

Thermoplastic trash racks and Fish screens



Stop wondering about your trash racks,
forget it's even there!

High quality materials and

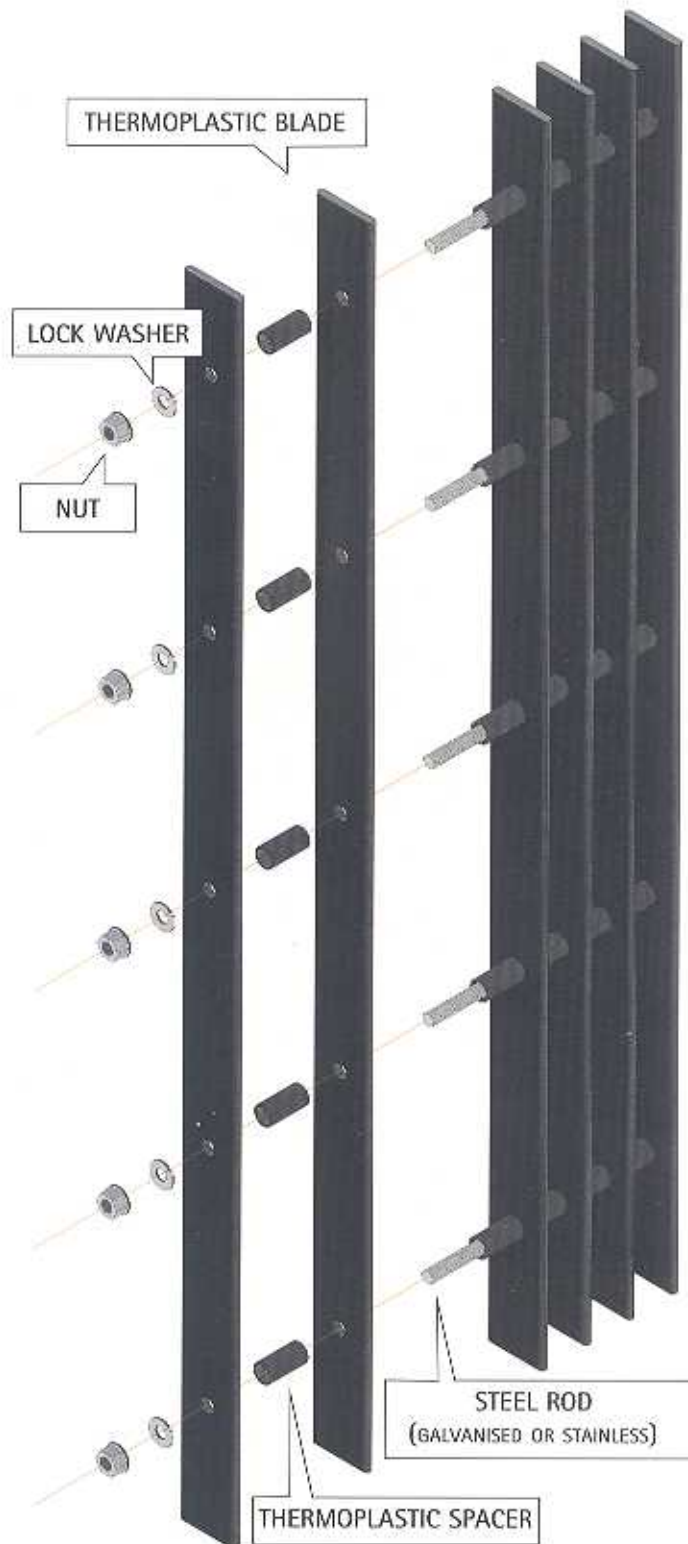
APPLICATION

The trash rack is one of the most essential elements within a hydroelectric power plant. It protects the rotating equipment from being damaged by large debris passing through the intake and also acts as a protective screen against fish passing through the turbine or pump propeller.

The traditional steel trash rack presents many problems including : excessive weight, routine maintenance such as repainting and restraightening of bent blades, corrosion and high adhesion of marine growth and frazil ice. Also the rectangular shape of the rack blades disrupt flow and create head losses. In many sites, these problems can only be overcome by costly means and with questionable results.

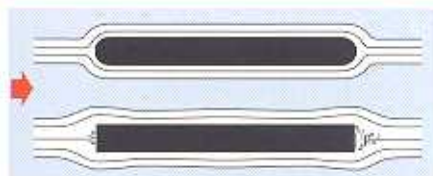
The HYDRO-INNOVATION trash rack is the economical solution to overcome these problems. Fabricated almost entirely from thermoplastic materials, it offers an excellent mechanical efficiency, a high resistance to impacts and abrasion and causes much lower head losses in comparison with steel trash racks.

Weighing in at five times less than steel trash racks, the HYDRO-INNOVATION trash racks are easy to assemble, install and maintain. These are valuable factors contributing to the long term benefits of the product. Moreover, when installed in a cold environment, the combination of surface finish, ductility and thermal conductivity makes our trash rack an ideal solution to reduce or even eliminate ice adherence.



state-of-the-art design ensure long and main

HEAD LOSS REDUCTION



The rounded edges and the smooth surface increase the power generation by reducing leaf and grass accumulation, turbulence, vortex and head loss around the rack. The head loss coefficient (kt) of our rounded blades is more than 30% lower than conventional square edge steel bars.

DESIGN



Thermoplastic blades are held together by stainless steel or galvanized rods with hexagonal stainless steel or galvanized nuts and lock washers at each end. Small thermoplastic tubes cover the rod between each blade to achieve the spacing requested by the customer. These spacers also prevent ice formation around the connecting rods. HYDRO-INNOVATION's trash rack can be easily adapted to new or existing structures.

MAINTENANCE FREE

Unlike steel racks, Hydro-Innovation trash racks never need paint or restraightening of bent blades. The routine maintenance is reduced to simple periodic inspections. They are highly resistant to corrosion, abrasion, impacts, ozone, ultraviolet light and sudden temperature changes.

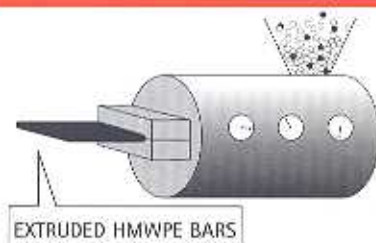


INSTALLATION

Weighing in at 20% the weight of steel racks, combined with a flexible design, the HYDRO-INNOVATION trash rack is simple and easy to assemble, install and maintain. No need for expensive crane rental. The spacing between the blades can be easily modified by changing the spacers length. For remote projects, the rack can be shipped in parts and assembled on site.



MATERIAL



Thermoplastic blades are made from extruded high-quality virgin high molecular weight polyethylene (HMWPE) specially compounded to withstand ozone and ultraviolet light. The HMWPE has a high resistance to impacts and abrasion. All the materials used in our trash racks are design to last at least 30 years.

DIMENSIONS

There are virtually no limits to the maximum length and width of our racks. The limits are imposed because of shipment reasons. The components dimensions depend upon hydrostatic pressure, impact and support structure beam spacing.



The Hydro-Innovation trash rack is quick and easy to install. It can be placed on a new or existing support structure. No need for expensive crane rental.

maintenance free service life.

MARINE GROWTH & ZEBRA MUSSELS

The superior hydraulic profile combined with the lack of nucleation sites reduce or even eliminate marine growth and zebra mussels. Nevertheless, if they find a way to accumulate, they will be easily removed because of the smoothness of the material.



FISH SCREEN

The growing environmental challenges such as narrow spacing and fish guidance screen, are efficiently met with the HYDRO-INNOVATION fish screen mainly because of its lightweight, flexible design, hydraulic profile and low price. Furthermore the use of smooth surface rounded blades helps to reduce fish injuries. When sucked in the rack, fish will swim away while rubbing themselves against the blades. Corroded sharp edges of steel blades can inflict serious injuries or even death.



A GLOBAL OFFER



In addition to a selling cost of less than a steel trash rack, HYDRO-INNOVATION includes in its standard supply all necessary engineering and assembly drawings for the trash rack and the supporting structure, all according to the customer's specification. Engineers from HYDRO-INNOVATION will also closely work with the customer to achieve the most advantageous technical and economical solution.

FRAZIL ICE

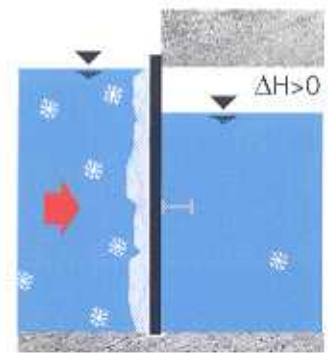
In cold environments, frazil ice is any operator's and owner's nightmare. Big surface of steel trash racks can be plugged in a matter of minutes. That phenomena increases when steel racks show numerous nucleation sites caused by corrosion and bent blades.

For our racks, the combination of smooth surface finish, ductility and low thermal conductivity reduce or eliminate frazil ice accumulation.

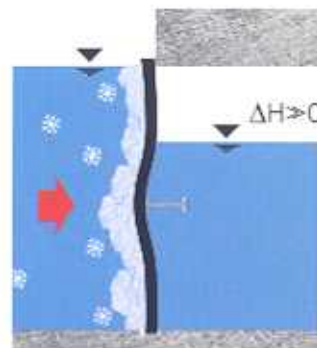
The following figures schematically present thermoplastic rack behavior under frazil ice conditions.



1. Frazil ice in water flow.



2. Accumulation of frazil ice on thermoplastic blades.



3. Hydrostatic pressure increase and blades start to bend. Ice begins to crack.



4. Ice breaks loose from thermoplastic blades. Hydrostatic pressure rapidly drops.

Why choose Hydro-Innovation's trash rack?

Maintenance free over minimum 30-year life.

Years of experience in harsh climates with heavy ice and debris loads.

High impact and abrasion resistance U.V. protected thermoplastic.

Power generation increased by a superior hydraulic profile.

Reduction of anchor ice, frazil marine growth and zebra mussels adherence.

Reduction of fish mortality.

Fast and low-cost assembly and installation.

20% of steel trash racks weight.

Can retrofit to existing support structure.

Fast response to inquiries.

Can be used with almost any type of trash rake.

