

UV Water Treatment
Hydro-Optic™ Technology

Canadian Fish Hatchery, Sam Livingston, Chooses Hydro-Optic™ UV for Water Biosecurity

To eliminate the risk of potential diseases that can impact fish health, Sam Livingston, one of North America's largest fish hatcheries located in Calgary, Alberta, Canada, chose Atlantium Technologies' Hydro-Optic™ (HOD) UV as the primary disinfection technology. With proven performance in delivering unparalleled water biosecurity in the aquaculture market and the ability to address 4-log inactivation of pathogens, the medium-pressure HOD UV provided the facility a proven solution for the protection of *Myxobolus Cerebralis*, *Renibacterium Salmoninarum* and *Myxosporean*.



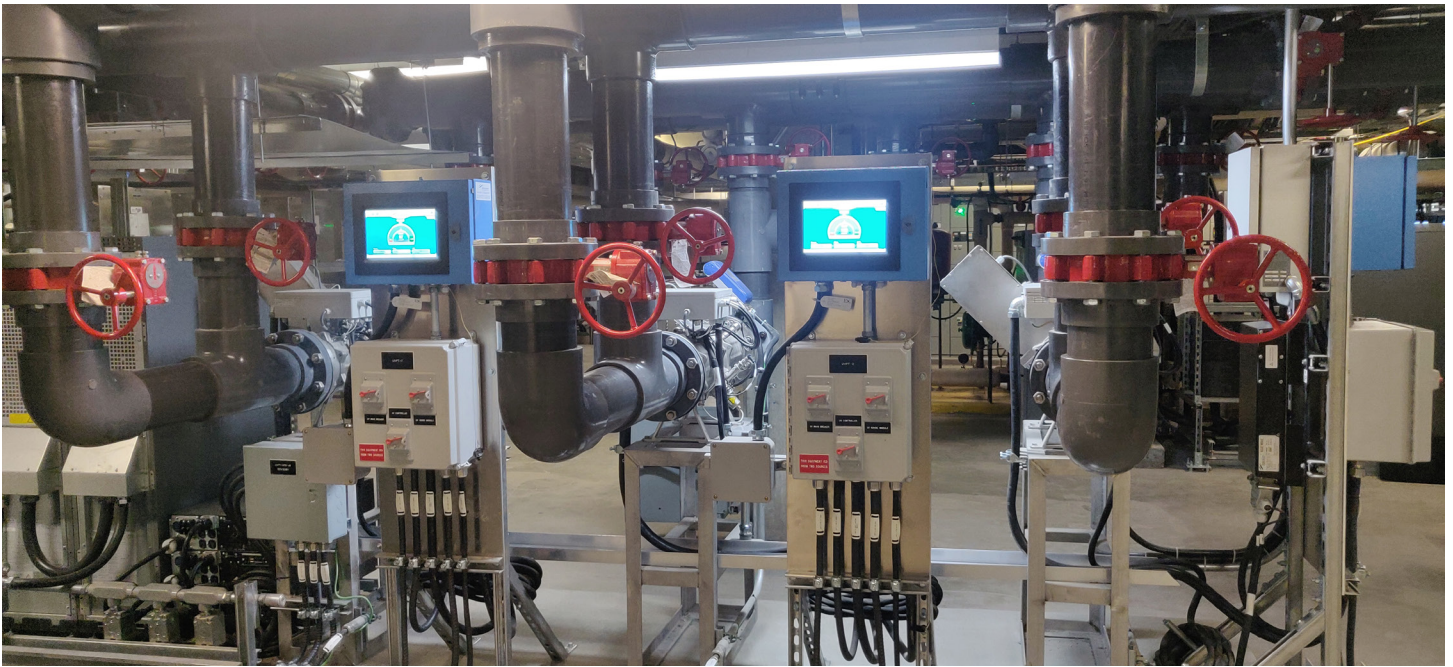
One of North America's largest fish hatcheries, Sam Livingston, located in Calgary, Alberta, Canada, recently completed some necessary facility modernizations, including upgrades to its water treatment systems and equipment.

To eliminate the risk of potential diseases that can impact fish health, the facility chose Atlantium Technologies' Hydro-Optic™ (HOD) UV as the primary disinfection technology. With proven performance in delivering unparalleled water biosecurity in the aquaculture market and the ability to address 4-log inactivation of pathogens, the medium-pressure HOD UV provides Sam Livingston a validated solution for the inactivation of *Myxobolus Cerebralis*, *Renibacterium Salmoninarum* and *Myxosporean*.

The installation of HOD UV — for intake water and RAS applications — delivers the necessary protection of *Myxobolus Cerebralis*, *Renibacterium Salmoninarum* and *Myxosporean* in a compact system design. From literature review as well as in-vivo tests conducted by Atlantium, a RED of 40mJ/cm² is required in order to achieve effective protection of *Myxobolus Cerebralis*, *Renibacterium Salmoninarum* and *Myxosporean* using medium pressure lamps. However, the project design criteria was set to 60mJ/cm² to ensure safety margins and production flexibility.

Pathogens Overview

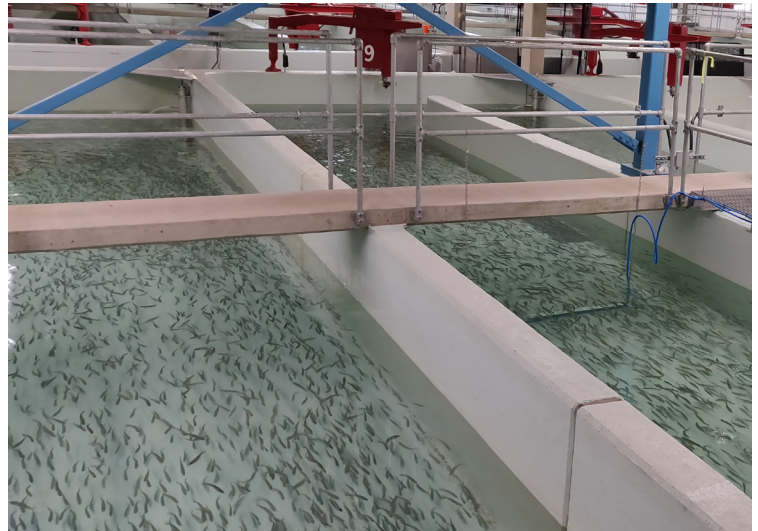
Myxobolus Cerebralis is a microscopic parasite that causes a chronic disease called "Whirling Disease," which often results in high mortalities among young, hatchery-reared fish. This parasite has a wide distribution and appears to be expanding. The principal method of spread is thought to be through the stocking of live, infected fish. *Myxobolus Cerebralis* has a two-host life cycle that involves fish and the bottom-dwelling tubifex worm. The latter releases the parasite spores into the water. The significance of it is that the disease does not transmit from fish to fish and can be treated even in an infected farm.



Atlantium's medium-pressure HOD UV provided Sam Livingston a proven solution for the protection of *Myxobolus Cerebralis*, *Renibacterium Salmoninarum* and *Myxosporean*.

Renibacterium Salmoninarum is a fastidious, gram-negative bacterium and the causative agent of Bacterial Kidney Disease (BKD) in wild and cultured salmonid fish. This bacterium has significant ecologic importance due to its effect on both farmed and wild salmonids. The disease is found in North America, Europe, Japan, Chile, and Scandinavia and is spread both vertically (mother to offspring) and horizontally (between adults).

Myxosporean is a subclass of microscopic parasites, belonging to the myxozoa clade within phylum cnidarian (together with Jellyfish and corals), and is a widespread subclass in the marine and freshwater environments. Two species of this class are *Thelohanellus kitauei* and *Myxobolus Cerebralis*.



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