



FAIRBANKS NIJHUIS FISH-FRIENDLY PUMP

FISH-FRIENDLY PUMP

SAFE FOR EEL & SCALE FISH

Fairbanks Nijhuis' patented fish-friendly pump* allows more than 97 percent of the fish and even 100 percent of the eel to pass through the pumping station unscathed.

The fish-friendly pump was developed in response to the adverse effects of conventional pumps in pumping stations on the fish stock. A substantial part of the fish mortality is caused when fish collide with the impeller blades and/or guide vanes when passing through conventional pumping stations. Furthermore conventional pumps greatly interfere with the innate migration of fish, and the eel population is especially threatened.



A SUSTAINABLE SOLUTION

The European Water Framework Directive (WFD) emphasizes the importance of turning all water barriers fish-friendly within the next several years. By choosing Fairbanks Nijhuis you have a sustainable solution that saves energy, while protecting wildlife and ecological environment. We are ready to assist you with converting your pumping station into a fish-friendly system.

BENEFITS OF THE FISH-FRIENDLY PUMP

Saves wildlife

This fish-friendly pump allows more than 97 percent of the fish and even 100 percent of the eel to pass through the pumping station unscathed.**

Optimized fish-friendly design

The impeller and guide vanes of the fish-friendly pump have a special design, that creates an optimal water flow, allowing the fish to pass through the pump safely. In addition, all edges are rounded and the space between the impeller blades is

much wider, which substantially reduces the impact risk, with minor effects on the efficiency.

Low total costs of ownership (TCO)

• High efficiency

Fairbanks Nijhuis builds pumps according to customer's specifications for the specific operation. Fish-friendliness is guaranteed while the efficiency is optimized. Our fish-friendly pump provides a pump efficiency of more than 80 percent at the design point.



Photo: Harry Melman

• **Easy installation**

The fish-friendly pump can be made customized to fit into an existing pumping station, and thus reduce or avoid structural adaptations.

• **Reduced operation costs**

In most cases the existing infrastructure remains unmodified when overhauling pumping stations. In addition, due to the optimized pump design most existing electrical systems can be used and don't need to be extended. These facts substantially reduce the costs of converting your existing system into a fish-friendly system.

• **Reduced maintenance costs**

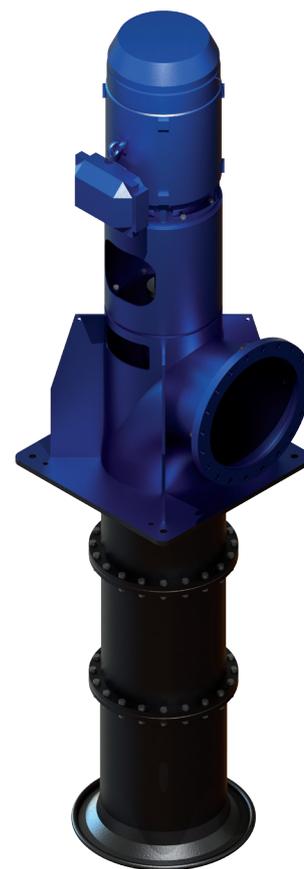
The lower speed of the pump positively affects maintenance requirements and service life: the pump is less vulnerable to clogging or damage to coating, bearings, etc.

No auxiliary systems needed

No auxiliary systems, like fish ladders needed to facilitate fish migration. This saves costs and provides low impact on visual amenity, also through the invisible installation of the pump in most cases.

TECHNICAL DATA

- Available in vertical and horizontal configuration, both dry and wet mounting.
- Application in natural open water systems where the operation requires relatively low pressures and high capacities for flood control
- The default capacity varies between 1,500 and 180,000 m³/h. A higher capacity can be realized for special applications.
- The head size varies between 1 and 8 meters. This is the usual range for applying conventional propeller pumps.



* The fish-friendly pump has been developed in collaboration with FishFlow Innovations

** These results were measured during a practical test with live fish under supervision of the independent agency VisAdvies BV. The execution of the practical test was permitted by the Dierexperimentcommissie DEC (Animal testing committee) of the Central Veterinary Institute of Wageningen UR. Source: report VA2009-19 of VisAdvies BV, August 2009.

Fairbanks Nijhuis' specialized pump offerings

Fairbanks Nijhuis offers world class custom engineered solutions for the global pumping industry. Offering complete system solutions in multiple markets including Water Supply, Wastewater Handling, Flood Control, Power Generation, Desalination, Maritime, Oil and Gas, Industry, Agricultural Irrigation, and Fire Protection. In addition, Fairbanks Nijhuis delivers professional services including installation, maintenance, repair, and training.

Manufacturing plants are based in Kansas City, (KS) USA and Winterswijk, The Netherlands. The combination of our two world-class engineering and manufacturing groups, with over 200 years of combined expertise, is a win for our customers across the globe. At Fairbanks Nijhuis, we modify our pump designs to meet the requirements of each individual system. This results in the best overall system performance for a specific application.

Social responsibility

Today, markets look for business partners who think and support in a sustainable manner. Fairbanks Nijhuis anticipates this need with environmentally friendly products and reliable services that help customers reduce their energy consumption and carbon footprint. The employees of Fairbanks Nijhuis are committed to contributing to a better world by applying the guidelines on social responsibility of ISO 26000.

Flood control applications

Being based in countries which for centuries have wrestled with the sea, Fairbanks Nijhuis has built up special knowledge of flood control, land reclamation, drainage and irrigation. Pumping stations are a vital part in the complicated system of measures preventing floods and in drainage and irrigation applications. Customers of Fairbanks Nijhuis benefit from its experience in this highly specialized field. New developments in this market are our fish-friendly pumps and turbines in order to save the fish habitat.



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