

DME-Seminar S-004-2017 – Presentation 01
Water Intake Technology - Systems and Solutions/Components

Aqseptence Group

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Wasser

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 **Johnson
Screens**

**Offshore Passive Intakes for
smaller/medium sized
desalination projects**

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Water Intake Technology - Systems and Solutions/Components

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Purpose and Application of Offshore Passive Intakes

- **Submerged offshore installation**
- **No moving parts, no extraction of waste from watersource**
- **Plug-In-System – easy and quick installation**
- **Smaller flowrates: usually up to 100,000 m³/day**
- **Reliable and straightforward cleaning operation thanks to automatic cleaning by Hydroburst**



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Johnson Offshore Intake System – JOIS™



1) Johnson Offshore Intake Screen
 2) Hydroburst Cleaning System

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Offshore Passive Intakes – Working/Installation Principle

- Three models: T-, S- and Half-T-Screen
- Materials: 304L, 316L, Duplex, Super Duplex, Z-Alloy (against biofouling)
- Withdrawal of water through the Vee-Wire® screen by dual flow modifier: resulting in even low pressure loss
- Low impact on fishes and other environment thanks to even and low slot velocity




Dual Flow Modifier

Velocity (ft/s)

0.50	15.25 cm/s
0.40	12.20 cm/s
0.30	9.15 cm/s
0.20	6.10 cm/s
0.10	3.05 cm/s
0.00	0.00 cm/s

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Offshore Passive Intakes – Working/Installation Principle



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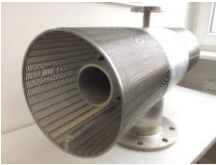

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Offshore Passive Intakes – Working Principle

- **Cleaning by Hydroburst:**
a sudden blast of compressed air flushes debris from the surface
- **Hydroburst Components:**
 - Compressor(s)
 - Air receiver
 - Automatic Air Valves
 - Control Panel
- **Automatic or manual mode**



GH1 Hydroburst

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Offshore Passive Intakes – Opportunities

- **Shallow Waters**
Down to minimum water depth of about 0.4 m
- **Far Offshore Screen**
Usually up to 400 m away from shore; in certain cases about 1 km possible
- **Deep Water Intake**
Several hundreds of meters
- **Access to in- and outside**
For visual inspection and potential cleaning from biological growth
- **Fish Protection**
Proven low slot velocities of max. 0.15 m/s



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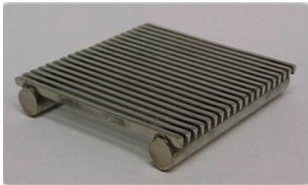
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Offshore Passive Intakes – Key Design Parameters

- **Low capital costs, no moving parts, easy to install and low maintenance needs**
- **Patented Dual Flow Modifier:**
 - Most even through-slot velocities and lowest entrainment risk
 - Very compact design
 - Low pressure loss
- **Fish-friendly design (compliant with American 316B rule)**
- **Non plugging Vee-Wire**
- **Automatic cleaning – with a periodic blast of compressed air using Hydroburst™ system**
- **Power consumption only after cleaning cycle**



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Offshore Passive Intakes – Case Studies

Cumwhinton Water Treatment Plant – UK

- Water Treatment Plant
- River Intake
- Installed in 2004: two T36 – 2 mm
- About 1,540 m³/h per screen
- 316L (1.4404)



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Offshore Passive Intakes – Case Studies

Tampa Bay, Florida

- Power and Desalination Plant
- River with mix of ground water and surface water
- 2001: two T84 – 2 mm installed, four additional in 2009
- About 10,000 m³/h per screen
- 316L (1.4404)



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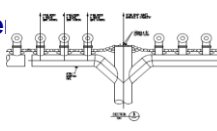
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Offshore Passive Intakes – Case Studies

WE Energies – Oak Creek Power Plant

- Lake Michigan
- 2006: 24 x T96E – 9.5mm installed
- Almost 15,000 m³/h per
- Z-Alloy (Cu/Ni)
- Compliant with 316B Fish Protection Rule



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Thank you very much for your attention

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