



FAIRBANKS NIJHUIS PRODUCT OVERVIEW

OUTSTANDING WATER TECHNOLOGY WITH DIVERSITY

FAIRBANKS NIJHUIS

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SMART SOLUTIONS FOR SMART CUSTOMERS

Nijhuis Pompen BV belongs to the Pentair Group, one of the world's leading water technology companies.

Under the brand of Pentair Fairbanks Nijhuis, Nijhuis Pompen BV delivers pump technology of the highest quality, based on more than 80 years of experience.

We offer a comprehensive service, from development, using ultra modern flow calculation software (CFD), through to prototype construction and manufacture of the pump in our own foundry.

We are able to develop, produce and install customised pumps for the widest variety of applications.

You will find our pump systems in the water supply and wastewater disposal sector, for example, as well as in desalination plants, flood protection systems, energy supply, shipbuilding, agricultural irrigation and fire protection.

We also provide a professional customer service, covering initial operation through to maintenance and repair, and including training for operators.

INSPIRED SOLUTIONS FOR A CHANGING WORLD!



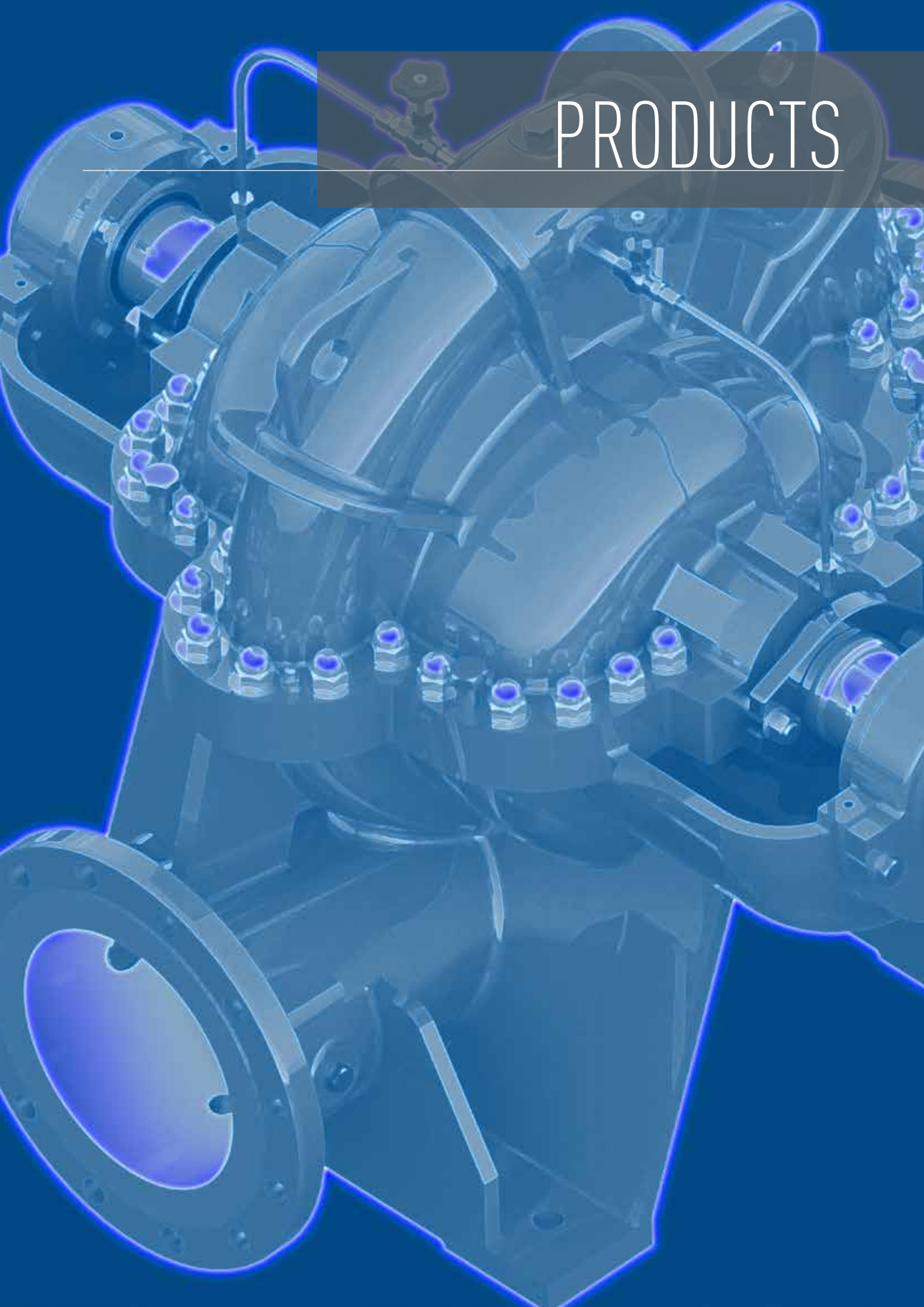
MILESTONES IN THE COMPANY'S HISTORY

- 1904** G.J. Nijhuis establishes a repair workshop for textile machinery
 - 1930** Nijhuis begins developing and manufacturing pumps. The company is named Nijhuis Pompen BV.
 - 2006** Nijhuis Pompen BV becomes part of the Norit Group
 - 2011** Nijhuis Pompen BV becomes part of the Pentair Group
 - 2012** The pump brands Fairbanks Morse and Nijhuis are merged to create Fairbanks Nijhuis
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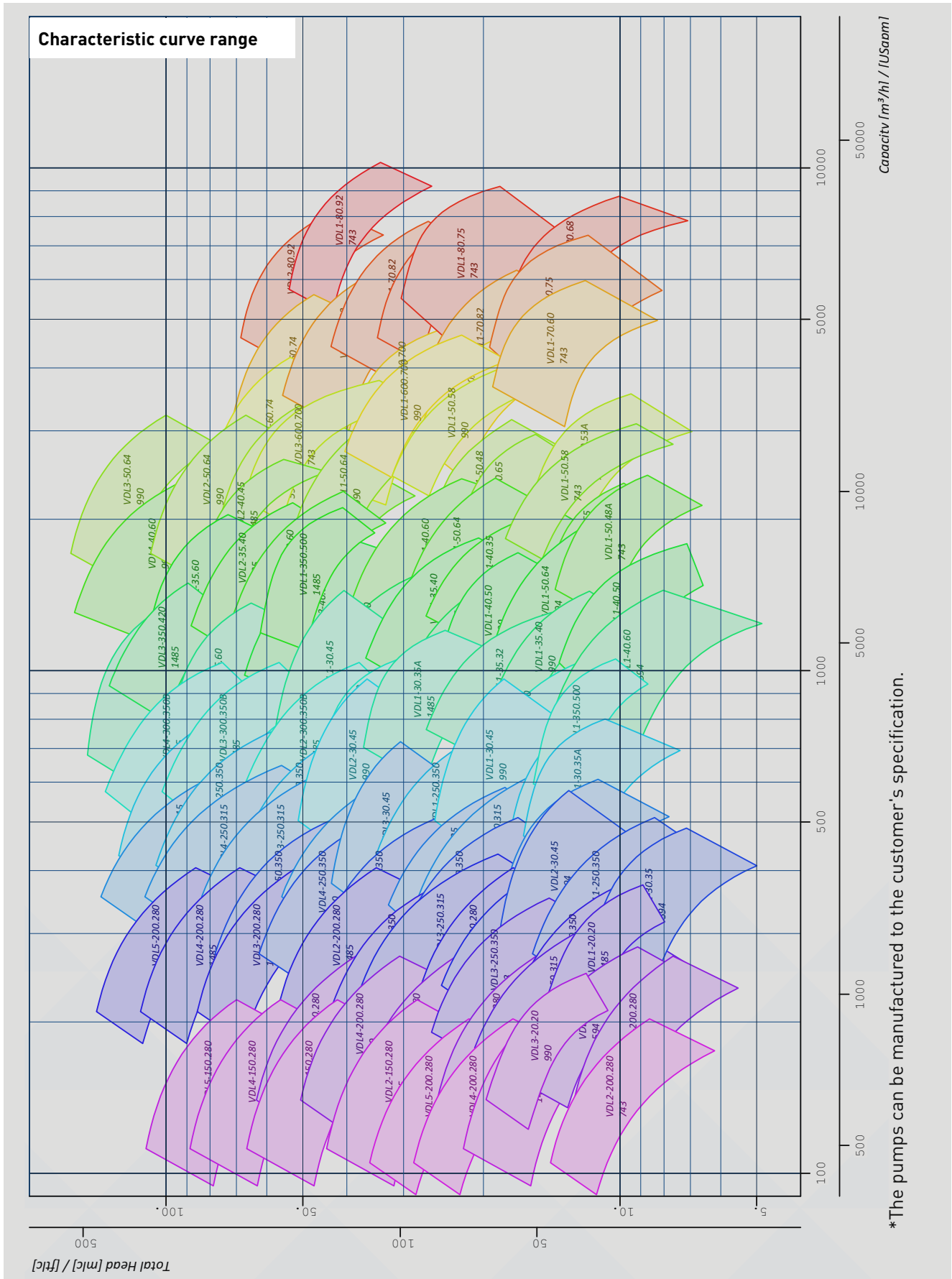
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PRODUCTS



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*The pumps can be manufactured to the customer's specification.



VDF pump in a fire protection system



VERTICAL TURBINE PUMPS

MODEL: VDL/VDF RANGE

Fairbanks Nijhuis vertical turbine pumps are energy-efficient and reliable pumps, suitable for a wide range of liquids and applications. The pump is supplied with a dry motor installation, and is available with a wide range of flow rates,

pressure heads and construction materials.

The hydraulic design includes a suction bell, single or multiple pump stages with closed or semi-open impellers, pump housing

with integrated line-shafts and a discharge elbow that can be located either above or below the foundation level.

APPLICATIONS

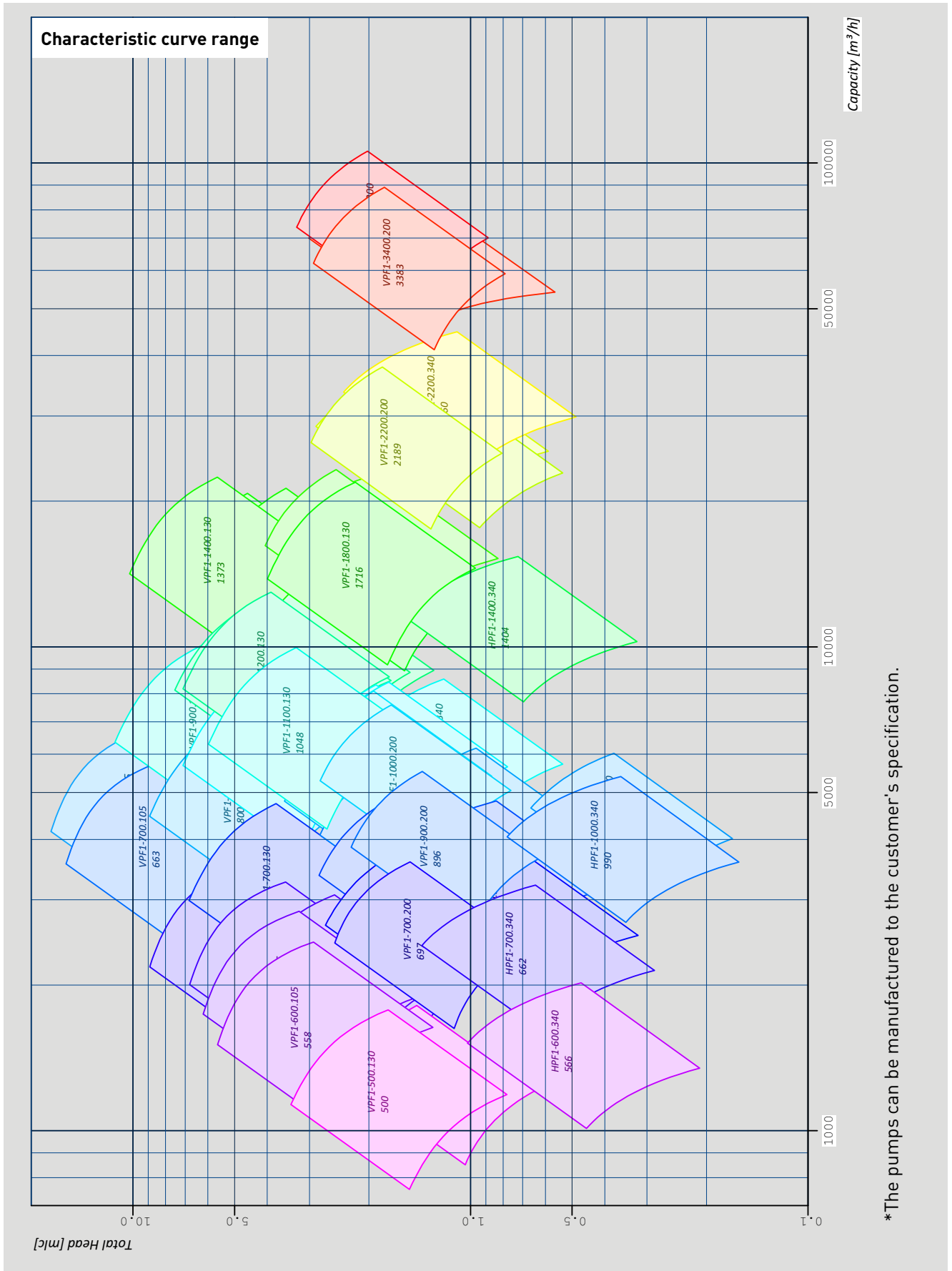
- Water cooling
- Potable water
- Desalination
- Fire protection
- Irrigation
- Drainage



FEATURES

- Capacities: 50 to 15,000 m³/h
- Discharge head: 25 to 365 m
- Highly efficient and durable
- Minimal maintenance requirements
- Large selection of materials
- Dry or submersible motor installation

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*The pumps can be manufactured to the customer's specification.



FISH-FRIENDLY PUMPS

MODEL: VPF RANGE, HPF RANGE

The Fairbanks Nijhuis patented fish-friendly pump makes it possible to pump water from water bodies (rivers, lakes etc.) whilst protecting the fish population. It allows 100 percent of the eels and at least 97 percent of other fish to

come through the pumping station unscathed. The pump was developed in response to the adverse effects that conventional pumps have on the fish stock.

A turbine model is also available. Your decision to use Fairbanks Ni-

jhuis products is therefore also a decision to sustainably protect wildlife. What is more, the high efficiency of the pump ensures extremely efficient and eco-friendly operation.

APPLICATIONS

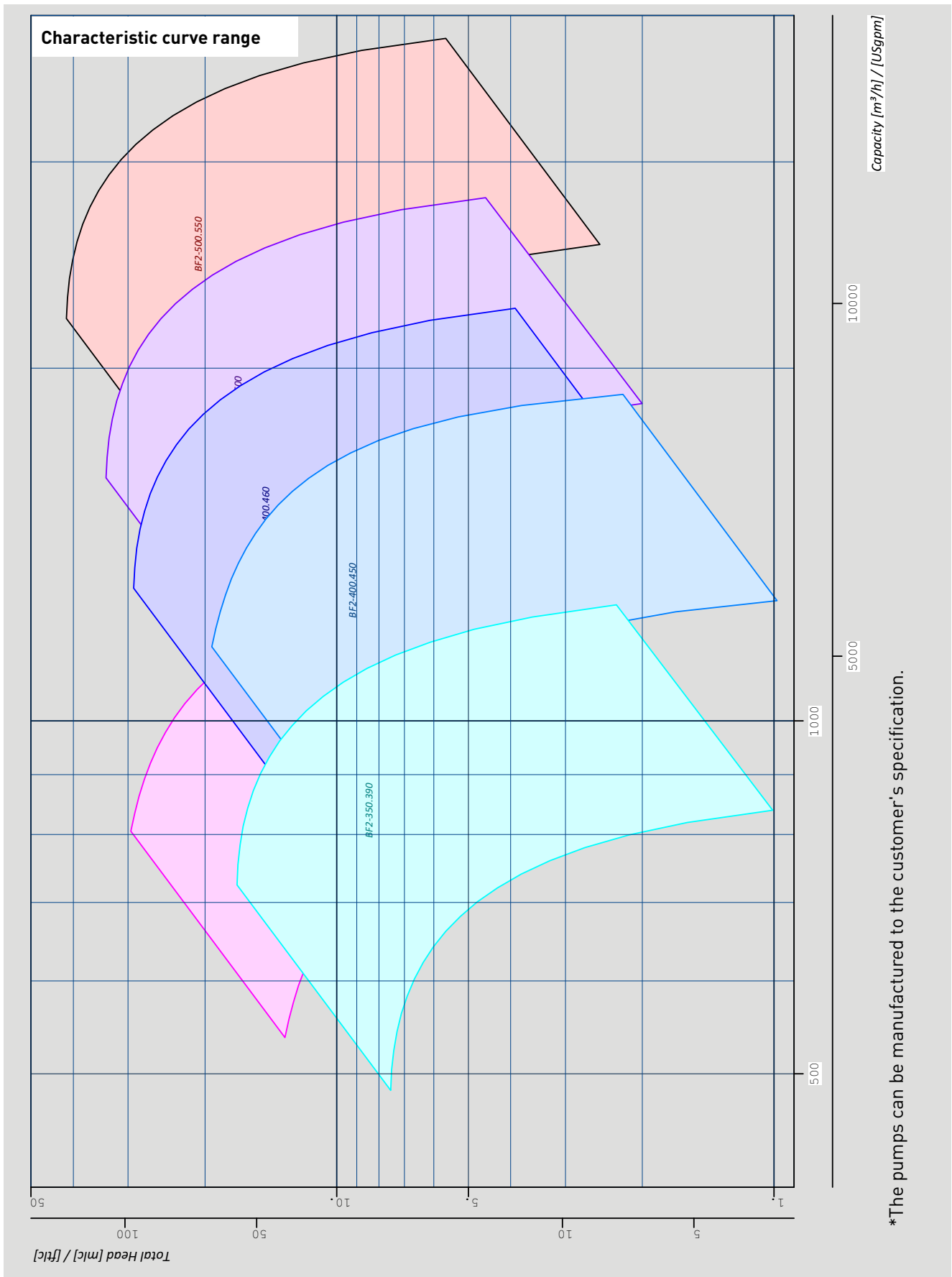
- Lakes
- Rivers
- Canals



FEATURES

- Capacities: 1,500 to 180,000 m³/h
- Discharge head: 1 to 8 m
- High pump efficiency
- Available in horizontal and vertical configuration, both dry and wet mounting
- Easy installation in existing pumping stations
- Various materials (also with concrete housing)

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BIFLOW PUMPS

MODEL: BF RANGE

The BiFlow pump is a bidirectional, in-line pump. This pump is specially designed for the transport of large amounts of ballast water, where space requirements for pumps and piping must be reduced to a minimum.

The configuration is completely symmetrical, consisting of two counter-rotating impellers with variable speed. The motor is submerged and completely integrated in the pump. This configuration ensures a high degree of efficiency

and controlled flow in both directions to opposing ballast tanks. The BiFlow can be installed in the double bottom of a ship – with either dry or submersible installation.

APPLICATIONS

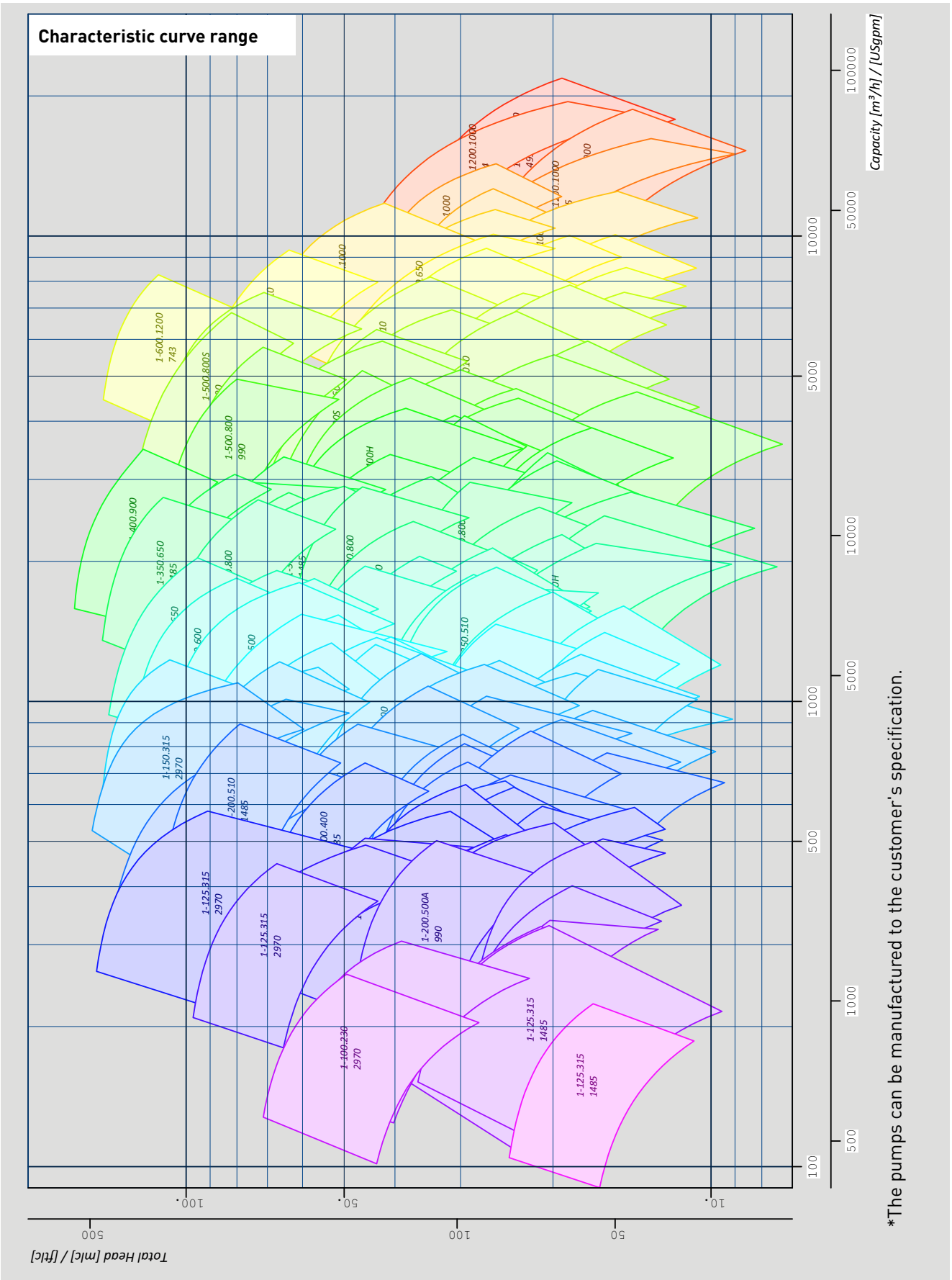
- Loading and unloading ships
- Stabilising hulls (anti-heeling)



FEATURES

- Capacities: 1.000 to 3.000 m³/h
- Discharge head: up to 30 m
- Bidirectional operation
- Large capacity
- High overall efficiency
- Symmetrical forward and reverse performance
- Compact design
- Very low noise and vibration levels

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SPLIT CASE PUMPS

MODEL: VENUS, HGTF, HG2, VENUS V, VGT RANGE



The Fairbanks Nijhuis split case pump is the right choice for a large number of applications with medium to high flow rates. The optimised design of the split housing ensures excellent efficiency and durability.

The housing requires very little maintenance and is available in a range of materials – to suit the specific requirements of the application.

The pumps can be manufactured to the customer's requirements (ranging from small impeller adjustments to special designs), with either horizontal or vertical configuration and either one or two stages (impeller stages).

APPLICATIONS

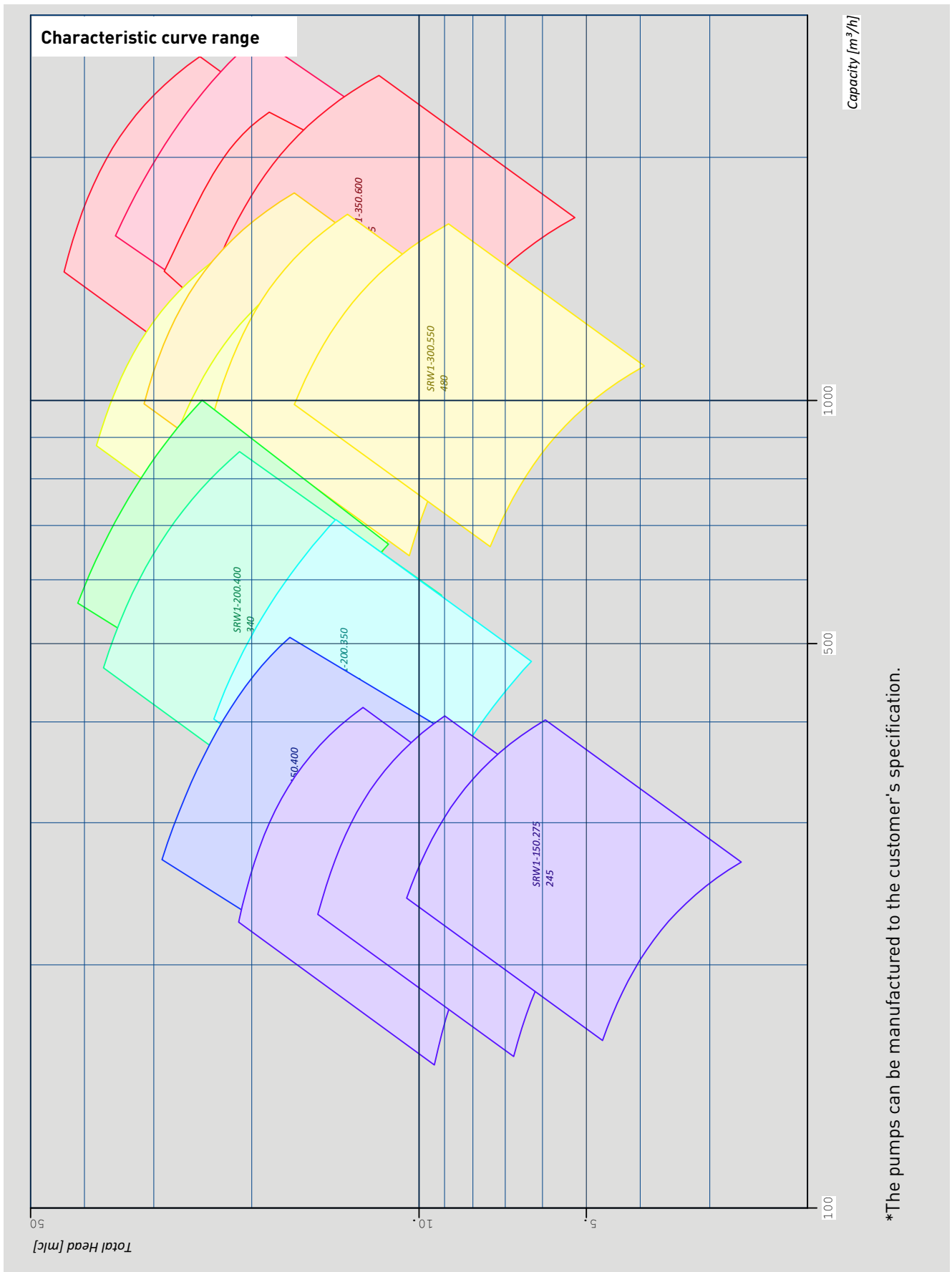
- Potable water
- Cooling water
- Air-conditioning
- Shipbuilding
- Irrigation and drainage
- Fire extinguishing systems
- Desalination



FEATURES

- Capacities: 90 to 13,000 m³/h
- Discharge head: 5 to 250 m
- High efficiency and large operating range
- Easy maintenance
- Low vibration and noise
- Large selection of materials
- Available in horizontal and vertical configuration

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SCREW IMPELLER CENTRIFUGAL PUMPS



MODEL: SRW RANGE

Fairbanks Nijhuis screw impeller centrifugal pumps use open screw channel impellers that pump the liquid freely without any blockages. Screw impeller centrifugal pumps are the ideal solution for pumping raw sewage that contains

fibrous or solid material. They can also pump sewage sludge with a dry solid content of up to 10%. Available in horizontal or vertical configuration. Suitable for raw sewage, sludge and liquids.



APPLICATIONS

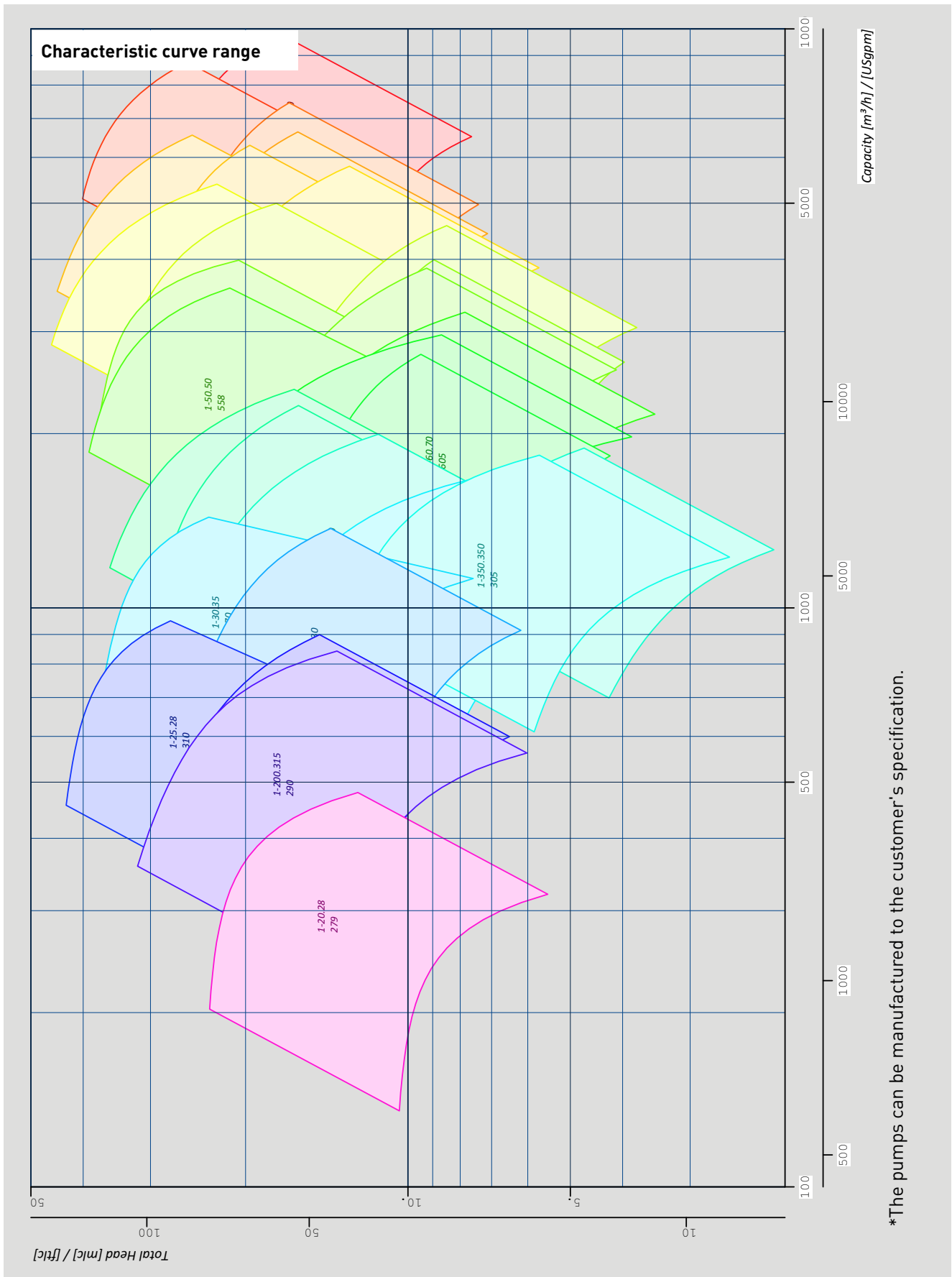
- Wastewater disposal
- Sewage disposal
- Sludge
- Viscous fluids



FEATURES

- Capacities: 50 to 5,500 m³/h
- Discharge head: 2 to 70 m
- Highly efficient and durable
- Large selection of materials
- Easy maintenance
- Available in horizontal and vertical configuration

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MIXED FLOW PUMPS

MODEL: HMF/VMF RANGE

Fairbanks Nijhuis mixed flow pumps function as a compromise between radial and axial flow pumps. They operate at higher pressures than axial flow pumps and have higher capacities than radial pumps.

Available in both horizontal and vertical configurations, with a wide range of intake and discharge connection options. This type of pump can therefore be installed in practically any configuration and is easily adapted to suit the

customer's requirements.

APPLICATIONS

- Potable water
- Cooling water
- Shipbuilding
- Irrigation and drainage
- Desalination



FEATURES

- Capacities: 150 to 11,000 m³/h
- Discharge head: 5 to 40 m
- Highly efficient and durable
- Low maintenance
- Available in horizontal and vertical configuration

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APPLICATIONS



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WATER TREATMENT

Clean drinking water is the basis for all healthy life on Earth. Yet there are still entire populations without access to clean drinking water. This means that diseases and epidemics are ever present.

Fairbanks Nijhuis has a large portfolio of pump designs for use in water treatment plants: vertical turbines and vertical propeller pumps are used to pump water into the plant from the source, while end suction pumps and split

pumps move the water step-by-step through the treatment process. The discharge connections of the pumps cover a large range of diameters, to meet the different requirements of water treatment plants.



IRRIGATION

Regional rainfalls often fail to meet the agricultural demand for water. Artificial irrigation using pumps provides the only alternative.

Whether the water is supplied via irrigation channels or dedicated groundwater sources – Fairbanks Nijhuis pumps play a decisive role in the irrigation of agricultural land. And they do this with low electricity consumption and the highest level of plant availability.



APPLICATIONS



FAIRBANKS NIJHUIS

STATIONARY FIREFIGHTING SYSTEMS

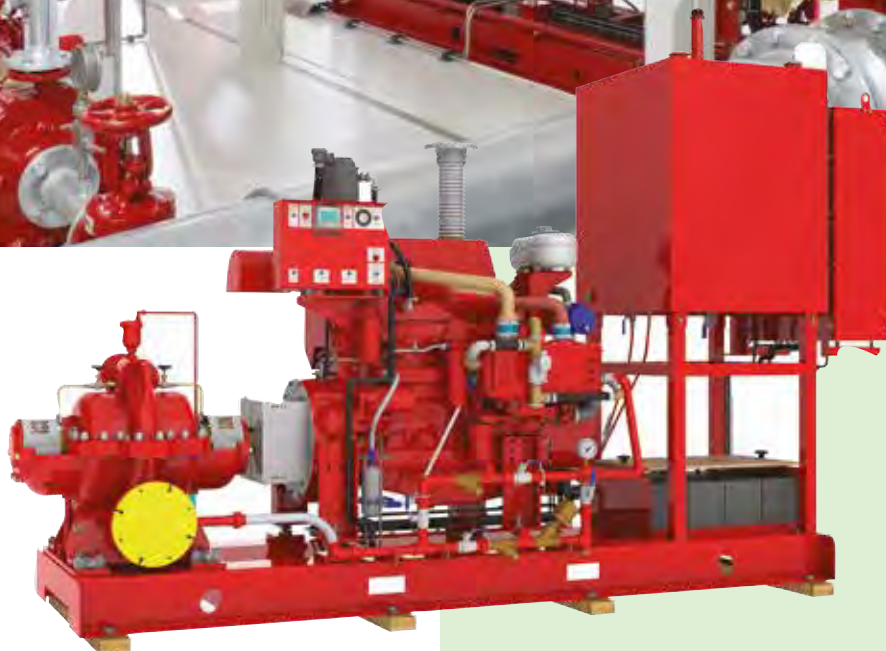
Fairbanks Nijhuis specialises in fire protection systems that are designed as compact system units. When configuring the system units, the aim is to carefully select the pump room, electric motor or diesel motor, controls, accessories and pump to create an optimum overall system.

Fairbanks Nijhuis has the benefit of many years of experience in the development of these systems and is one of the world's leading manufacturers of fire pump systems.

The company's customers include leading sprinkler manufacturers, airports, power stations, and industrial and (petro-) chemical companies. The compact units are used in storage areas, in aircraft hangars, on construction sites and in large (public) buildings.


Our services:

- Complete pumping systems in a pump room, pump house or container
- Container unit, fully assembled, ready for immediate operation
- Transport of the container unit to the site, including complete installation
- Suitable for all climates and types of location





OFFSHORE AND MARITIME FIRE PROTECTION



Only pumps that comply with the highest class of the internationally recognised standards are acceptable for use as fire pumps. Fairbanks Nijhuis pumps and fire protection systems are used on oil platforms, floating refineries, ships, jetties and FPSO (Floating Production Storage and Offloading) units.

The fire pumps for maritime applications are manufactured in accordance with the latest FIFI Classes I, II and III and certified by Llyods, ABS, BV and DNV.

When designing fire protection systems, Fairbanks Nijhuis always considers the operator and the maintenance technician, who need to be able to operate the system easily and intuitively. Comprehensive training and customer services are included in the overall package.

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INDUSTRIAL APPLICATIONS

A wide variety of pumps is used in industrial processes. In-depth knowledge of the particular industrial processes is essential when dealing with these sometimes sensitive liquids. The steel, oil, gas and petrochemical industries

require reliable, high-quality pumps: Fairbanks Nijhuis has this knowledge and has gained a great deal of experience over the last 100 years.



FLOOD PROTECTION

As a Dutch company, Pompen Nijhuis was confronted with the risk of flooding from the North Sea right from the start. As a result, Fairbanks Nijhuis has special expertise in flood protection, land reclamation, drainage and irrigation. Pumping stations form an essential component of all flood

protection, irrigation and drainage measures. Customers of Fairbanks Nijhuis benefit greatly from the company's experience in this highly specialised field. New developments in this market include fish-friendly pumps and turbines that protect the habitat of fish in rivers and bodies of water and

also save energy.

Here are a few examples of prestige projects in which Fairbanks Nijhuis pumps have been used: New Orleans (USA), IJmuiden Pumping Station (The Netherlands), South-to-North (P.R. of China) and Marina Barrage (Singapore).



SHIPPING AND DREDGING

In maritime applications, it is vital that processes operate without interruption. Standard pumps usually suffice for the operating processes on most ships, but certain applications call for special pumps. Whether standard or special pumps are needed, Fairbanks Nijhuis has the right solution and the accompanying expertise and

service. For example, high-capacity bidirectional in-line pumps are used to fill or empty hulls.

In the case of dredgers, the key characteristic is “wear resistance”. As a rule, the pumps are used to convey sludge and liquids with a high solids content, which present the pump materials with a

major challenge. For these ships, Fairbanks Nijhuis supplies various pumps that require only simple maintenance in order to achieve a long service life.



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WASTEWATER COLLECTION/LIFTING STATIONS

Wastewater and sewage has to be collected and then treated in a sewage treatment works. Lifting stations and pumping stations are used to overcome gravity and transport the wastewater from A to B, irrespective of the topography.

The pumps can either be dry mounted or submersible. Fairbanks Nijhuis offers a broad range of pump types, which are available in various configurations to ensure reliable wastewater disposal.



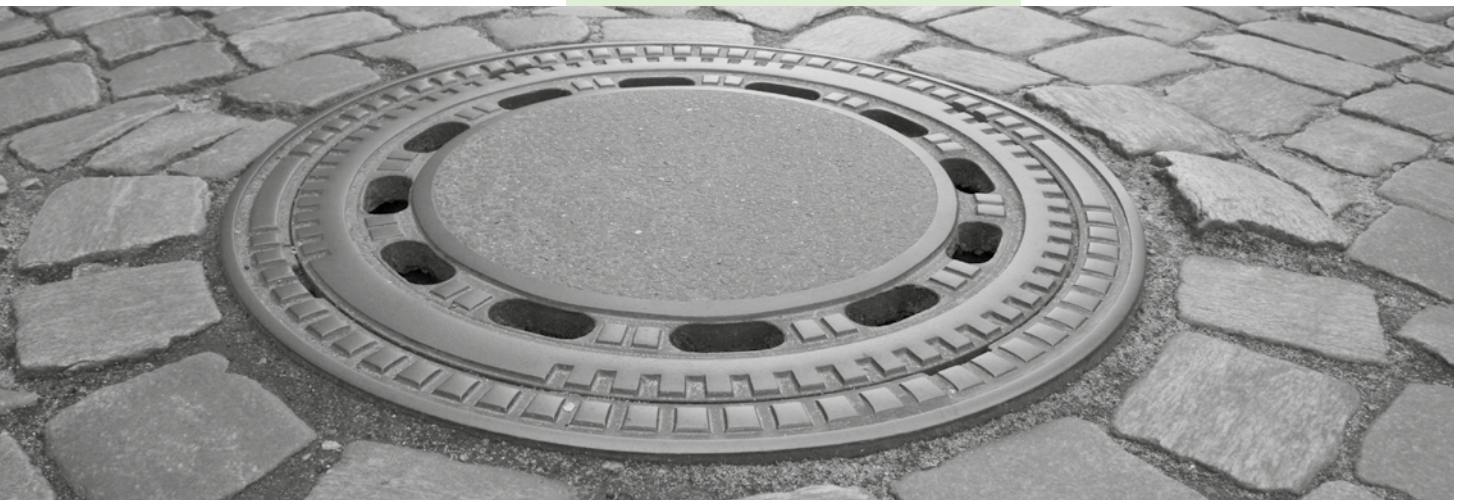
DESALINATION

Special pumps are required in order to achieve optimal system efficiency in the desalination process. The pumps need to guarantee uninterrupted operation and must be made of a material that is able to withstand the corrosive and ag-

gressive medium: seawater.

Since every desalination plant has its own specifications, Fairbanks Nijhuis adapts the pump design to suit the required flow rate and discharge head. This makes it possi-

ble to achieve maximum reliability, flexibility and durability, while also ensuring maximum energy efficiency.



SEWAGE PLANTS

Municipal and industrial wastewater has to be treated in order to prevent damage to the environment.

As the population grows, the demand for treatment plants and thus also for pumps increases.

Fairbanks Nijhuis pumps can be found in numerous municipal sewage plants around the globe.

Pumps are used everywhere: for transporting the untreated wastewater, pumping it into the treatment plant, conveying the activated sludge and for pumping the backwash water. Various types of

impeller ensure smooth, uninterrupted operation, so that liquids containing fibres, solids or abrasive materials can be pumped reliably.



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SERVICE



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INSTALLATION AND INITIAL OPERATION

In close cooperation with the Development Department, the Fairbanks Nijhuis Service Team can carry out all of the mechanical and electrical installation work on a turnkey basis.



INSPECTION AND MAINTENANCE

Fairbanks Nijhuis oversees the complete life-cycle of a pump, to ensure optimal mechanical and energy-efficient performance. Professional vibration measurements can be taken in order to detect potential defects at an early stage. Vibration can be caused by wear, velocity and acceleration. Vibration measurements reveal the actual condition of new, existing or rebuilt pumps and other rotating equipment.

The measurements are evaluated by an experienced Pentair team, which then recommends further steps on the basis of the results.





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TRAINING

Fairbanks Nijhuis provides training for its customers, worldwide, with regard to installation, operation and maintenance. These training sessions for managers and service technicians can be held on site or in one of the service centres.

Because Fairbanks Nijhuis maintains connections with customers from the widest range of application areas, it is able to pass on its expertise to both new and existing customers. This leads to improvements in the technical and organi-

sational processes during maintenance and operation of the pump systems.



MAINTENANCE AND REPAIRS

Fairbanks Nijhuis repairs pumps on site or in one of its own workshops. A 24-hour maintenance contract ensures permanent support for our systems, also if problems should arise. Spare part stocks can also be managed on behalf of third parties. As a result, we are able to work with guaranteed repair times at fixed prices. In addition to these services, Fairbanks Nijhuis offers the option of modifying pumps or accessories to customer specifications in

collaboration with our development department.

Our "Service" is not restricted to the repair of our own pumps: it can also include the general overhaul of the customer's existing pumps made by other manufacturers.



CUSTOMER-ORIENTED AND FLEXIBLE

Fairbanks Nijhuis supplies all spare parts for the Fairbanks Nijhuis Group, worldwide.

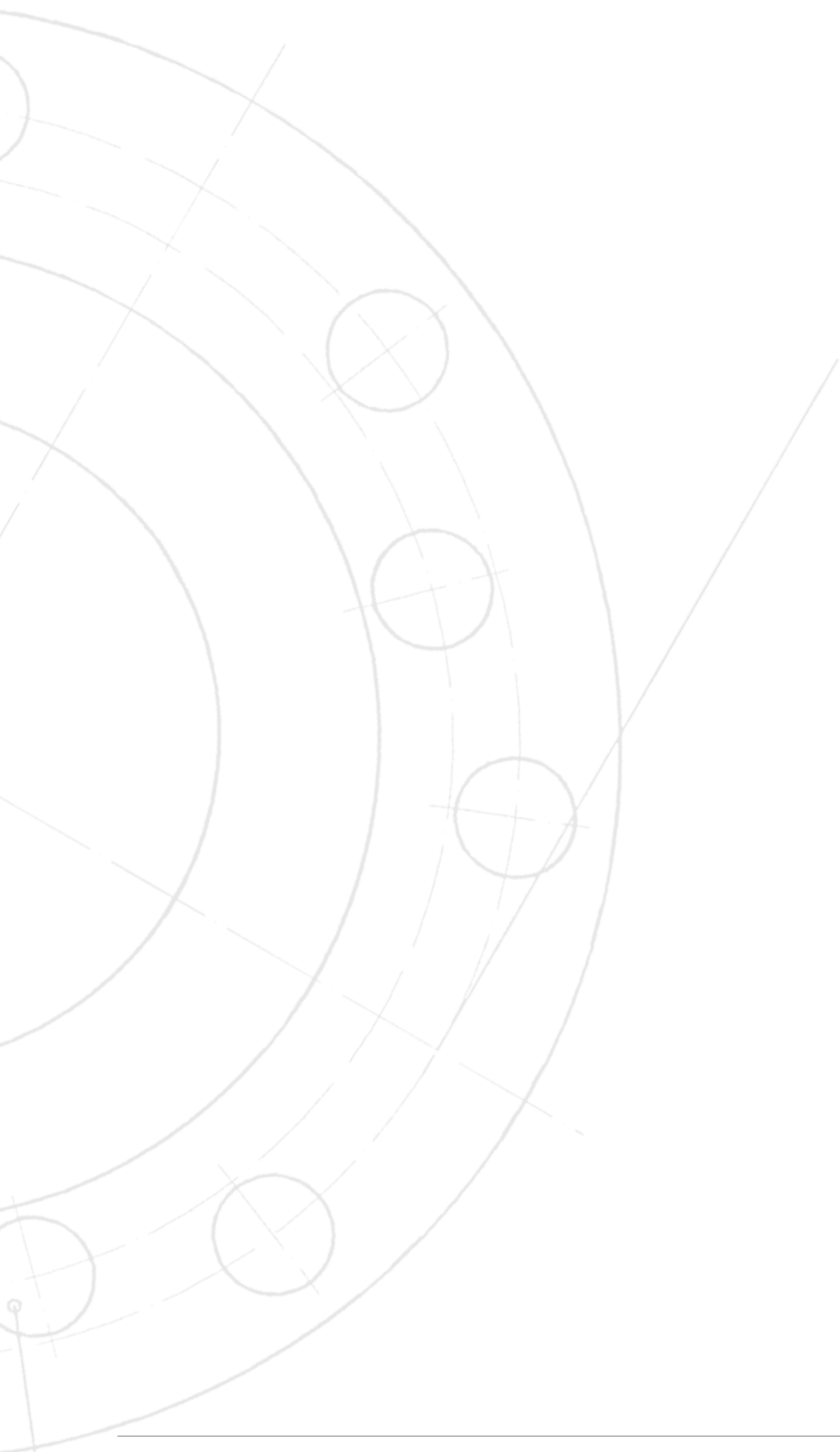
Thanks to our in-house foundry, a large proportion of the necessary spare parts can be cast in various materials at short notice.

This means that we can:

- provide a rapid response to requests for spare or replacement parts
- react flexibly to the customer's special requirements
- minimise the customer's stock of spare parts



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REFERENCES



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IJMUIDEN PUMPING STATION, The Netherlands

The IJmuiden pumping station was constructed in 1975. It comprised four pumps with a total capacity of 160 m³/s (576,000 m³/h). In 2004, two Fairbanks Nijhuis propeller pumps were added in order to increase this capacity.

Each of these pumps conveys water at a rate of 50 m³/s (180,000 m³/h).

The permanent flooding that previously caused continuous problems in the western area of The Netherlands could then finally be brought to an end by this pumping system. Fairbanks Nijhuis was involved right from the beginning, with the preparation of a feasibility study.

CUSTOMER: Rijkswaterstaat,
The Netherlands

TECHNICAL DATA

The propeller pumps that were produced and installed by Fairbanks Nijhuis in 2004 are of the type HP1-4000.340.

Capacity

50 m³/s (180,000 m³/h)

Discharge head

0.5 to 5 m



MARINA BARRAGE, Singapore

Until recently, Singapore was reliant on imports from Malaysia for its drinking water supply. In order to reduce this dependency, it was necessary to expand the drinking water supply in Singapore itself. Fairbanks Nijhuis supplied the pumps needed for this project.

The project had three objectives: to supply water, to provide flood protection and to create leisure facilities. In order to meet these aims, a dam was built, separating the Marina Bay from the ocean. This created a basin in which rainwater could be collected. In order to regulate the water level in the basin and to discharge excess water into the sea, an adjacent drainage system with seven pumps was constructed.



CUSTOMER: Metax Engineering /
The Public Utilities Board



TECHNICAL DATA

The propeller pumps made and installed by Fairbanks Nijhuis for the Marina Barrage have been in operation since 2007.

Pump type

Seven pumps, type VPL1-3200.340

Capacity:

140,000 m³/h per pump

Discharge head: 3.8 m

Propeller diameter: 3.2 m

Power requirement: 1.6 MW

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BERLINER WASSERBETRIEBE, Germany

Berliner Wasserbetriebe is the largest water supply and wastewater disposal company in Germany. It supplies drinking water to 3.5 million Berliners as well as to almost 100,000 people in the surrounding area. In addition to this, it is responsible for the eco-friendly treatment and purification of wastewater in Berlin and its environs.

The wastewater is collected in sewers and pumped to the treatment plants, where it is purified in accordance with the latest standards. The treatment plants treat around 660,000 m³ of wastewater per day.

TECHNICAL DATA

The pumps for the wastewater treatment works in Steglitz, Berlin were supplied by Fairbanks Nijhuis. The pumps have been in operation since 2007.

Pump type

Two pumps, type SRWVA1-250650

Flow rate

1440 m³/h per pump

Discharge head

38 m



MIJNDEN LOCK, The Netherlands

The Mijnden Lock is an important access point to the Loosdrechtse Plassen lakes from the Drecht and Vecht rivers to the west. In many open bodies of water in The Netherlands, including the Loosdrechtse Plassen, the fish are isolated from neighbouring lakes and water courses because the waterways are regulated by pumping stations and locks. The pumps in these pumping stations and locks represent an insurmountable obstacle to migrating fish. And a very large number of fish die in the pumps.

In this case, the customer, Waternet, recognised the many advantages of our fish-friendly pump and decided to replace the existing pump at the Mijnden Lock with a fish-friendly pump. By replacing the pump, Waternet was also able to meet the requirements of the European Water Framework Directive, which sets high standards regarding the quality and fish-friendliness of waterways.



TECHNICAL DATA

The fish-friendly pump made and installed by Fairbanks Nijhuis* for the Mijnden Lock has been in operation since 2010.

Pump type
VPF1-800.200
Flow rate
4,870 m³/h

Discharge head
1.6 m
Impeller speed
333 rpm

*The fish-friendly pump was developed in cooperation with Fishflow Innovations.

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SHENZHEN, China

The metropolis of Shenzhen (with a population of 14 million) is one of the fastest-growing cities in Asia. The demand for water for both domestic and industrial use is therefore enormous.

Due to this large demand, it was necessary to expand the existing Shangpu water-supply pumping station. In addition, a second pumping station was built to pump untreated water through 20 km of pipeline into the Xibeng Reservoir. From here, the water is distributed to various locations for further treatment. Fairbanks Nijhuis split case pumps were used in both of these expansion measures.

TECHNICAL DATA

The pumps made and installed by Fairbanks Nijhuis for Shenzhen have been in operation since 2008.

Pump type

6 pumps, type VENUS 900-1000
5 pumps, type VENUS 1200-1000

Flow rate

13,500 m³/h per pump

Discharge head

51 m and 17 m



DELFT WATER BOARD, The Netherlands

In Den Hoorn in the year 2000, the largest and most modern wastewater treatment plant in Delfland was constructed: the "Harnaschpolder". This plant was needed in order to cope with the increasing volume of wastewater and to comply with the latest standards. Nine pumping stations, including the Laakwijk station, were retrofitted with pumps so that some of the wastewater from Den Haag and Rijswijk could be transferred to the Harnaschpolder plant.

The capacity of the Laakwijk pumping station, which dates back to 1958, was increased from 2,902 m³ to 3,400 m³ per hour. Due to the location and the desire to retain the distinctive building for the benefit of the town, the retrofitting operation was no run-of-the-mill job. The works were completed at the end of 2011 and the Fairbanks Nijhuis pumps were delivered. After a successful period of trial operation, the pumping station was officially commissioned in 2012.



TECHNICAL DATA

The pumps made and installed by Fairbanks Nijhuis have been in operation since 2012.

Pump type

2 pumps, type RW1-500735

2 pumps, type RW1-400525

Flow rate

3400 m³/h per pump (RW1-500735)

1800 m³/h per pump (RW1-400525)

Discharge head

27.6 m (RW1-500735)

8.8 m (RW1-400525)

Rotational speed

750 rpm

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SPECIAL PUMPS FOR DREDGING, PALM ISLANDS, Dubai

The artificial Palm Islands in Dubai (United Arab Emirates) were constructed from sand dredged from the seabed of the Persian Gulf by the Belgian company Jan De Nul (Palm Jubel Ali) and the Dutch company Van Oord. The construction of the Palm Islands added 520 km to the coastline of Dubai. Floating trailer suction hopper dredgers and other lighter vessels were used for this job.



Almost all of the ships and vessels used by the Dutch and Belgian dredger companies involved in this project used Fairbanks Nijhuis pumps for their dredging operations.

- Split case pumps
- Flushing pumps
- Peristaltic pumps
- Cooling water pumps
- Bilge and ballast pumps
- Pumps for air conditioning systems
- Fire extinguishing pumps

Fairbanks Nijhuis also provided support services for the shipowners, including site visits from troubleshooters and customer service technicians and the supply of replacement parts.



REFERENCES



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