

wavemaster™ polarcirkel™ fishtalk™ akvasmart™



E-AKVAGroup-24 page catalogue-20170803

Cage Farming & Land Based Aquaculture



Reliable and innovative aquaculture solutions combined with professional service and support



■ **As a partner our mission is to improve your profitability and sustainability.**

During more than 40 years as innovator and provider of technology and services to the global aquaculture industry, we in AKVA group have learned what really matters to our customers as well as to ourselves. Partnerships, good partnerships – enabling us to contribute solutions and services that make our customers successful in developing and operating sustainable and profitable aquaculture operations. Good Partnerships, where our contribution to solutions and services earn us the opportunity to develop AKVA group as a sustainable and profitable company.

We will continue to build AKVA group with this as our mission. We will be focused on our customers’ needs, being attentive and responsive. We will develop and use our knowledge to contribute solutions and services that lifts our customers performance.

We will take pride in being reliable and honest in what we do and how we act, and we will use our enthusiasm to generate the energy and joy needed to take our customers as well as AKVA group forward.

In AKVA we strongly believe that we can make a difference. We are proud to be part of the global aquaculture industry which is playing a crucial role providing healthy seafood world wide.

We are partners – and in it for the long run.

AKVA group is a solid partner with offices and facilities in Norway, Chile, Denmark, Scotland, Iceland, Spain, Greece, Turkey, Iran, Canada and Australia. With 11 offices and several agents and distributors around the globe AKVA group is present in all markets worldwide. AKVA group is a unique partner with the capability to offer both cage farming and land based aquaculture operations with complete technical solutions and service.

The company holds strong, well-known brand names and the product line range from plastic and steel cages, mooring systems, nets, net cleaners, work boats, feed barges, feed systems, camera systems, environmental sensors, underwater lights, production and process control software, recirculation systems, PE piping systems, farm design, on-site services and training courses.

Partnering with AKVA group allows customers to keep their focus on fine tuning farm operations to increase profitability, while sharing the technical challenges with a reliable partner with the right people, the right technology and the right knowledge to achieve excellence.



HALLVARD MURI
CEO, AKVA group ASA.

Project planning

Two heads think better than one, says an old proverb. In terms of planning an aquaculture operation it translates into allowing people with different know-how to work together in the planning process. Letting AKVA’s technical experts team up with your own operational experts will ensure well founded and correctly dimensioned farming solutions.

Budgeting

Budgeting means planning years ahead to create an image of the size and shape of your operations. This is imperative to secure adequate financing and proper financial control. Allowing technical considerations into the budget will also help you identify constraints or bottlenecks in your operation.

Technical solutions

Are you happy with standard solutions or does your operation or managers require fine tuning of some of the hardware? In a carefully planned complete project, specific hardware requirements can be taken into account at an early stage so they won’t add extra costs or delays along the way.

Installations

Plug and play may be the preferred mode for anyone wanting to connect two pieces of equipment together. In an aquaculture facility, putting the pieces together may not be quite as simple, although it might seem like it when our experts are at work. Professional commissioning and start-up will prevent future headaches and costly mistakes.

Service & support

Systems running year after year, sometimes in extreme weather, will always be subject to extensive wear and tear. In order to maintain reliable operations, preventive service agreements and regular maintenance are critical. AKVA group’s Service department has decades of experience in supporting and performing maintenance under such conditions.

Rental*

AKVA group offers rental of complete systems as well as single products with service included. We have a very skilled and experienced service network and our new rental agreement allow our customers to focus their attention on feeding fish, while we make sure that the equipment is continuously performing. **Not offered in all areas.*

Cage Farming Aquaculture - Complete Solutions Worldwide

PRODUCTS



■ From single components to complete aquaculture solutions with professional support.



Feed Barges

AKVA group is the world's leading supplier of feed barges with decades of experience and nearly 300 barges delivered worldwide.



Feed Systems

The central feed system was invented by AKVA group in 1980 and Akvasmart CCS is today the world's most popular and reliable feed system.



Cages

AKVA group is the leading supplier of both plastic and steel cages in aquaculture, and has since 1974 delivered more than 60,000 cages.



Software Solutions

Fishtalk is a unique IT concept and tool that provides integrated operations and biological production. AKVAconnect is the latest farm operations and technical control software platform.



Camera and Sensor Systems

Advanced video camera and sensor systems monitor both fish, the feeding process and the environment. This ensures optimum operations and a healthy fish.



Workboats

The robust Polarcirkel workboats offers great design, quality build, unique flexibility, safety and low maintenance.

Polarcirkel all-plastic Cages, the safest, strongest and most escape proof cages on the market



All-rope solution. No shackles or bolts that can corrode or damage the net.

The new Pressure Injection Moulded brackets design provides superior strength.

Wavemaster Cages, a trusted and well proven steel cage concept



Ideal platform for fish farming
The rugged wide walkways are designed to withstand rough daily use. All components are hot dip galvanized and provides extra long life-span.



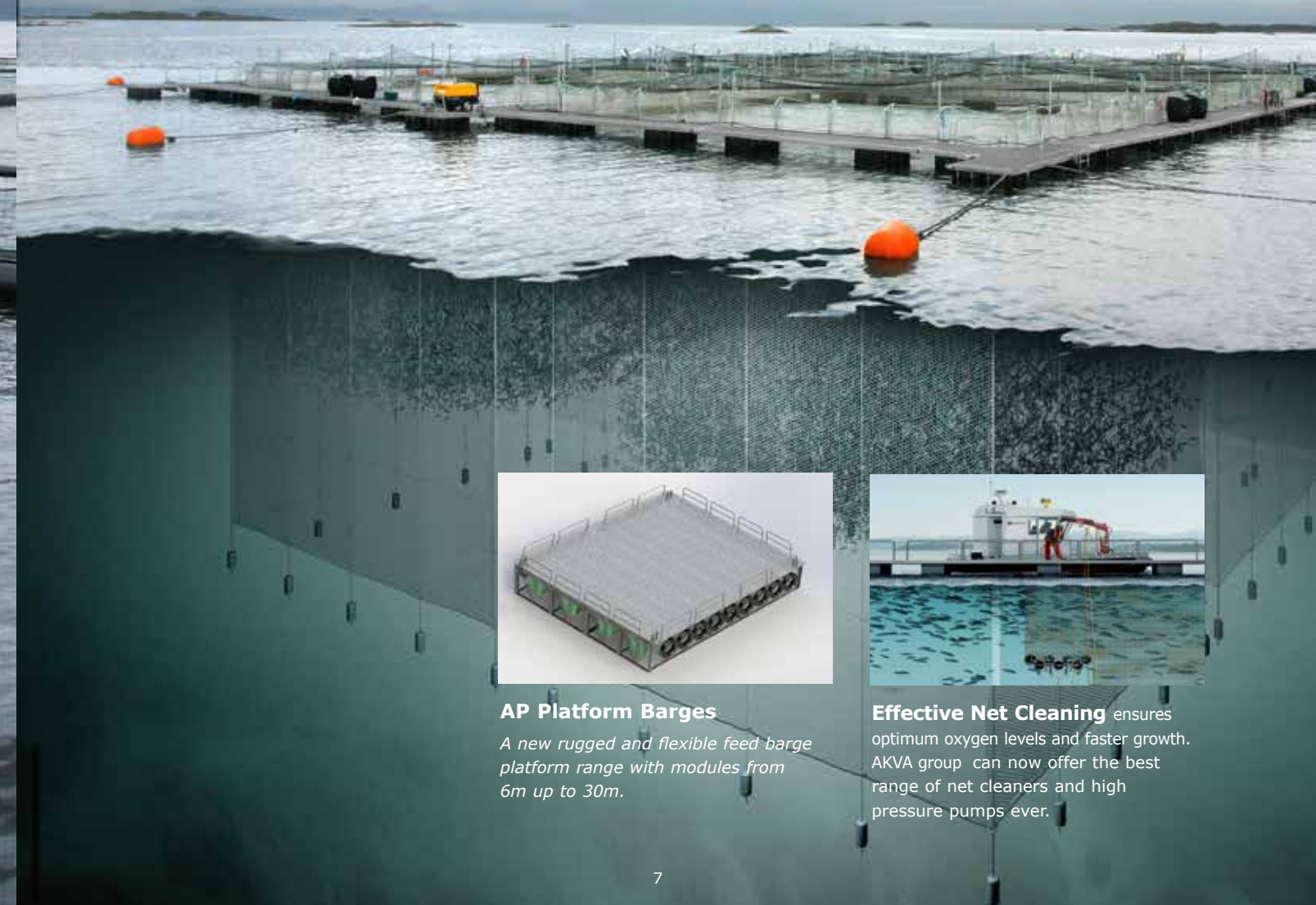
Smart details and solutions
Wavemaster cages include smart solutions for fully integrated non-slip walkways, net supports and floats with self-draining top.



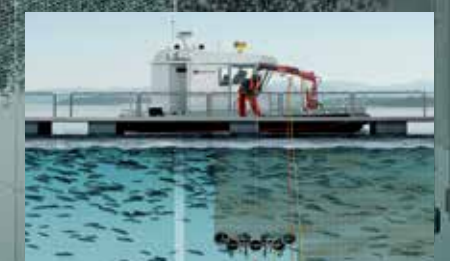
High quality mooring systems
A wide range of well proven high quality mooring systems are available in various dimensions.

Patented moulded rubber hinge system reduces loads and increases life-span.

Wavemaster Cages are available in a wide range of models and sizes up to 40x40m to suit individual needs.



AP Platform Barges
A new rugged and flexible feed barge platform range with modules from 6m up to 30m.



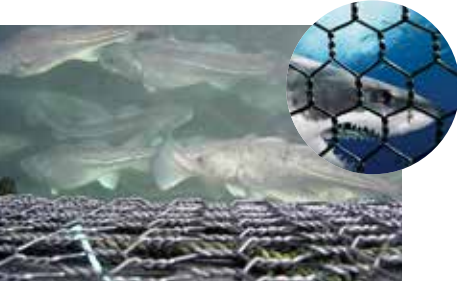
Effective Net Cleaning ensures optimum oxygen levels and faster growth. AKVA group can now offer the best range of net cleaners and high pressure pumps ever.

The highest quality nets safeguards your fish

CAGE NETS

Non fibre nets - EcoNet

The unique Polarcirkel EcoNet concept can totally change today's fish farming! This non fibre net technology has been used to make over 4000 fish farming nets, in addition to many other usages including shark nets, rock slide nets etc.



The semi-rigid structure keeps the net shape intact to maximize water flow and oxygen to the fish.

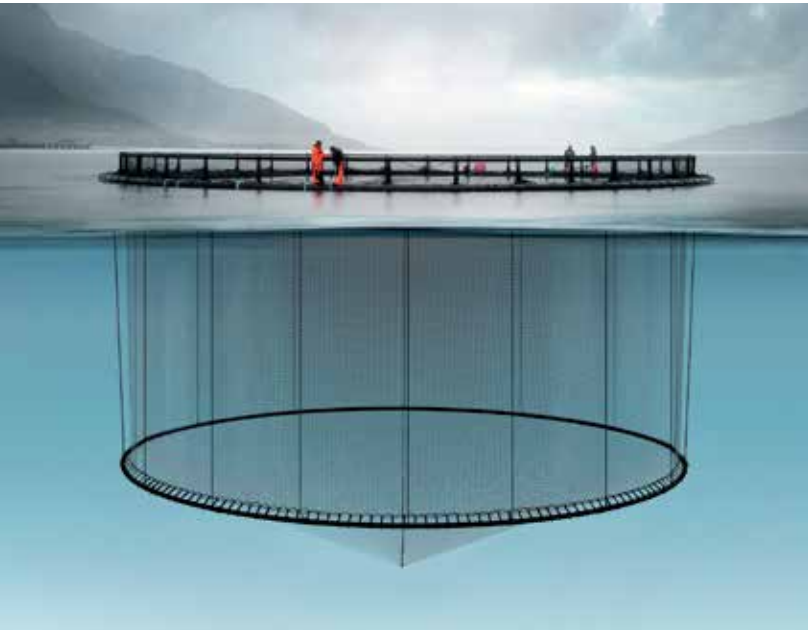
The EcoNet is made from very strong but light weight PET and has some superior characteristics, including: Being virtually-escape proof, predator proof and has a long lifespan. The non-fibre wire has very hard surface that resists marine fouling and makes it easy to clean in the water. No use of antifouling paints or ongoing net changes.



These quality nets are based on years of experience with the safety of our customers at heart.

Fibre nets - Egersund Net

Egersund Net is one of the world's leading net and service suppliers and invests heavily into R&D to ensure leading edge net products and new concepts. Including material testing, net shape designs, net weight concepts and new anti-fouling treatment methods. Extensive scale testing is performed at SINTEF's large tank testing facility in Hirtshals, Denmark. The end result is a powerful combination of high-tech modern R&D with decades of personal craftsmanship and practical experience.



The EcoNet maintain a superior net shape, high durability, escape prevention, no net changes, maximized water flow and no anti-fouling paint.



Egersund Net supplies nets with both square and hexagonal mesh made of high quality materials.



Cameras, Sensors, Underwater Lights

CAMERAS & SENSORS

Environmental Sensors

To know the environmental data such as temperature, oxygen, salinity, pH and current speed and direction is important when feeding fish. Akvasmart Feeding Software allows full control of the environmental status on the site, at all times. The data can be viewed real-time or logged for later analysis. The Akvasmart software can also be set to automatically control the feeding based on these parameters. Accurate real time readings are displayed and logged in the control software and AkvaControl will calculate the expected daily feed amount based on feed tables with detailed temperature data.

Feeding Cameras

The SmartEye 360 Twin Camera system is a class above and without doubt the best system of it's kind on the market. It is an advanced feeding and inspection colour camera with unique features that can be operated from the cage, a work boat, the feeding control room and via the internet. It provides sharp, colour or monochrome video underwater images. Basic HR and Super HR the world's most popular feeding cameras. They are simple, reliable and affordable colour/monochrome cameras and a smart choice if you need effective feeding control in cage.

Wireless transmitter

The new Digital CAP uses Ethernet based wireless communication network that links with the feed barge network. Bandwidth for transmitting video and control commands is dimensioned for multiple parallel video signals. The Ethernet technology also greatly improves video image quality compared to analogue signals. The surface video camera in this Digital CAP has a powerful pan/tilt/zoom camera that is controlled from the feed barge control room. This allows video surveillance of the cages, nets, moorings, workers and other tasks on the cages.

Surveillance Cameras

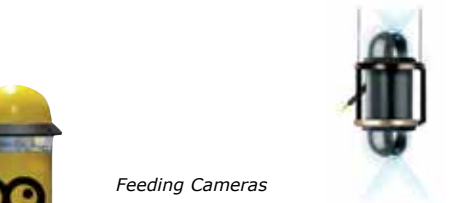
A range of SmartEye Surveillance cameras provide better control over unwanted visitors, predators, feed spread or simply added safety when working alone at the farm. Surveillance cameras can monitor the deck, machine room, feeding system or other vital areas. These are advanced IP cameras with powerful 24x optical zoom, clear pictures and smart functionality, which can easily be operated from the cage, workboat, control room or via Internet.

Blue LED and metal halogen Underwater Lights

The correct use of underwater lights for many aquaculture species, ensures reduced fish maturation. In addition it results in faster growth and more effective feed utilization. The high quality underwater lights have excellent light distribution, the design allows for easy bulb replacement, functional design and a rugged construction. The Underwater Lights series are adapted for smolt and juveniles in small tanks, as well as for salmon, cod and other fast growing species that require light in larger cage farms.



Multi Sensor



Feeding Cameras



Wireless network



Surveillance Cameras



Underwater Lights, Blue LED and Metal Halogen.

Akvasmart CCS Feed System



Software

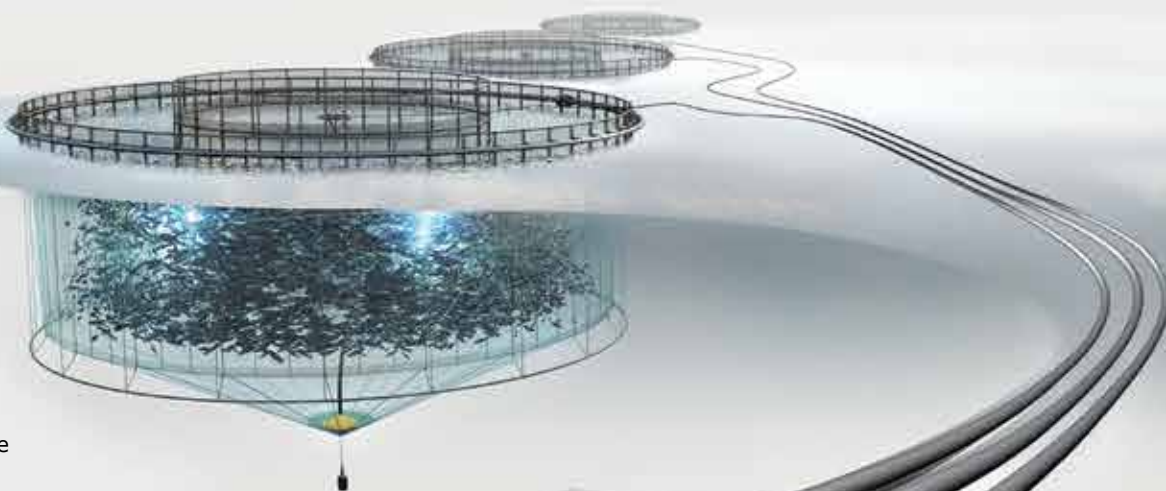
The Akvasmart CCS Feed System is designed to handle more than 40 feed lines running in parallel and more than 1000 cage/tank units, centralized- or hopper feeders, all operated from one PC, iPad or smartphone.

Akvasmart CCS is the perfect choice for feeding fish, designed to fit the requirements from low capacity system such as CCS-32, up to high capacity systems such as CCS-110.



Wireless Transmitter

Digital CAP transfers video and sensor data in real-time. Integrated surface camera.



Feed Blower:

Generates transport air for the feed system.

Feed Silos:

Up to 8 silos can be connected in series for each feed line.

■ Preventing only 1% feed waste on a larger fish farm, can easily increase the bottom line by 50-100.000 US\$.

Air Cooler:

Reduces the temperature of the transport air.

Air Control system:

Regulated air speed and keeping the pellet in the gentle feed handling area significantly reduce the risk of blockage and feed breakage.

Cleaning Injector:

The injector will blow the soft balls one by one, cleaning the feed system using transport air.

Feed Dosers:

With capacities from 0,6kg/min up to 192kg/min. Up to 8 dosers can be connected in series for each feed line.

Feed Selector Valve:

Distributes feed to the correct cage and ensures gentle feed handling. The Selector Valves can be offered with connections from 4 to 60 feeding pipes.

Feed Pipes:

A wide range of high quality and durable Polarcirkel Feed Pipes are available in various dimensions and coil lengths up to 1000 metres.

Rotor Spreaders:

Rugged Rotor Spreaders designed to provide excellent feed spread in cages. All our models have adjustable light weight aluminium rotor pipes that allow for lower air speed for start-up and rotation. This means less dust and breakage, power consumption, back pressure, air temperature, noise and wear and tear on the feed pipes.



Integrated accessories:

A wide range of Akvasmart units as sensors, cameras, underwater lights and rotor spreaders can easily be integrated to the CCS Feed System.



Environmental Sensors



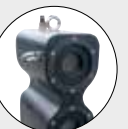
Camera Systems



Network Systems



Underwater Lights



Biomass Estimator

AKVA basic, a feeding system in one compact unit

Easy installation, operation and low maintenance makes AKVA basic an ideal and reliable equipment on smaller locations or isolated farms.



Wavemaster - the world's leading feed barges

The main purpose for a feed barge is to provide the most efficient and reliable feed system for your farming operations. The second purpose is to provide a safe and seaworthy barge that can withstand the forces of nature at your farmbase site.

Each individual barge model has been optimized to ensure the lowest possible cost compared to size of barge. As a result, the Wavemaster Feed Barges are the most cost efficient barges on the market with no material or space wasted.

A wide range of feed barges - up to 850 tons and 16 parallel feed lines

The silo sections are often made with corrugated steel plates in order to achieve high strength to weight ratio and smooth internal surfaces.

The new automatic silo hatches will open safely and easily with a new electric remote system.

The feed is loaded into the silos using either bulk bags or bulk blower/conveyor systems. Hatches are available in various sizes.

Tailormade quality barges for a wide range of sites and climates.

The feed storage capacity in each silo range from 15-84 metric tons (based on a density of salmon feed at 650kg/m³).



Steel plate thicknesses of 5.5 - 6.5mm.

Steel plate thicknesses of 5.5 - 6.5mm.

Metallization of outer surface above water line is an option to decrease maintenance and increase life-span.



Heavy duty internal mooring pipes with flared bottom openings. Oversized to allow for two anchor chains in each pipe.



Reinforced bottom "trumpet" mooring pipes distributes loads and prevents chain being snagged during tightening.



In addition to the required safety gear onboard, most Wavemaster feed barges also include water intrusion and fire alarm systems.



Air control system allows for real time measurement of airflow, back-pressure and temperature ensuring optimum feed handling.



Subject to local safety regulations, most barges include 3-5 watertight bulkheads with two automatic bilgepumps in each.



Most barges are supplied with large fuel tank(s), freshwater tank, hot water tank, sewer tank and optional integrated mort silage tank(s).



AC 450 Panorama

A popular barge offered in two versions, Panorama and Comfort. AC 450 has up to 8 feed lines and a loading capacity of 450 tons.



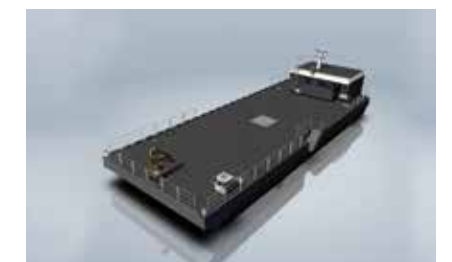
AM 320 Comfort

Feed barge offered in two versions, Classic and Comfort. AM 320 has up to 6 feed lines and a loading capacity of 320 tons.



AJ 150 Classic Med

This model is a perfect choice for medium sized farms. AJ 150 has up to 4 feed lines and a loading capacity of 150 tons.



AWB 50 Work Barge

New work barge with 180m² workspace on deck and 200m² storage room below. AWB 50 has a loading capacity of 50 tons on deck.

Visit www.akvagroup.com and see a complete range with specifications.



Tank solutions

AKVA group tanks can be customized to any desired diameter and height thus making it possible to obtain perfect utilization of the available site space.



Water treatment

We have 30 years experience providing optimal water quality conditions for both fresh- and seawater operations.



Piping and pipework

AKVA group has one of the most modern production lines for polyethylene pipes in Europe and thousands of kilometres have been delivered since 1971.



Feeding systems

The Akvasmart CCS Feed System will feed the correct amount, at the optimal rate, on time, every time.



Sensor systems

Environmental sensor data is of vital importance. A better environment will always improve your production.



Underwater Lights

Light treatment is successfully used for smolt and juveniles in tanks and cages of different types and sizes.

From extensive to intensive aquaculture

AKVA group offers a wide range of land based aquaculture technology, from single components to complete water treatment installations worldwide. The dedicated range of quality products and software solutions provides maximum reliability and cost effectiveness.



Flow through system

The traditional form of land based aquaculture with low level of water treatment technology. This form of aquaculture is commonly used on sites with vast amounts of water with a good temperature profile.



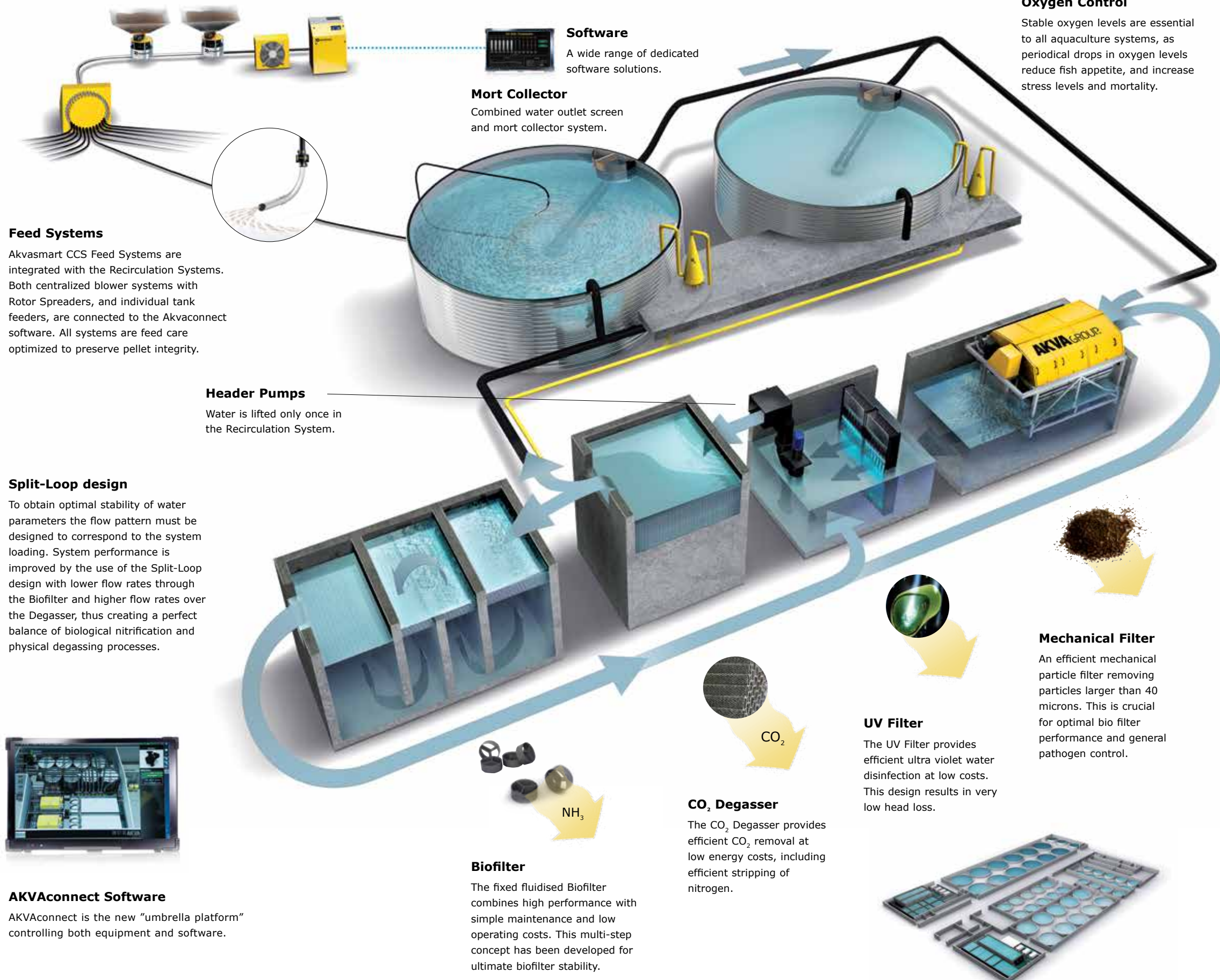
Re-use system

Re-use is often a result of a gradual increasing implementation of technology including for instance oxygenation and degassing. Depending on the level of technology, the Re-use relative to flow-through is often between 20 and 60%.



Recirculation system

Recirculation systems are currently being built all over the world and for many different species. A high level of technology allows a very high degree of water Re-use; normally in the range of 95-99% compared to the water consumption in a flow through system.

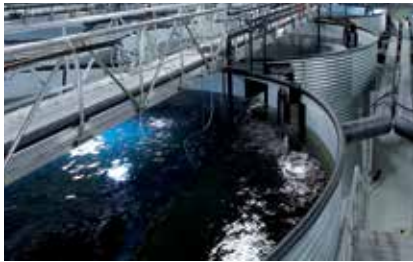


Customized tank solutions

TANKS

Dedicated tank design

The production unit design is imperative for a successful rearing facility, and the solution depends highly on the behavioural pattern of the species. The tank system should be designed to optimize the water flow characteristics so that exact water exchange rates for the different species and fish sizes can be achieved.



Our new best selling steel tank solution with Polyethylene (PE) inner liner

Tailor made solutions

AKVA group tanks can be customized to any desired diameter and height thus making it possible to obtain perfect utilization of the available space on the site. For fast swimming species, such as Atlantic Salmon, a general recommendation is to have a diameter to depth ratio of approximately 3:1. Diameter to depth ratios in this area will provide good self-cleaning of the tank and at the same time make it possible to avoid powerful vortex in the centre of the tank that could otherwise trap the fish.



Plast Sveis tanks can easily be integrated with a wide range of tank equipment such as mort collector, degasser, oxygenation systems, feed system and water quality monitoring.

All AKVA group tanks can easily be customized to any desired diameter and height.



The steel sheets are delivered on pallets. Liners are rolled up to minimum diameter. The total package is easy to transport in containers, resulting in low transport cost for deliveries world wide.



Connections are easy to do when using PE both in pipes and tank walls/floors. Any connection can be welded resulting in a 100% waterproof environment. All Plastveis tanks are delivered with High Density PE inner liner which is a highly hydrophobic material making the tanks stay clean.



There are various concepts for mort collection and we are able to offer systems both inside and outside the tanks.

Flexible filter concepts

WATER TREATMENT

Mechanical filters for; inlet water filtration, effluent water filtration in recirculation systems and re-use systems.

Filtering the inlet water to the farm will secure clean water by reducing the organic loading from outside and reducing the impact of invasive organisms. Also treatment of outlet water from farms before discharge is most often done efficiently by the use of mechanical filtration removing faeces from the farming process.

Multi-step biofilter technology

AKVA group's multiple chamber biofilter design provides optimal conditions for the biological process of breaking down ammonia. The key is to ensure that the organic material is consumed by heterotrophic bacteria early on in the biofilter.

From low UV treatment to full water sterilization

This is done by applying ultraviolet light (UV) only to a carefully calculated portion of the water flow in each cycle. It is a common misconception that sterilizing all the water will control the bacterial dynamics in the rearing unit. However, as bacteria grow very rapidly on organic material, sterilizing the water would in fact have a destabilizing effect on the system. By only partially UV treating the water flow, the healthy and useful bacteria from the biofilter are allowed to dominate and suppress pathogenic bacteria.

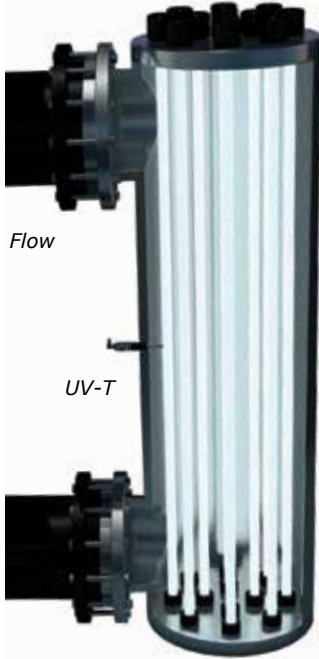
Accurate CO₂ stabilization

Control of carbon dioxide levels is essential for producing a healthy and fast growing fish both in flow through and in recirculated aquaculture systems. Through extensive experience with degassing both for fresh- and saltwater species AKVA group has developed systems that are both efficient and durable. The use of composite and PE materials with hydrophobic properties ensures low maintenance and products that last even in saltwater.



Modularized polyethylene units can be offered in a wide range of sizes.

Temperature sensor



Flow

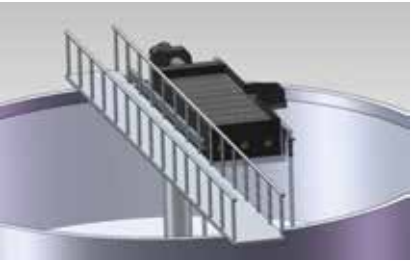
UV-T

Through the automatic cleaning processes, only minimal maintenance of the mechanical filter is required.



AKVA group's multi-step technology provides a stable biofilter performance, even at high pH levels and low total ammonia levels.

New Smart-Ray built-in UV solution.



The CO₂ degasser can also be designed as an integrated part of each tank; either installed inside the tank or just outside.



Polyethylene CO₂ degasser

Perfectly tuned water flow

Maintenance free pipes

AKVA group produces PE pipes with state-of-the-art machinery, and offers complete pipe systems for high and low pressure applications. High quality raw materials are used throughout, and full documentation of the pipe production process can be provided by an in-line scanning system. This provides cost savings as well as ensures long, maintenance free lifespan of the pipes.

PE piping and plumbing parts are suitable for a wide range of industrial use, chemicals, corrosive fluids, sewage, sludge, water, food and agriculture granulates.

Feeding Pipes in various dimensions, wall thicknesses and coil lengths up to 1000 metres.



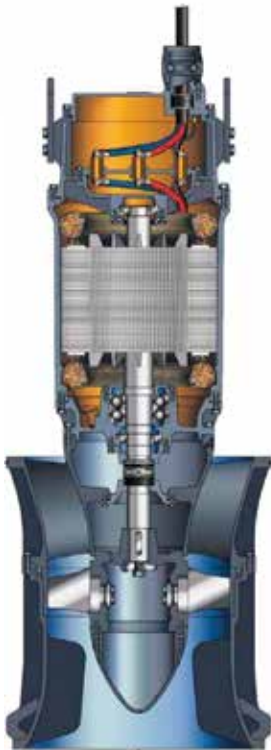
Custom designed pumps ensure maximum operation

The highly reliable pumps can also be delivered in saltwater resistant materials. These custom made propeller type pumps are extremely efficient for lifting large amounts of water with low head, and frequency control ensures optimal RPM and a long lifespan. Therefore, the recirculation system water flow can be perfectly tuned according to the biomass in the system.



Multi-purpose end-suction pump is an ideal solution in oxygen cones and can also be applied in CO₂ degassing.

AKVA group offers a wide range of pipes and fittings from 20mm up to 900mm diameter.



Multi stage centrifugal pump
A perfect wash down pump for drum filter cleansing. Flow propeller pump
Designed for CO₂ degassing.



Industrial quality pumps from AKVA group have high performance and extra low maintenance.

Full recirculation in one compact unit

Recirculation goes mobile with AKVAflex

AKVAflex is a new innovative concept that integrates our well known recirculation technology and sophisticated AKVAconnect control system in a flexible and easy installation.



If you want to move the unit to another site or recirculate another tank, simply lift the unit to it's new position and hook it up - and you are ready to go!

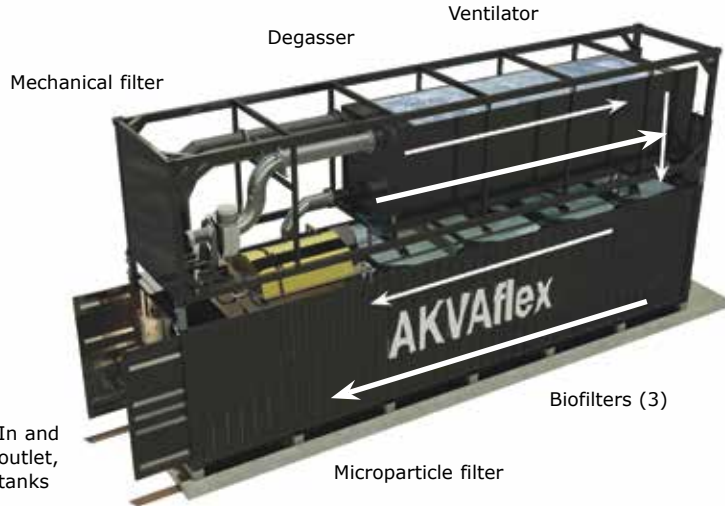
As a result of innovation and recent developments it is now possible to get an industrial size recirculation system pre-installed with a minimum on-site setup time, no matter where you want to install it worldwide.

High oxygen levels are essential

Correct oxygen levels are essential for high fish welfare and growth in all aquaculture systems. In modern farming the use of pure oxygen has become a vital parameter in reaching production goals. Efficient and reliable systems for pure oxygen injection is therefore of utmost importance.



The new Multi Sensor connects directly to the feed system and can stop the feeding at low oxygen levels.

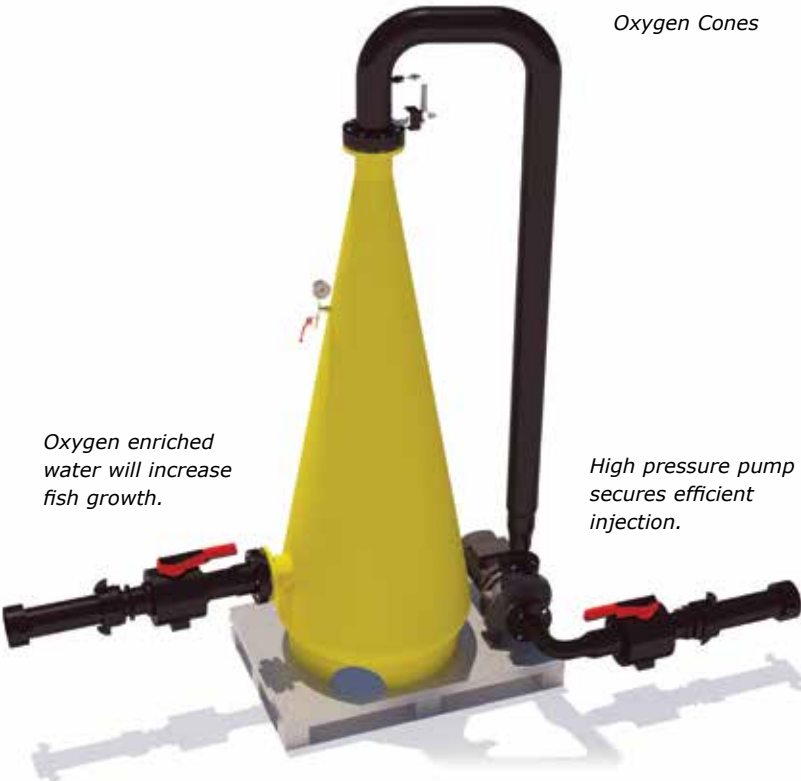


Innovative recirculation system pre-installed with a minimum on-site setup time.

AKVAflex is a competitive alternative to permanent installations and the perfect solution for salt water resirculation.



Oxygen Cones



A result of more than 35 years of aquaculture experience

Our software is in use by aquaculture companies worldwide, a strong testimony to the fact that AKVA group offers aquaculture solutions that are second to none! Fishtalk software gives a fast and detailed summary of when the fish will be ready for the market, as well as trends in production costs over time. Easily viewed, through simulating changes in growth conditions, the environment, feeding regimes, feed prices, smolt costs, harvests, and numerous other planned or simulated factors, the biological and financial consequences of changes in underlying conditions.



An interactive control platform

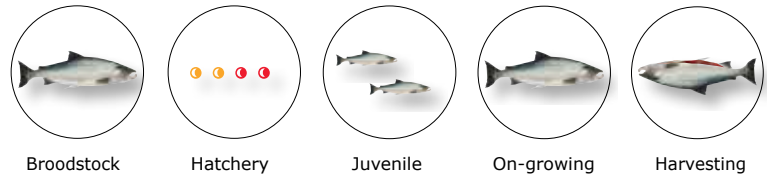
AKVAconnect provides the ability to gather data and combine information from all levels of your aquaculture operations, including controlling and monitoring all technical processes. This improves management's production overview and control. AKVAconnect also provides the maintenance team with dedicated logging of all parameters associated with the equipment on site.

AKVAconnect allows full process control via internet on a PC, iPad or Smartphone.

Fishtalk – From broodstock to harvest



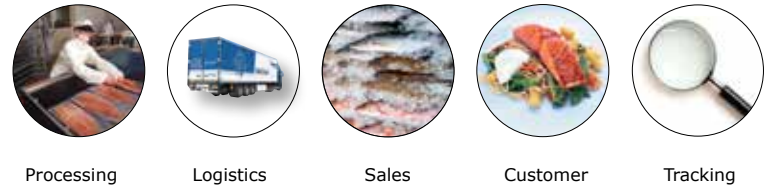
Fishtalk captures data from broodstock to harvest and has powerful reporting and analysis capabilities. With the financial and planning modules Fishtalk becomes a primary tool, from day to day use on a single site to mapping out a 5-year plan for the whole company.



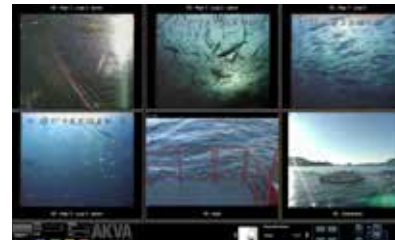
Wisefish - Fully integrated end-to-end ERP solution



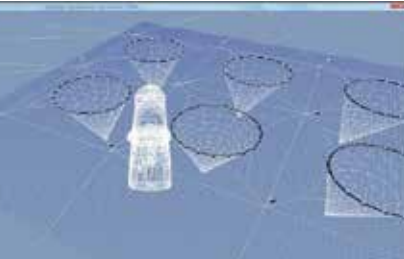
Combine fish stock inventory details captured in AKVA group's premier Fishtalk software with the advanced accounting features of Wisefish. Capture the total Cost Of Goods Sold of live fish stock inventories, distributed down to the site or even cage level.



AKVAconnect - Process control platform



AKVAconnect software is designed for optimal industrial control of the processes and activities on fish farms. The system offers full control, surveillance and perfect integration of machines, sensors and all processes on a fish farm.



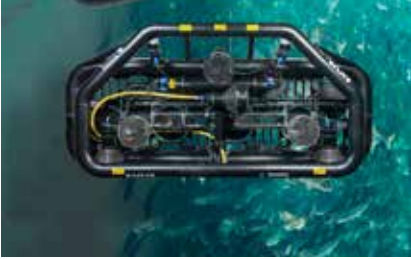
New Safe Guard System

AKVA Safe Guard provides a complete overview of the conditions around the cages and of the weather conditions in the local area.



Smart Software Platform

AKVAconnect is a new process control platform used to connect to and keep control on everything from local farms to international corporations.



New Remote Net Cleaner

A powerful, remote net cleaner that is easy to operate. The Net cleaning rig can be operated via a handheld mobile console or from a control room.



Recirculation goes mobile

If you want to move the AKVAflex unit to another site or recirculate another tank, just lift the unit to a new position, hook it up - and you are ready to go.



Fishtalk Optimizer

Uses matematic optimation to create an optimal slaughtering plan including an acertained set of limitations. Planners will be able to save time and calculate the best plan in seconds.



New smart combi light

Aurora SubLED 1350 Combi keeps the fish in deeper waters most of the time and reduces louse pressure.



Stable barge with V-bottom

AC 600 PV, Panorama feed barge is extra stable and has a feed storage capacity up to 600 tons and 8 parallel feed lines.



Extra careful feed handling

The new Akvasmart Surface Spreader has a light weight construction, and is easy to install and to move around.



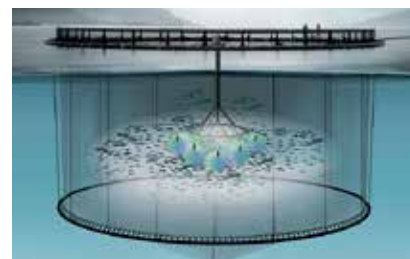
Large AWB 50 Work Barge

A work barge with extra large deck and storage capacity. Up to 50 tons can be loaded on deck. The size of the barge is 10x25 metres.



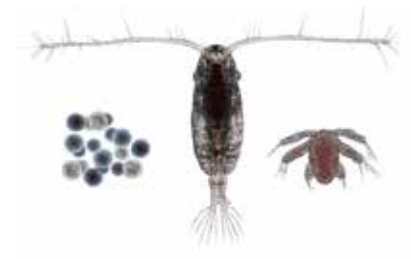
Efficient pipe cleaning

The injector will blow the plugs one by one, cleaning the feed system using transport air.



Efficient underwater feeding

The fish will reside in deeper waters, most of the time around the feeding points. It will also provide increased growth and improved fish welfare.



Live feed copepods

After 20 years of research - a perfect live feed solution in small bottles. The copepods will enhance survival and improve growth of marine fish larvae.