

APPLICATION NOTE

Meeting EPA “Fish-Friendly” Requirements With USFilter Circulating Water Screens

THE CHALLENGE



Complying With Safe Fish Handling Requirements

By the year 2001, the Environmental Protection Agency (EPA) is expected to provide guidelines for Section 316(b) of the 1972 Amendments to the Federal Water Pollution Control Act, which states “...that the location, design, construction and capacity of cooling water intake structures reflect the best technology available (BTA) for minimizing adverse environmental impact.” Consequently, plants may need to modify and upgrade existing

intake screens to meet these fish-friendly requirements.

Retrofitting and overhauling equipment in existing plants is often difficult, complex and risky, as the exact condition of the equipment and structures is hard to define. It can also be expensive in terms of downtime and capital costs. And, depending on the age of the screens, finding compatible retrofit parts may be nearly impossible.

THE SOLUTION

USFilter Can Economically Retrofit or Upgrade Existing Traveling Water Screens

When it comes to safe fish-handling screens and existing screen modifications, we’re the experts. USFilter can supply everything from a complete intake design to a replacement component for a 75-year-old traveling water screen.

More than 20 years ago, we developed a capture and release method of handling

fish, in conjunction with Dr. Joseph D. Ristroph. This Ristroph design fish screen led to substantial modifications to the standard traveling water screen. A decade later, we developed an improved system with help from Dr. Ian Fletcher, known as the Fletcher Modified system or the Modified Ristroph design.

USFilter

MEETING EPA "FISH-FRIENDLY" REQUIREMENTS WITH USFILTER CIRCULATING W



PSEG's Salem Generating Station

Putting Our Expertise to Work for You

Today, we continue our research programs, working to refine and modify fish-handling screens so they are safer for all aquatic life. We can economically retrofit your standard screen into an efficient fish screen, with special baskets that have smooth meshes, flow spoilers and fish catchers. We can install deeper baskets, lower pressure spray systems and a separate trough for fish discharge. Our fish-friendly diversion screens feature extremely low approach velocity flows, allowing the smallest, most fragile species to avoid impingement.

Smooth-tex® flat wire screen surfaces minimize fish injury, and slots sized to the nearest 0.04" exclude even very small fish.

At USFilter, we can also upgrade an existing, inefficient screen to better-than-original condition. We're continually developing new component and screen designs for older installations to accommodate changed intake conditions, extend equipment life or reduce operating costs.

Offering You the Best In Service and Support

Our engineering support services include hydraulic flow analysis in our full-scale test flume or using computer models to analyze water flow patterns and velocity ranges in order to accurately predict system demands and sizing requirements.

We provide OEM replacement parts for all Rex® and Link-Belt® equipment ever made and for other manufacturers' equipment. Our factory trained service personnel are available worldwide to assist with emergencies or scheduled maintenance.

G WATER SCREENS

A CASE STUDY

“The modified CWTSs have operated flawlessly during periods of very high debris loads in the river water.”¹

John P. Ronafalvy,
Project Manager, PSE&G

Modifications to Circulating Water Traveling Screens Save Fish at Salem Generating Station

When Public Service Electric & Gas Company’s Salem Generating Station came up for license renewal, they were required by the state of New Jersey to modify their circulating water traveling screens (CWTS) for safer fish handling. Located on the shores of the Delaware River, Salem Generating Station is situated in an environmentally sensitive area. The Delaware Estuary contains approximately 200,000 acres of salt-water marshes fed by numerous rivers and streams.

PSE&G contacted USFilter about modifying their existing intake screens, originally manufactured by Envirex Incorporated (now part of USFilter). The main goals were to improve the survival of impinged fish and increase debris handling capability during peak loads.

We had worked with Dr. Ian Fletcher to develop fish-handling features used at power generation plants such as Consolidated Edison’s Indian Point Unit 2 Generating Station; New York Power Authority’s Indian Point Unit 3 Generating Station; Northeast Utilities Millstone Unit 3 Generating Station, as well as the original equipment installed at Salem Generating Station. USFilter drew on its experience from these

projects, along with ongoing development work, to design the most efficient and economical upgrade for Salem Station.

USFilter removed Salem Station’s screens and sent them to its Madison, IN manufacturing facility, where they were disassembled, inspected, modified, and upgraded to better than new condition, then returned to the site. The upgrade included replacing the original stainless fish-handling baskets with lightweight, non-metallic baskets. The new baskets provide a refined hydrodynamic flow pattern, thus increasing the fish survival rate. USFilter also installed new drive units to increase travel speeds from 17.5 to 35 feet per minute, improving debris removal. The spray units were upgraded, improving both fish transfer and debris removal.

According to a technical paper presented by PSE&G at the 1999 EPRI Aquatic Impact Conference, “Biological operability testing data indicates that the modified CWTS units will significantly reduce overall fish losses when compared with the original Ristroph-type unmodified CWTS units.”

¹ From paper presented by PSE&G at 1999 EPRI Aquatic Impact Conference



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THE CONCLUSION

USFilter Intake Screen Modifications and Upgrades Are the Best Solution for Meeting Future EPA "Fish-Friendly" Requirements

With over 20 years of experience researching and developing traveling water screens for safe fish handling, USFilter can economically retrofit your standard screens so they comply with the Best Technology Available requirement. We can also upgrade

your screens for more efficient debris handling. Our engineering support services ensure that you get the best solution for your specific application, while our OEM replacement parts and factory trained service personnel keep your intake screens on-line.

Call today! 800.524.6324

The logo for USFilter, featuring the letters "USFilter" in a bold, blue, italicized sans-serif font.

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