptence Group can provide design and application assistance.

From shallow rivers to deep oceans from coastal to offshore installations JOIS™ can meet site requirements anywhere in the world. JOIS™ comprises two parts: one or more original Johnson Screens® passive intake screen(s) and the corresponding Hydro-burst™ air-powered cleaning unit.

### 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
- Easy and quick to install
- Low head loss
- Proven technology for shallow water resources
- No waste stream – there is no debris brought to the surface to be handled or disposed of
- Compact design
- Fully automated cleaning
- Submerged and offshore
- MaxFlow™ Intake design – enabling up to 40 % higher flow

## Johnson Screens® Passive Intake Screens



To provide maximum efficiency, Johnson Screens® passive intake screens are designed and engineered to each unique environment, resulting in a system which costs less to install, operate and requires less maintenance. Johnson Screens® high capacity passive intake screens are constructed using non-plugging Vee-Wire® with an 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, and low maintenance needs
- Easy cleaning – with a periodic blast of compressed air using our Hydroburst™ system
- Non-plugging Vee-Wire®
- Three standard configurations – drum, tee and half screens
- Internal dual-flow modifier – provides low and even slot velocity (CFD modelling is available on demand)
- Selection of materials – from 304 stainless steel for fresh water to Super Duplex for seawater; Z-alloy (CuNi) for repelling zebra mussel attachment and anti-bio fouling in fresh water

Picture on the left:  
Johnson Screens®  
Vee-Wire®



Picture on the right:  
Johnson Screens®  
Passive Intake  
Screen Z-Alloy  
(CuNi) to avoid  
zebra mussel growth



## Internal Dual Flow Modifier



In early development, Johnson looked at modifier designs, which included restrictive pipes using slots and holes, they were rejected due to potential plugging and a very high pressure drop across the screen surface area was experienced.

The Johnson Screens® passive intake screen systems have an open pipe design that is highly effective, and is based on the industry standard. The key component of a Johnson® 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 than with a single pipe modifier.

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.

## Max-Flow™ Passive Intake

NEW



Max-Flow™ Passive Intake Screen

Johnson Screens' next generation Passive Intakes with the Max-Flow™ design increase the flow capacity of the previous designs by up to 40%. The newly redesigned internal modifier allows an even slot velocity distribution also along the extended screening surface in the screen central area. The new

patent-pending screen design offers significant capital savings in any intake project by using more compact or fewer intake screens. Additionally, project savings can be increased by reducing piping and civil works. Naturally, the new screen design also offers all of the same features and benefits that standard passive screens do and still promises the same fish-friendly performance as the previous designs of Johnson Screens® Passive Intake screens have been doing for over 40 years. Johnson Screens® Max-Flow™ Passive Intake is a patent pending design.

## Half Intake Screens for Shallow Water

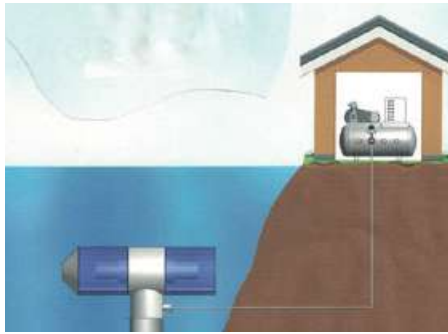


Johnson Screens® Half Intake Screen

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



With time, general debris might gather on the outer screen surface. Aqseptence Group GmbH has therefore developed the Hydroburst™ backwash system to ensure a reliable submerged intake system, the so called JOIS™ (Johnson Offshore Intake Systems). The Hydroburst™ cleans the passive intake screens efficiently from debris without having to send divers in to clean the screens, but by regularly releasing an appropriate volume of compressed air through the bottom of the screen within a few seconds time. The air displaces the water inside the screen which is consequently pressed through the screen openings in opposite flow direction,

followed by the compressed air. By means of its buoyancy the air distributes the debris into the water and so keeps the screen functioning continuously and properly.

Our Hydroburst™ system is designed to deliver a sufficient volume of air, customized to the site and installation conditions – a real solid blast of air that has proven to work in a wide variety of types of applications and conditions. By using a programmable timer system and automated PLC system that is able to communicate to a central data control system/SCADA system for control, it is possible to clean the screens in automatic and/or manual mode.

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