



# Aquaculture

Land-based Fish Farming

PROVEN TECHNOLOGY

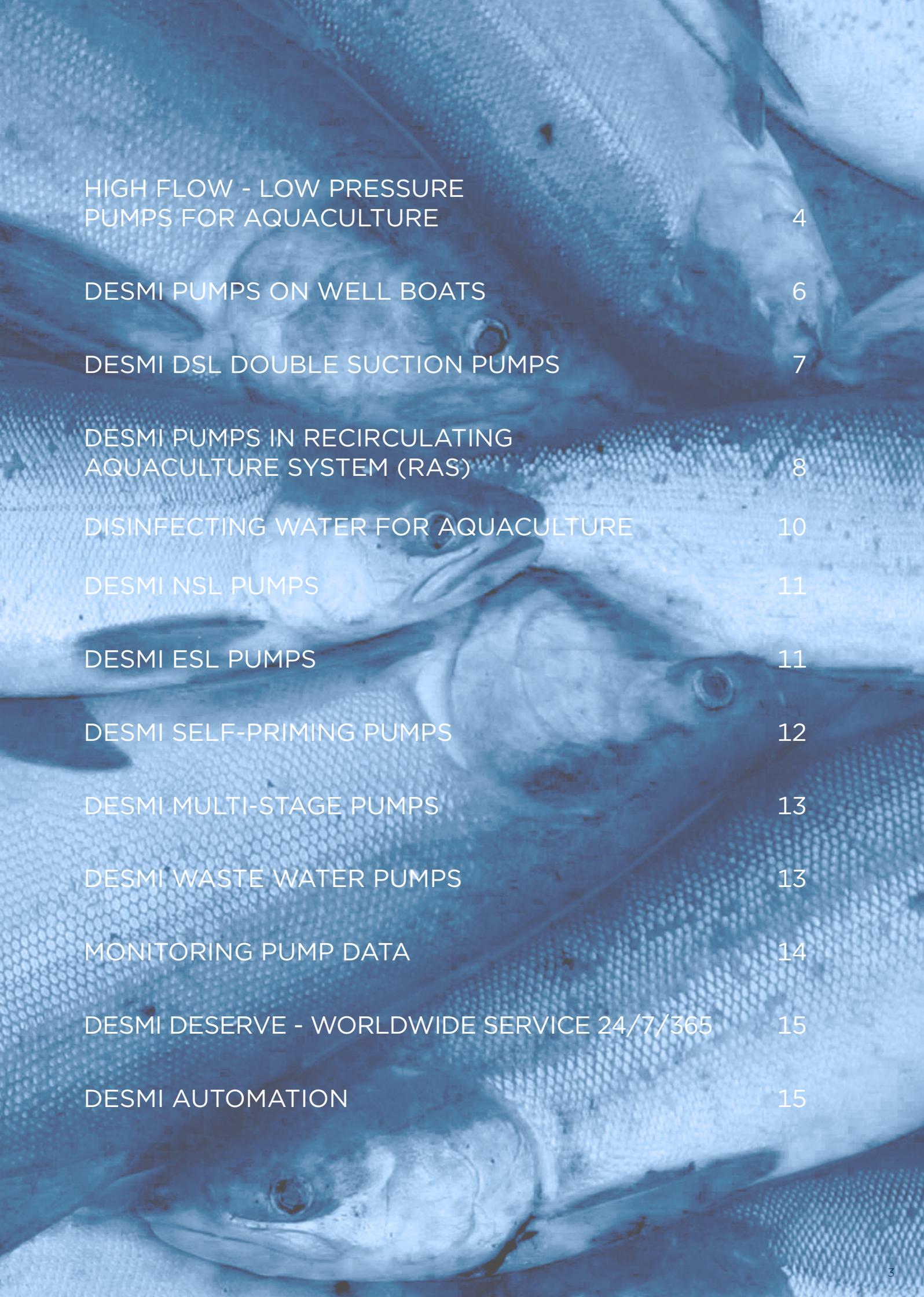
**DESMI**

# AQUA CULTURE

The growing world population is increasing the demand for fish, which is influencing the rapid development of vessel and land-based aquaculture systems such as recirculation aquaculture systems (RAS), hatcheries, and flow through systems, etc. to become larger and more sustainable in order to farm larger quantities of fish.

In this regard, energy emission is a key parameter addressed by the fish farmers to minimize the energy consumption in order to reduce the operating costs of the farm.

To support the fish farmers in achieving this goal, DESMI offers energy efficient and reliable pumps and pumping solutions including UV Treatment for the vessel and land-based fish farming markets.



HIGH FLOW - LOW PRESSURE PUMPS FOR AQUACULTURE	4
DESMI PUMPS ON WELL BOATS	6
DESMI DSL DOUBLE SUCTION PUMPS	7
DESMI PUMPS IN RECIRCULATING AQUACULTURE SYSTEM (RAS)	8
DISINFECTING WATER FOR AQUACULTURE	10
DESMI NSL PUMPS	11
DESMI ESL PUMPS	11
DESMI SELF-PRIMING PUMPS	12
DESMI MULTI-STAGE PUMPS	13
DESMI WASTE WATER PUMPS	13
MONITORING PUMP DATA	14
DESMI DESERVE - WORLDWIDE SERVICE 24/7/365	15
DESMI AUTOMATION	15

# High Flow - Low Pressure PUMPS FOR AQUACULTURE

DESMI has developed new pumps for the aquaculture market, where the focus is to provide high efficiency rates for high flows at low water lift.

The new pumps are suitable for aquaculture water applications (seawater, freshwater, brackish, water with cleaning agents, etc.) and for meeting the aquaculture industry requirements for:

- Design to run 24 / 7 / 365
- Very long intervals between maintenance
- High efficiency > 80% at high-flow & low-pressure conditions
- Flexibility - can be installed horizontally or vertically to adapt to any pipe system
- Slow speed (using 6 or 8 pole motors) - very limited noise transmitted to fish tanks
- Easy installation and maintenance
- Self-priming ability with a separate built-on priming pump

Horizontal End-Suction Centrifugal Pump	
Nominal diameter	DN 250 to 600
Flow rate	500 to 6400 m <sup>3</sup> /h (2201 to 28.178 US GPM)
Head	2 mLC - 20 mLC
Pressure	5 bar (PN5) (72 psi)
Temperature	0 to 100 °C (212 °F)
Motor	Standard and Ex motors
Motor size	From 7.5 kW to 250 kW
VFD	Fully compatible
Pump media	Freshwater, water with additives, seawater
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz
RAS Application	Main Pump Intake Water Pumps



High Flow - Low Pressure Pumps for Aquaculture

# DESMI High Flow - Low Pressure Pumps



1.85m service technician

Up to 1,6 m



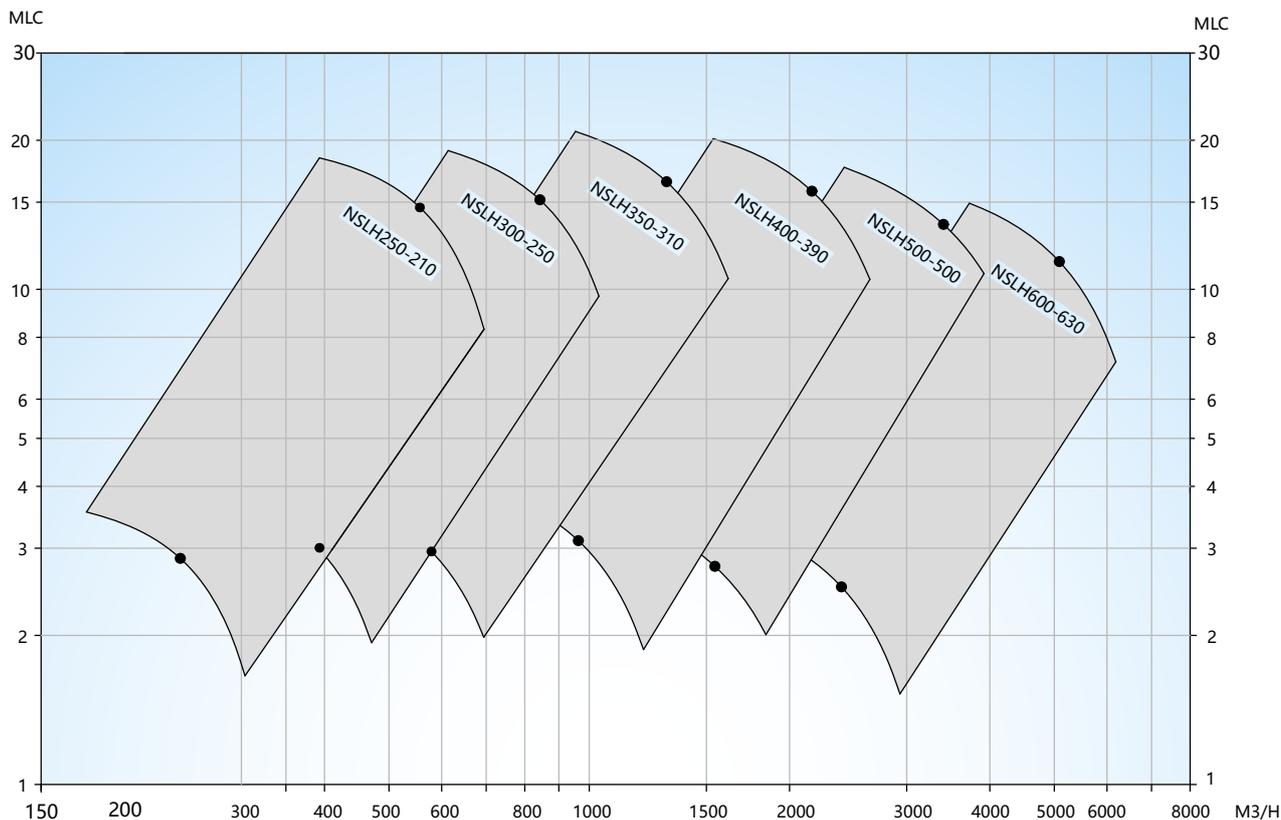
Standard Horizontal Installation



Vertical Installation



Horizontal Reverse Installation  
(Where the media is pumped downwards)



• MAX EFFICIENCY POINT\*  
\*shown for min. and max. speed for each pump size

# High Flow - Low Pressure DESMI PUMPS ON WELL BOATS

The growing world population is increasing the demand for fish, which is influencing the rapid development of land-based aquaculture systems and on board aquaculture vessels.

For well boats our high-flow - low-pressure centrifugal pumps are very suited as they require very little space in the vertical installation.

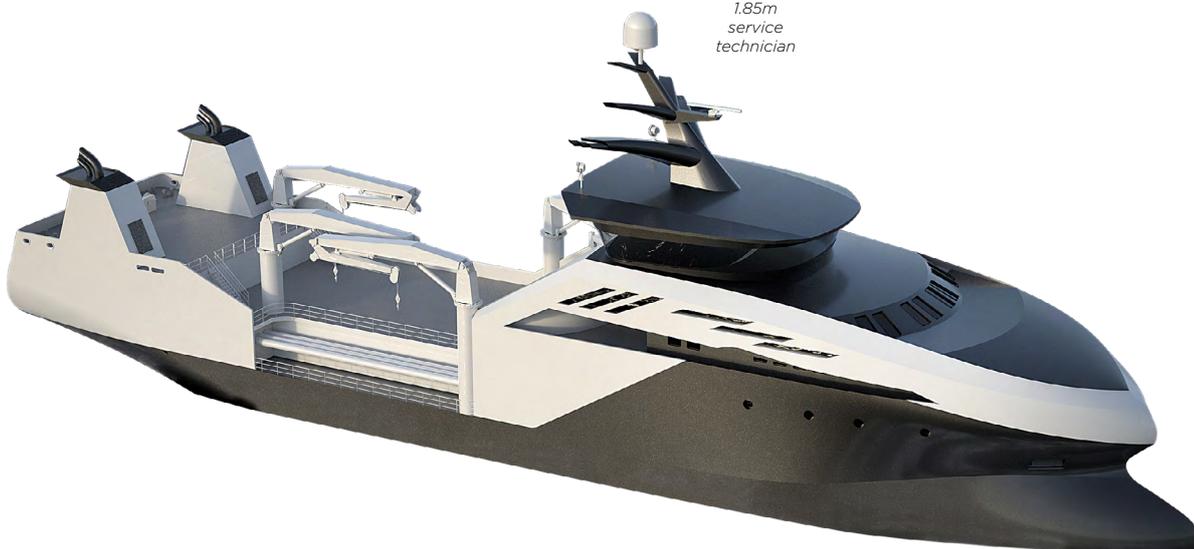
For a complete range of engine room pumps for ships, please visit [www.desmi.com](http://www.desmi.com).

Vertical End-suction Pump - High Flow - Low Pressure	
Nominal diameter	DN 250 to 600
Flow rate	500 to 6400 m <sup>3</sup> /h (2201 to 28.178 US GPM)
Head	2 mLC - 20 mLC
Pressure	5 bar (PN5) (72.5 psi)
Temperature	0 to 100 °C (212 °F)
Motor	Standard and Ex motors
Mortor size	From 7.5 kW to 200 kW
VFD	Fully compatible
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz



1.85m  
service  
technician

Up to 3 m



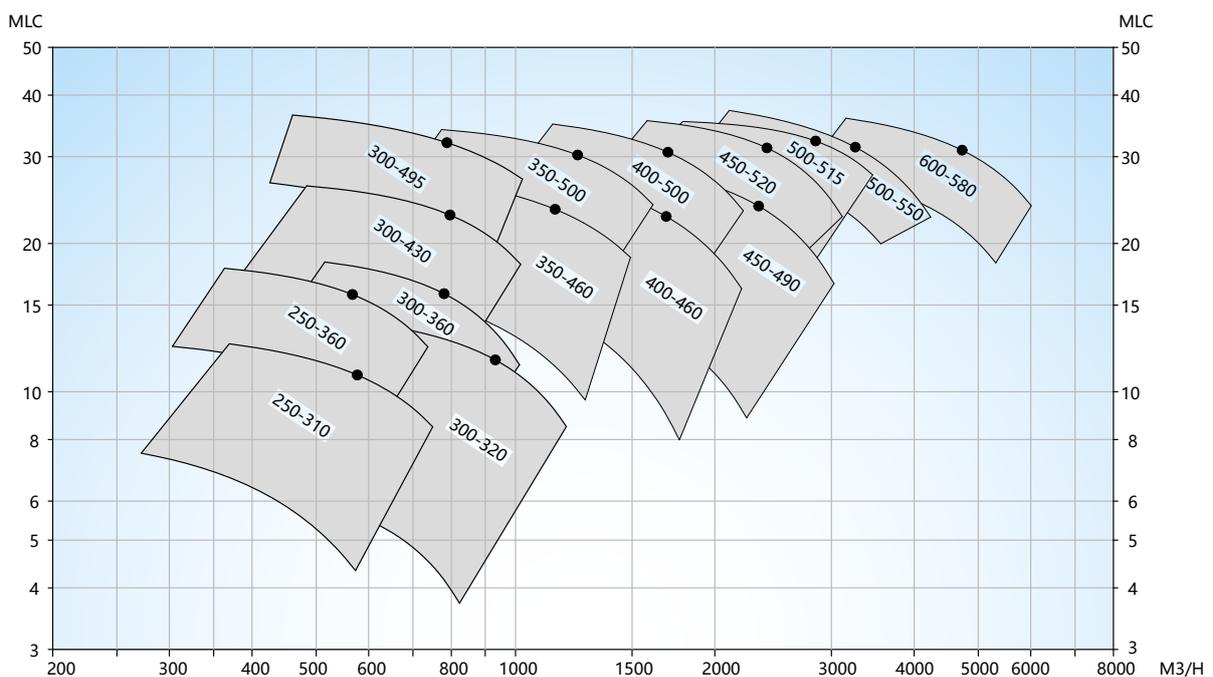
# DESMI DSL Double Suction Pumps

The DSL pumps are high efficiency pumps in a cost-effective design.

## Pump Concept:

- Single-stage, double-suction, vertical in-line centrifugal pumps
- The inlet is placed in line with the outlet
- Advanced double-suction impeller
- High efficiency
- Very Low NPSH values
- Self-priming ability with a separate built-on priming pump

DSL Horizontal In-line Double Suction Centrifugal Pump	
Nominal diameter (DN)	150 to 600
Flow rate - 50 Hz	Up to 6200 m <sup>3</sup> /h (27300 US gpm)
Flow rate - 60 Hz	Up to 7400 m <sup>3</sup> /h (32580 US gpm)
Head	Up to 140 m (459 ft.)
Pressure	Up to 25 bar (363 psi)
Temperature	Up to 140°C (284°F)
Motor	Standard and EX motors
VFD	Fully compatible
Pump media	Freshwater, water with additives, seawater, and oils up to 500 cSt.
RAS Application	Main Pump Intake Water Pumps
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz



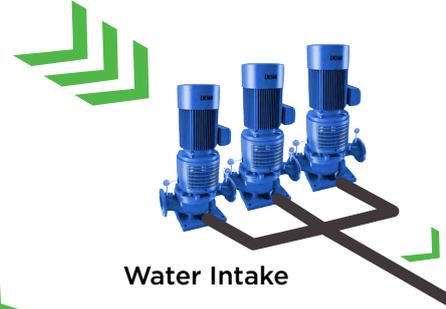
• MAX EFFICIENCY POINT\*

\*shown for nominal speed (50 Hz) for each pump size

# DESMI Pumps in Recirculating Aquaculture System (RAS)

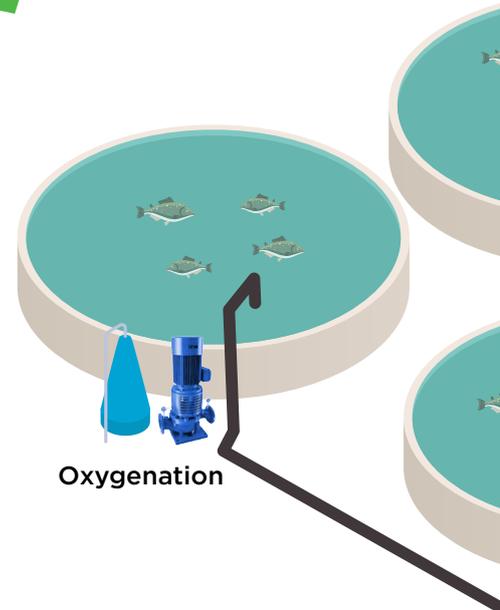


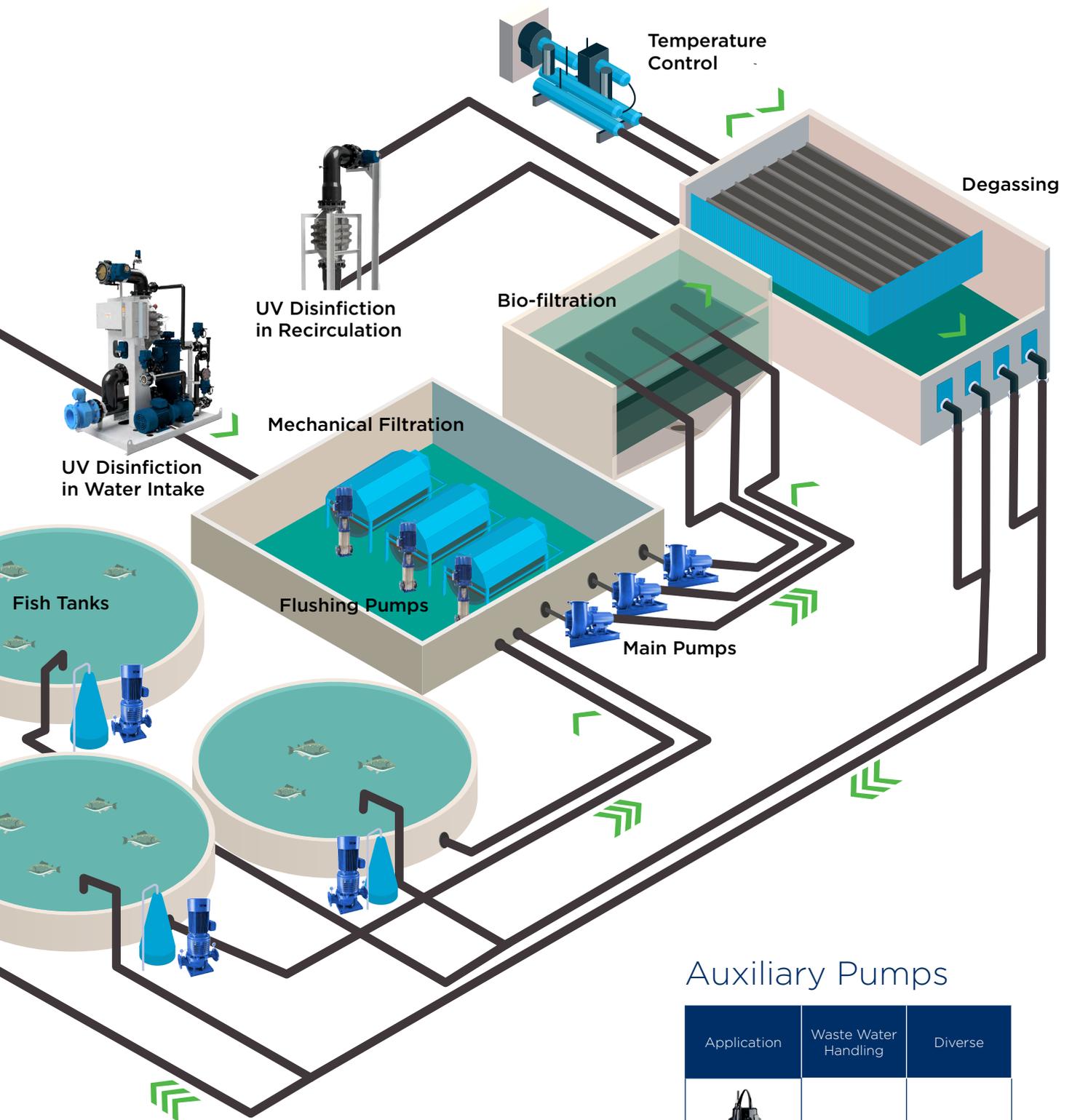
**MAIN PUMPS**  
DESMI High Flow  
- Low Pressure Pumps



## Primary Pumps

Application	Main Pumps	Oxygen Control	Intake Water Pumps	Flushing/ Sluicing Pumps	Cooling / Heating Pumps
 DESMI High Flow/ Low Pressure Pump	✓		✓		
 DESMI DSL Double Impeller Pump	✓		✓		
 DESMI NSL/NSLH Pump		✓	✓		✓
 DESMI ESL/ELSH		✓	✓		✓
 DESMI DP Pump				✓	





## Auxiliary Pumps

Application	Waste Water Handling	Diverse
 DESMI Waste Water	✓	✓
 DESMI Selfpriming	✓	✓

The above is a sample drawing of a typical RAS. The DESMI pumps can be used in various applications and processes.

# Disinfecting water for aquaculture

DESMI UV is a high performing UV disinfection system. It offers simple installation with high quality and compliant performance anywhere in the world. Even in extremely dirty and challenging water conditions. It is approved for operation in waters regulated by the International Maritime Organization (IMO) and by the United States Coast Guard (USCG).

DESMI UV has no salinity or temperature limitations. Model selection ensures flow ranges down to 35 m<sup>3</sup>/h and up to 3500 m<sup>3</sup>/h with a single unit. The different UV models are optimized for both high and record-breaking low UV transmission values!

## THE SAFE WAY TO DISINFECT WATER FOR AQUACULTURE



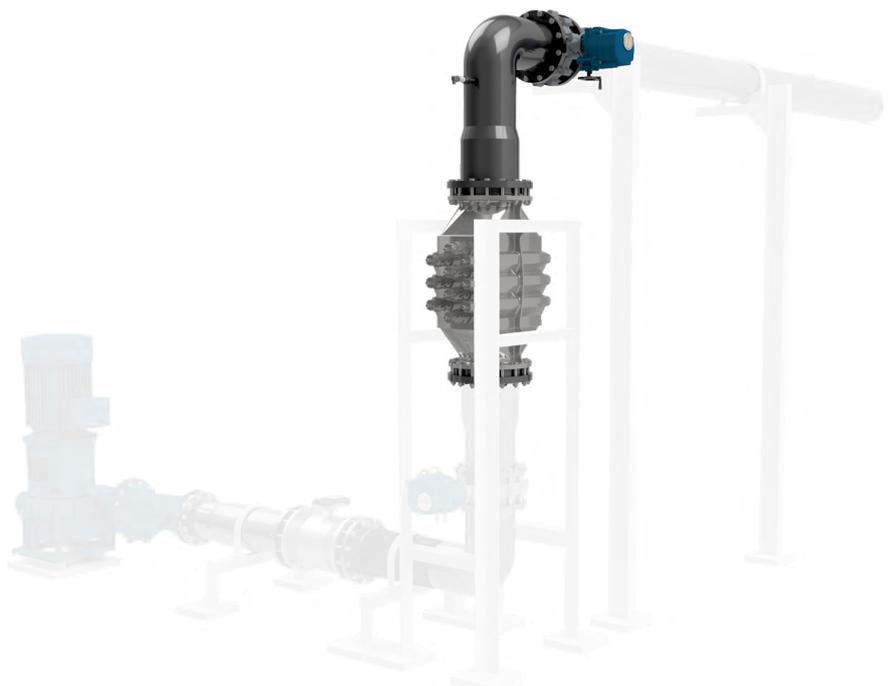
**Veterinærinstituttet**  
Norwegian Veterinary Institute

\*NVI Pending - Expected Q2 2023

- Simple installation, operation, and maintenance
- Acts as a firewall for viruses in intake water
- Can be delivered skid mounted for super easy installation
- Can be bundled with Auto-filter and Auto-Cleaning
- No chemicals, only UV light
- Automatic dose control ensuring optimal safety
- Specialized plant engineering team available
- +10 years of marine experience
- More than 1000 systems in operation around the world
- From 35 m<sup>3</sup>/h up to 3500 m<sup>3</sup>/h on a single unit



UV system skid mounted with filter and cleaning

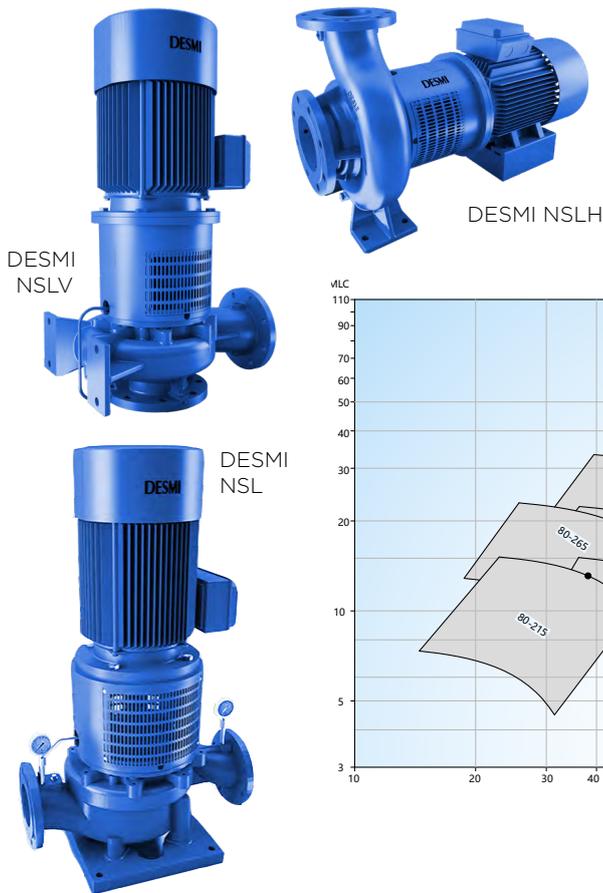


UV system standalone - Auxiliary options available

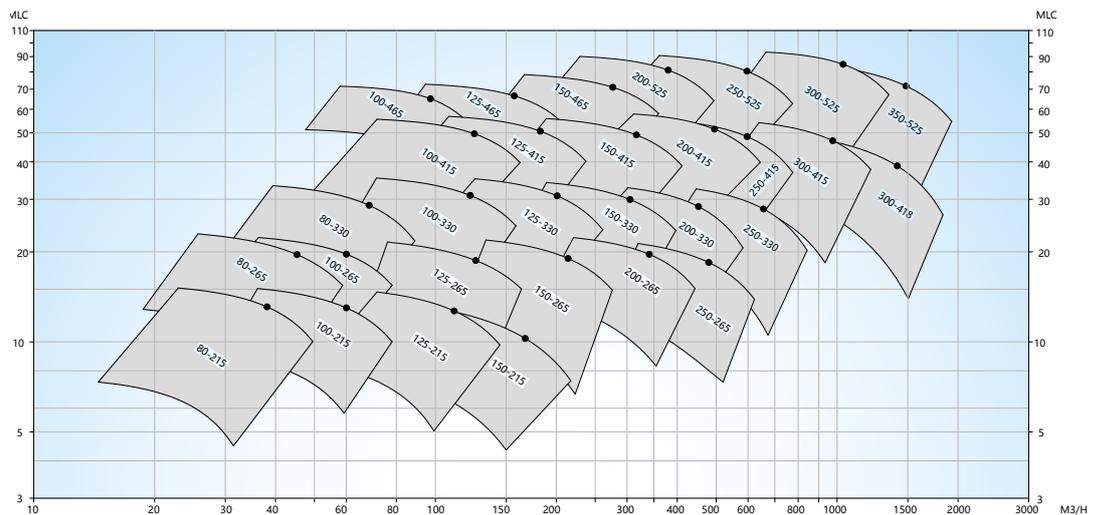
# DESMI NSL Pumps

DESMI NSL centrifugal pumps are suitable for many different applications in a recirculation aquaculture system, e.g. oxygen cone, level control, water exchange, and temperature control. High efficiency rates ensure low operating costs.

- Designed to run 24 / 7 / 365
- Very long intervals between maintenance
- High efficiency
- Easy installation and maintenance
- Spacer-coupling options for easy maintenance
- Robust shaft design
- High efficiency impeller with low NPSH values
- Self-priming ability with a separate built-on priming pump



NSL / NSLH/V Vertical and Horizontal In-line Centrifugal Pump	
Nominal diameter (DN)	65 to 400
Flow rate	Up to 1800 m <sup>3</sup> /h (7900 US gpm)
Head	Up to 220 m (720 ft)
Pressure	Up to 25 bar (363 psi)
Temperature	Up to 150°C (302°F)
Motor	Standard and EX motors
VFD	Fully compatible
Pump media	Freshwater, water with additives, seawater, and oils up to 500 cSt.
RAS Applications	Oxygen Control Intake Water Pumps Cooling / Heating Pumps
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz



• MAX EFFICIENCY POINT\*  
\*shown for nominal speed (50 Hz) for each pump size

# DESMI ESL Pumps

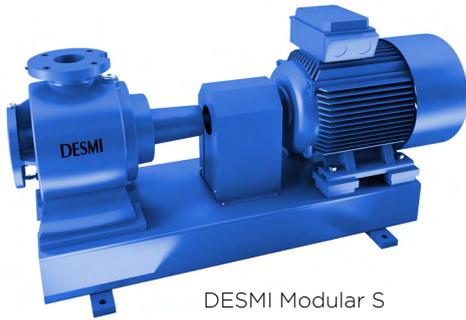
The ESL centrifugal pumps are DESMI's small size range. They are designed for various aquaculture applications and meet the requirements for:

- Low maintenance costs
- High efficiency
- Low NPSH
- High configuration flexibility
- Installation and serviceability
- Self-priming ability with a separate built-on priming pump



ESL/ESLH In-line and End-suction Single-stage Centrifugal Pump	
Nominal diameter (DN)	25 to 100
Flow rate - 50Hz	Up to 225 m <sup>3</sup> /h (990 US gpm)
Flow rate - 60 Hz	Up to 250 m <sup>3</sup> /h (1100 US gpm)
Head	Up to 65 m (213 ft)
Pressure	Up to 30 bar (435 psi)
Temperature	Up to 140°C (284°F)
Motor	Standard and EX motors
VFD	Fully compatible
Pump media	Freshwater, water with additives, seawater, and oils up to 500 cSt.
RAS Applications	Oxygen Control Intake Water Pumps Cooling / Heating Pumps
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz

# DESMI Self-Priming Centrifugal Pumps



DESMI Modular S



DESMI SA

The series of DESMI MODULAR S pumps represents one of the most distinctive developments in self-priming pumps. Based on many years of experience in the production of self-priming pumps, we supply pump series that meets the future demands for economical and reliable pumps.

The individual design, compact with a clearcut cylindrical form, together with the practical advantages such as easy assembling and MODULAR construction of all components ensures a long and positive operation.

This priming principle means that MODULAR S can pump a mixture of air and liquid and thus evacuate air from the suction pipe. Thus, priming can be avoided, and a foot valve is not necessary.

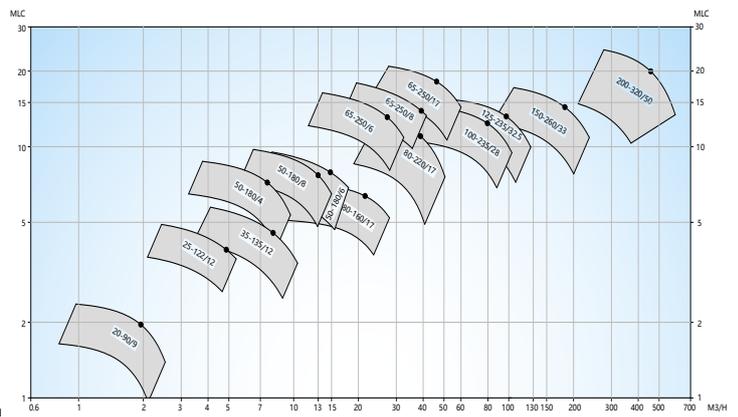
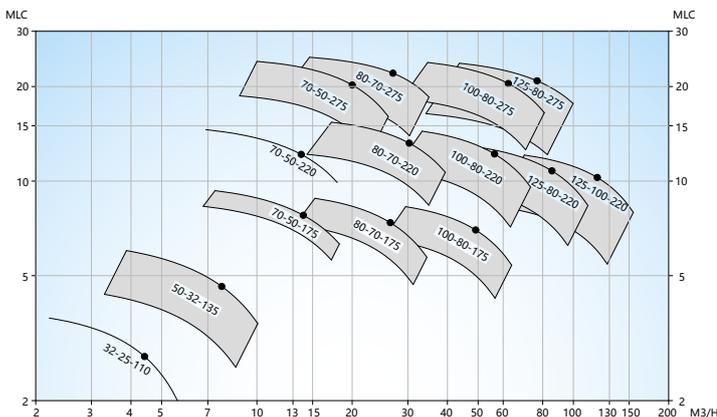
Self-priming Centrifugal Pump Modular S	
Nominal diameter (DN)	32 to 125
Flow rate	Up to 400 m <sup>3</sup> /h (1760 US gpm)
Head	Up to 150 m (490 ft)
Temperature	Up to 120° C (248° F)
Motor	Standard and EX motors
VFD	Fully compatible
Pump media	Freshwater, water with additives, sea-water, and oils up to 500 cSt.
RAS Applications	Scrtetting Pumps Miscellaneous
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz

The DESMI SA pump is used for contaminated liquids as well as liquids containing air or gas from sumps, gullies, and many other applications where suction lift is required.

The pump can handle clean and polluted liquids that are non-corrosive to cast iron and bronze, plus oils, petrol, diesel, and a number of chemicals.

- Excellent self-priming ability
- Ideal for handling contaminated liquids
- Easy maintenance with replaceable wear plate
- Open impeller design for handling of particles

Horizontal Self-priming Centrifugal Pump SA	
Nominal diameter (DN)	20 to 200
Flow rate	Up to 650 m <sup>3</sup> /h (2900 US gpm)
Head	Up to 110 m (360 ft)
Temperature	Up to 120° C (248° F)
Motor	Standard and EX motors
VFD	Fully compatible
Pump media	Freshwater, water with additives, sea-water, and oils up to 500 cSt.
RAS Applications	Scrtetting Pumps Miscellaneous
Materials	Cast Iron (GG20) (with or without Ceramic Coating for seawater), Stainless Steel (AISI316 & 1.4410), NiAlBz



• MAX EFFICIENCY POINT\*  
\*shown for nominal speed (50 Hz) for each pump size

# DESMI Multi-stage Pumps

The DESMI DPV - Multi-stage pumps provide the high pressure required for, e.g., back washing mechanical filters.

- High efficiency
- Unique hydraulic design: high pressure per impeller with high efficiency
- Hydraulic efficiency for DPV 2, 4, 6, 10, 15, 25, 40, 60, 85, 125 from 54 to 80%, respectively.
- Standard motor with high performance IE3



DESMI DPV Pumps

DP Multi-stage	
2-pole range	2, 4, 6, 10, 15, 25, 40, 60, 85, 125
4-pole range	15, 25, 40, 60, 85, 125
Capacity range (m <sup>3</sup> /h)/(gpm)	0.5-193/2-849
Pressure range (m)/(ft)	5/16 to 400/1312
Temperature range medium	-20 - +140° C / -4 - 284° F
Pump media	Freshwater, water with additives, and seawater.
RAS Applications	Flushing/Sluicing Pumps
Materials	Hydraulic: Stainless Steel (AISI304 & AISI304); Base Plate Cast Iron (GG20)

# DESMI Submerged Waste Water Pumps

Submersible waste water pumps from DESMI convey domestic, public, and industrial waste water, sewage (containing High TSS Concentrations), and sludge (which may contain high levels of solid and fibrous matter), as well as domestic waste water of any kind. Thanks to the use of a broad range of materials (stainless steel in different grades, bronze, viton, etc.), DESMI submersible pumps are suitable for recirculating aquaculture systems (RAS).



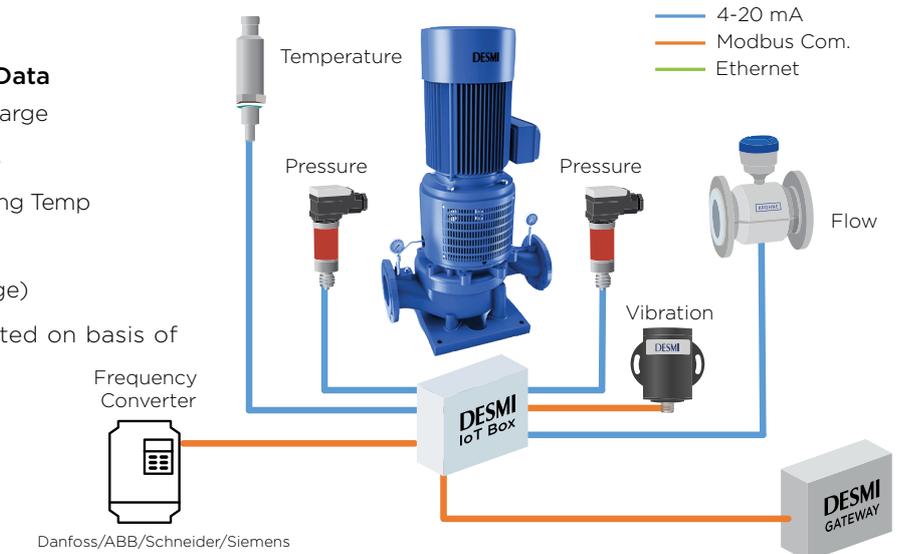
DESMI Submerged Waste Water Pumps

DESMI Waste Water Pumps	
Nominal Diameter	DN80 - DN150
Flow Rate	3 - 500 m <sup>3</sup> /h
Head	4- 70 mLC
Temperature	Up to 120° C (248° F)
Motor	Integrated 3-phase 400V 2,4 and 6 Pole motor (IP68)
Motor size	1,5 - 37 kW
Impeller types	Closed Single Channel impeller; Closed Multi Channel impeller; Open Vortex Impeller
VFD	Fully compatible
Materials	Cast Iron (GG25) & Stainless Steel (316)
RAS Applications	Waste Water Handling Miscellaneous

# Monitoring Pump Data

## Monitoring of All Relevant Pump Data

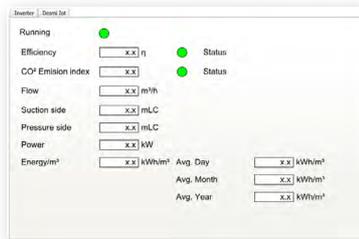
- Pump Pressure at inlet and discharge
- Vibration level and accelerations
- Media Temperature Motor Winding Temp
- Pump Efficiency
- Pump Flow (By actual flow gauge)
- Pump Flow<sup>VIRT</sup> (Virtual, calculated on basis of Pump Curve 95% accuracy )
- Motor Power
- Motor speed
- Etc.



## Cloud Solution and Data Accesibility in Customer Scada System

All data can be transmitted to the DESMI cloud by LAN, WIFI, LoRaWAN, 4G/5G or whatever is available on the site.

The data, which is relevant in the daily operation, can be directed into the SCADA/Management System and can be used to monitor the efficiency and the "health" of the pumps along with other required parameters.



API<sub>1</sub> (Pressure)  
API<sub>2</sub> (Flow)  
API<sub>3</sub> (η)  
...  
API<sub>10</sub> (Vibration)

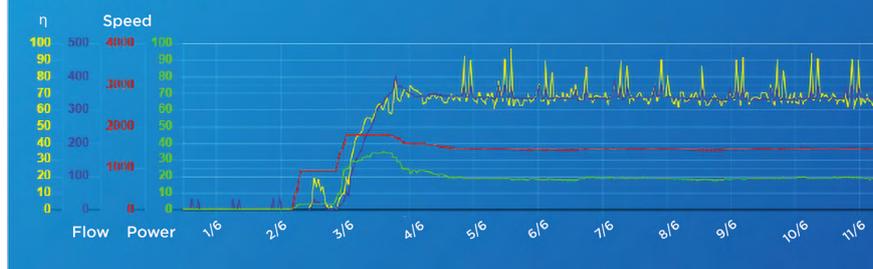
\*API = Automated Programming Interface



## Online data

Power	Pump Speed	Suction Pressure	Discharge Pressure	Flow (Calculated)	η min Daily	η	η Max. Daily
14,5kW	1340rpm	0,00 bar	0,93bar	291,2m <sup>3</sup> /t	35,8%	82,2%	85,3%

## Historical Data



## Online Support & Commissioning Support

DESMI can provide online support where skilled pump specialists can log-on to the cloud and assist commissioning, fault finding, and supporting our customers 24/7/365.

Obviously, DESMI service technicians can also support on the site.



DESMI has for more than 185 years serviced and supported our full product range. Some of the key factors of being around for this long are: Reliability, trustworthiness, and having a profound respect for our customers and their needs.

The DESMI DeServe operates globally and around the clock. We can offer all services from simple advice over the phone to full on-site maintenance and service programs. The team is highly experienced, factory-trained, and fully capable of meeting both your technical and practical demands.

The DESMI DeServe can also offer customized programs to meet specific client requirements and be your preferred partner of choice. In case of emergency breakdowns or equipment life-time support we can send most equipment within 48 working hours or access our global parts database and ship out needed spare parts from one of our regional warehouses often from day to day to ensure your DESMI equipment is always operational.

### DESMI Genuine Spare Parts Kits for Simple Overhaul and Service

DESMI provides spare parts kits for easy and simple maintenance and overhaul of your pumps. We offer a variety of spare parts kits for a number of DESMI pump series.

To determine which spare parts kit you need and to provide you with the best service, we need to have the following information:

- Pump type (e.g. NSL 150-265)
- Serial number (e.g. 323249 or 30192-1)

### Spare Parts Kits include:

- Mechanical shaft seal
- Special tool
- Bearings
- O-rings
- Gaskets
- Washers & nuts
- Item list
- Etc.

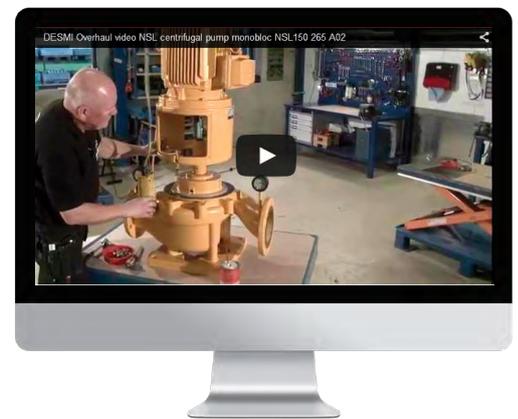


DESMI Service Hotline 24/7/365

+45 96 32 81 10



Overhaul Videos



## DESMI Automation

DESMI Automation offers a wide range of automation solutions developed for the industrial segment.

Our product portfolio includes solutions from simple motor starters to advanced PLC based solutions.

DESMI Automation is constantly developing new product solutions, and currently, the following products are offered as standard products:

- Motor starters ranging from 0.75 kW to 90 kW
- Frequency converter (various brands) solutions with built-in optional web server facility, 0.75 kW to 1MW (in various voltage ranges)
- Tank level control solutions
- Pump heating control solutions



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- DESMI Service Centers
- DESMI Companies
- DESMI Dealers/Agents

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MARINE & OFFSHORE

INDUSTRY

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