

USER MANUAL

DEAD FISH COLLECTOR

REVISION 5



Egersund
Net

Part of AKVA group

www.egersundnet.no

THANK YOU FOR CHOOSING A PRODUCT FROM EGRSUND NET

Our vision is to be “a safe supplier of net technology, services and equipment for the aquaculture industry”. That means we want to be sure you have the best possible understanding of how to use our dead fish collectors.

A dead fish collector is a tool for collecting and removal of dead fish from nets. A dead fish collector is a special net used to collect dead fish. It is placed in the center at the bottom of the net.

Egersund Net aims to produce high quality, durable dead fish collectors, and in this user manual we describe how you should handle our product.

We can now offer dead fish collectors with EU type examination certificates in addition to regular dead fish collectors.

A certified dead fish collector comes with a type examination certificate. It is fitted with lifting straps, and all materials used in production are traceable and recorded by batch number.

This user guide covers all of our dead fish collectors.

The manual is designed in accordance with Norwegian Standard 9415 and the NYTEK regulations. We wish to make our manual as user-friendly as possible. To achieve this, we rely on suggestions, feedback and cooperation from you, the users of our products. We appreciate every suggestion we receive, as it helps us to deliver more effective and safer equipment. If you have any suggestions or ideas that may help improve user-friendliness, we would appreciate hearing from you.

Together, we can make fish farming an even more eco-friendly and sustainable growth industry that produces safe and healthy seafood for the global market.

Our user manual for dead fish collectors is available on our website www.egersundnet.no , as well as in our web-based equipment log Net-Reg, www.net-reg.no .

Best regards,
Egersund Net

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1 INTRODUCTION

1.1 Revision changes

REV. NO.	DATE	SCOPE	REFERENCE
5	20.09.2019	Updated information on requirements for validity period	Chapter 2.3, Validity period
5	20.09.2019	Updated information on inspection of steel frame	Chapter 8, Inspection and control
5	20.09.2019	Additional control of dead fish collectors	Chapter 8, Inspection and control

1.2 About the product

A dead fish collector is made of netting mounted on a steel ring as a frame. Ropes or straps are mounted on the frame and gathered in a ring or round slings used to lift the dead fish collector. A ring is mounted on the bottom for attaching ropes to pull the dead fish collector into place in the net, or for fastening a center weight under the net. A handling rope is mounted inside, between the top and bottom of the dead fish collector.

To operate this type of dead fish collector, the net must be equipped with a separate rope, called the “dead fish collector rope”. The dead fish collector is installed with a dead fish collector rope either inside or inside/outside the net.

1.3 Symbol definitions



REQUIREMENT

Placed beside text describing requirements.



NOTE

Placed beside text describing events or anything else that the farmer should be aware of.



TIP

Describes tips and advice in connection with the installation and handling of a dead fish collector.



ESCAPE RISK

Placed beside text describing events and/or operations that may increase the risk of fish escaping.

1.4 Manufacturer and contact details

If you have any questions about our dead fish collectors, please contact Egersund Net.

Egersund Net AS

Svanavågeveien 30, NO-4374 Egersund, Norway

Telephone: +47 957 64 155

E-mail: jl@egersundgroup.no

Website: www.egersundnet.no

2 IDENTIFICATION OF DEAD FISH COLLECTORS

Each of our dead fish collectors has a unique production number. All information related to the production is recorded and archived with a reference to the production number. Each dead fish collector has one identification mark; the type of marking and where it is attached to the dead fish collector depends on whether it is a certified dead fish collector or not.

On a certified dead fish collector, the identification mark is attached directly to the steel ring. On other dead fish collectors, there is an identification flag attached to a rope/strap.

2.1 Identification mark on certified dead fish collectors

INFORMATION ON LINE 1:

- Type designation
- Diameter
- Production date

INFORMATION ON LINE 2:

- Production number

EXAMPLE OF LINE 1

ENDD	150	06-17
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EXAMPLE OF LINE 2

120001

SPECIFICATIONS FOR LINE 1:

ENDD	150	06-17
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-
- Shape of dead fish collector;
- Egersund Net
- Dead fish collector
- Double ring
- Diameter
- Production month-year

2.2 Identification mark on ordinary dead fish collectors

On ordinary dead fish collectors, an identification flag is attached to the lifting rope.



2.3 Validity period

The validity period for a new dead fish collector is a maximum of 24 months, provided that inspections of the dead fish collector have been conducted in line with the requirements set out in Chapter 8 of this user manual. After a maximum of 24 months, dead fish collectors should be checked before any further use. Only personnel from Egersund Net have the authority to determine whether the validity period of a dead fish collector can be extended.

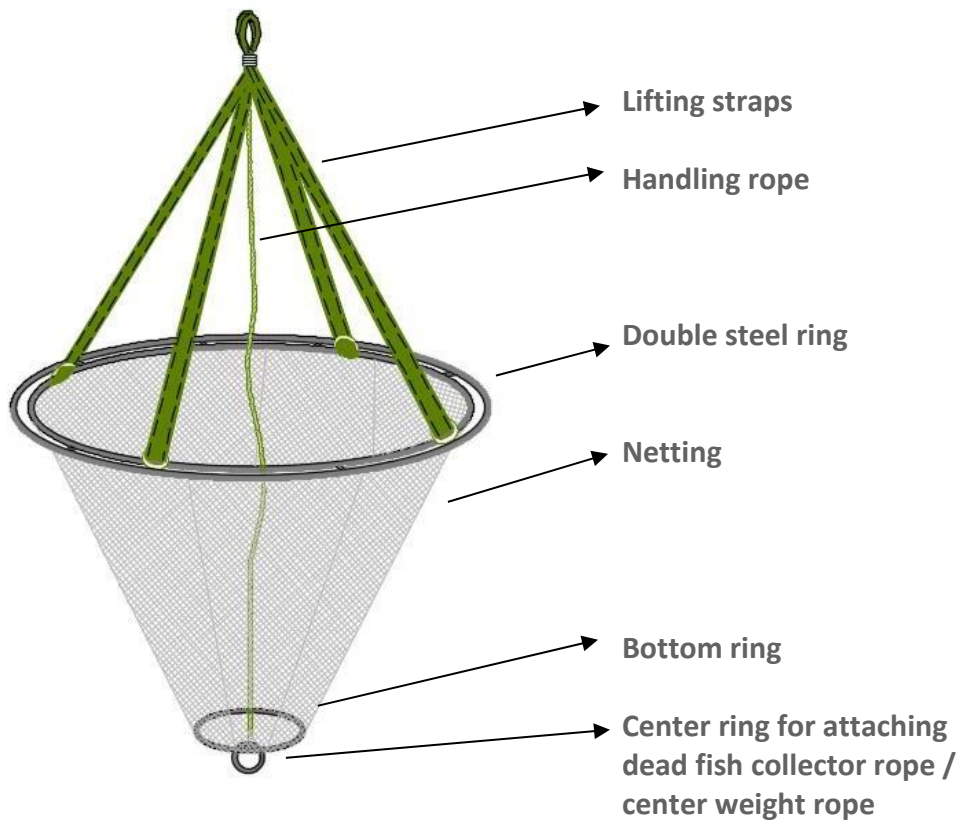
When extending the validity period, the following must be checked:

- Steel rings. Netting and ropes/straps must be removed for a thorough inspection of steel rings, and there must be absolutely no signs of corrosion. Steel rings must be checked to ensure that they have not been subject to impact and/or deformation during handling. This can cause cracks in the material that are difficult to detect.
- Netting, rope and straps must be checked.

When dead fish collectors are no longer fit for use, they can be delivered to one of Egersund Net's service departments, where we will handle it in accordance with applicable waste management procedures.

3 CONSTRUCTION

The illustration below shows an example of a dead fish collector with the designation ENDDB: Dead fish collector with double steel ring and with bottom ring.



3.1 Type designations



END

Dead fish collector with a single steel ring – without a bottom ring

Example:

END 150, where 150 means the steel ring has a diameter of 150 cm (1.5 meters)

This type of dead fish collector can also be manufactured with flat/horizontal steel center ring at the bottom.

Other type designations:

- ENDB – Dead fish collector with a single steel ring and with a bottom ring
- ENDD – Dead fish collector with a double steel ring and without a bottom ring
- ENDDB – Dead fish collector with a double steel ring and with a bottom ring

4 TRANSPORTATION AND STORAGE

Dead fish collectors are usually delivered packed on pallets. They can also be placed on top of nets, or delivered directly on board a boat, for example.

Before using a dead fish collector, we recommend storing it in such a way that it is not subject to corrosion or wear and tear.

5 DEAD FISH COLLECTOR WITH DEAD FISH COLLECTOR ROPE INSIDE THE NET

For dead fish collectors with the dead fish collector rope inside the net, the rope runs along the inside of the net and passes through an inner ring in the center of the bottom of the net.

5.1 Installing a dead fish collector with dead fish collector rope inside the net

- Divide the dead fish collector rope in the middle, attach one end to the bottom of the dead fish collector and the other to the top.
- Pull the end that runs through the bottom of the dead fish collector until it stops in the center. The dead fish collector should now be ready for use.
- The rope ends for raising and lowering the dead fish collector should be attached to the floating collar with a minimum distance of 20 meters. This is to prevent the ropes from becoming tangled.

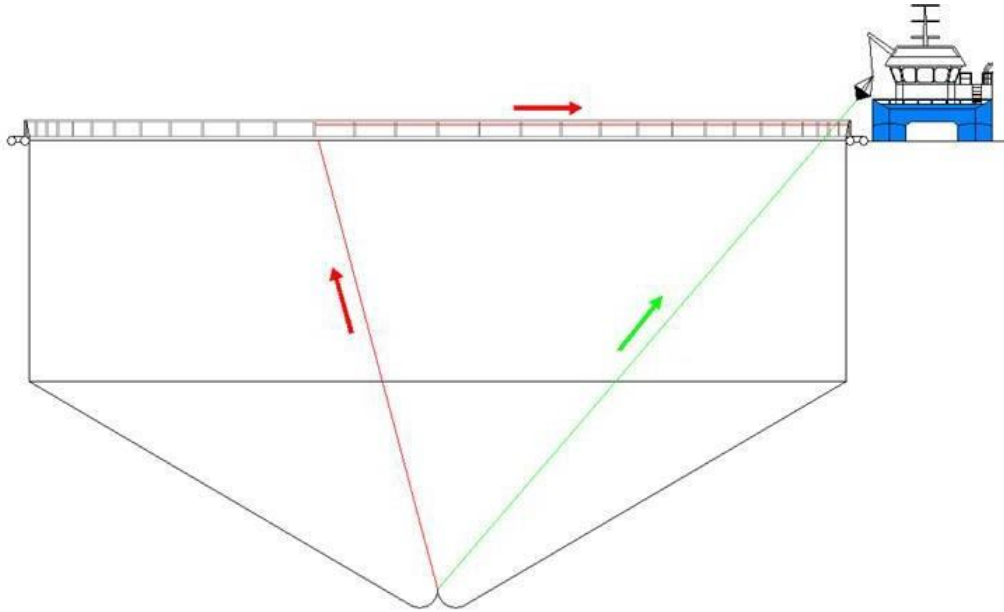


Tip: Run the dead fish collector rope through rings mounted on handrails on the floating collar. The recommended distance between the first and last ring is about 20 meters. The rope then runs down to the center of the net, through a ring mounted in the net. Then fasten it to the bottom of the dead fish collector.

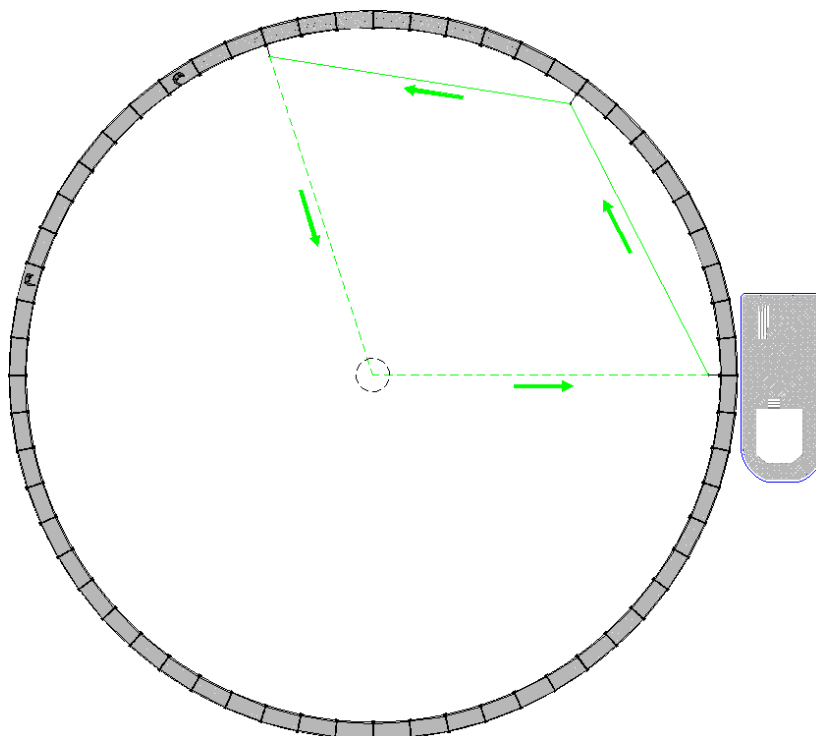
- To remove any dead fish lying at the bottom of the net, pull up the rope attached to the bottom of the dead fish collector while the dead fish collector is secured at surface height.
- Then loosen the rope holding the dead fish collector at the surface. Lower the dead fish

collector in a controlled fashion by keeping moderate tension on the rope during the operation. This will keep the bottom of the net slightly elevated so that any dead fish left in the net will fall into the dead fish collector when it stops in the center.

- Once you have the dead fish collector properly positioned, slacken the tension on both ropes.



The illustration above shows how to handle dead fish collectors with a dead fish collector rope inside the net.



The illustration above shows a dead fish collector rope that pass through rings mounted on handrails on the floating collar

6 DEAD FISH COLLECTOR WITH DEAD FISH COLLECTOR ROPE INSIDE/OUTSIDE THE NET

For dead fish collectors with a rope that runs inside/outside the net, the rope runs along the inside of the net, out through the bottom center of the net and into the sea – with a center weight mounted at the end.



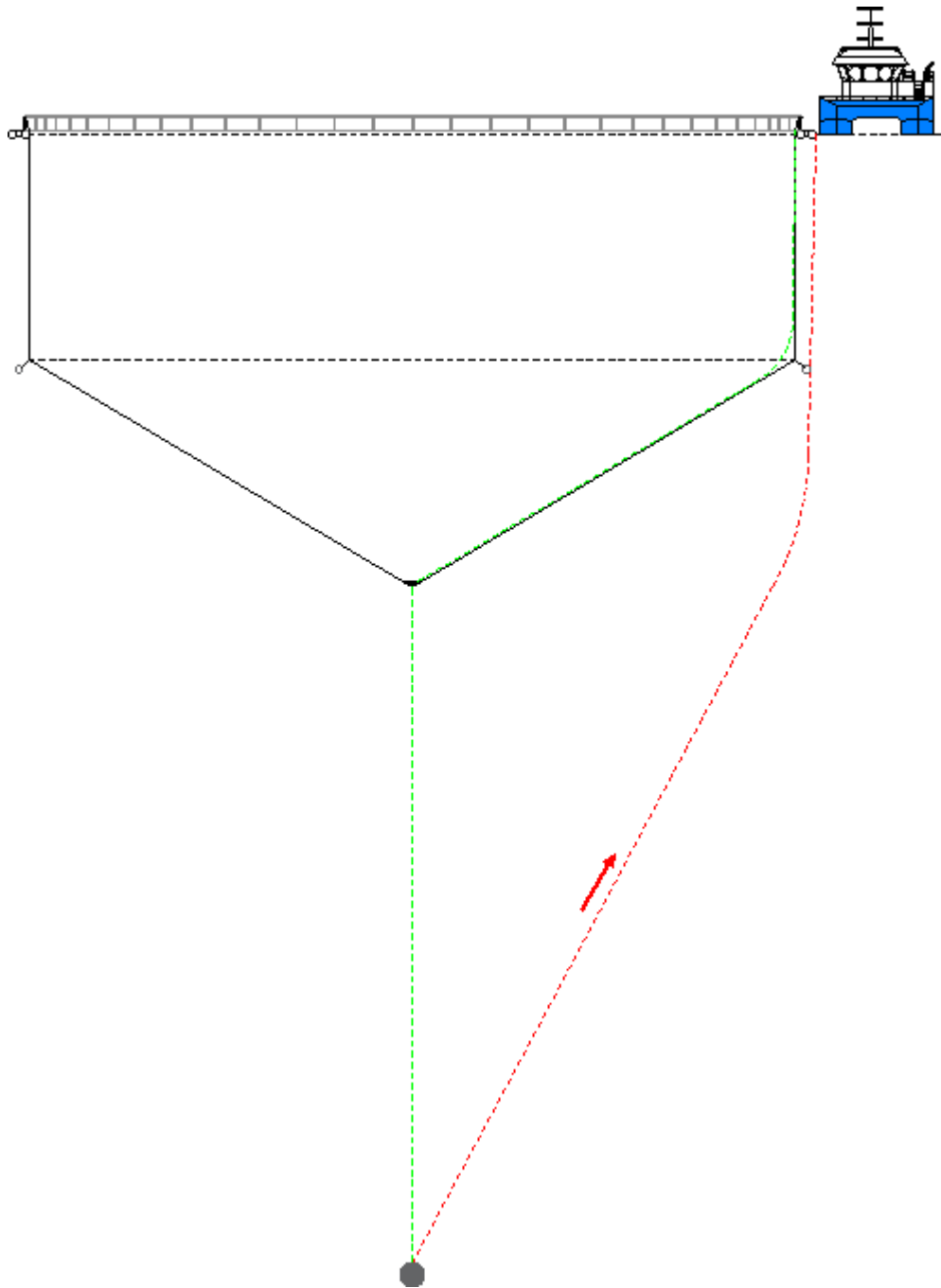
Center weights must be made of a material that will not cause damage if it comes in contact with the net.

If no weight is used, the dead fish collector rope can run up along the net wall on the outside of the net.

6.1 Installing a dead fish collector with dead fish collector rope inside/outside the net

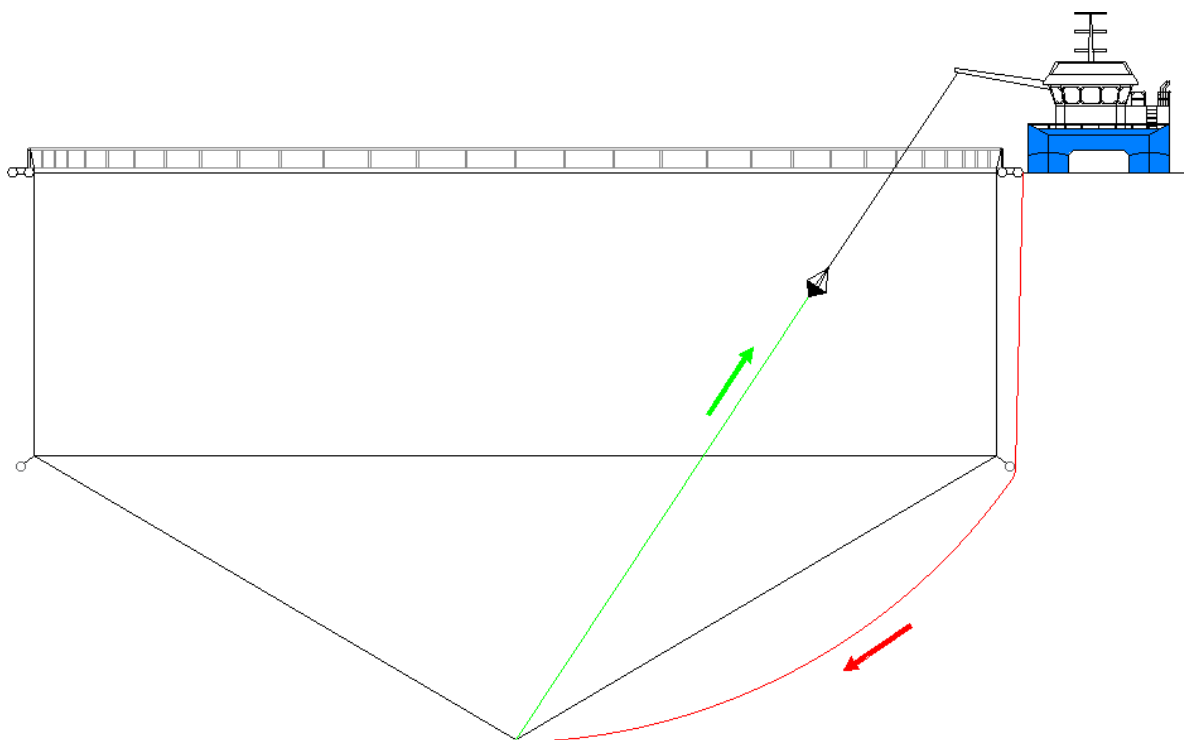
- Securely fasten the center weight to the part of the rope on the outside of the net. Remember to attach the inside of the rope to the boat/floating collar. Thread an additional rope through the center weight and attach one end to the boat/floating collar.
- We recommend using a rope to the center weight under the net that is long enough to prevent the weight from coming into contact with the net when lifting. This is because it will reduce the load on the dead fish collector and the net when the dead fish collector is pulled up to the surface. See Section 6.2 for more information.
- Slowly lower the center weight in a controlled manner.
- Pull on the part of the rope inside the net until the center weight stops at the bottom of the net, and then a few extra meters (for nets with a circumference of 160 m). This is done because when the dead fish collector is at the surface, the bottom of the net should be lifted slightly so that any dead fish left in the center fall out to the sides.
- Fasten the part of the rope inside the net with an additional rope (locking rope) to prevent the weight from falling back down.
- Then cut the rope on the inside of the net at the top of the locking rope. Attach the lower part of the dead fish collector rope to the bottom of the dead fish collector and the upper part of the dead fish collector rope to the top of the dead fish collector.
- Fasten the top of the dead fish collector rope to the boat and untie the locking rope. The dead fish collector will then end up where it belongs.



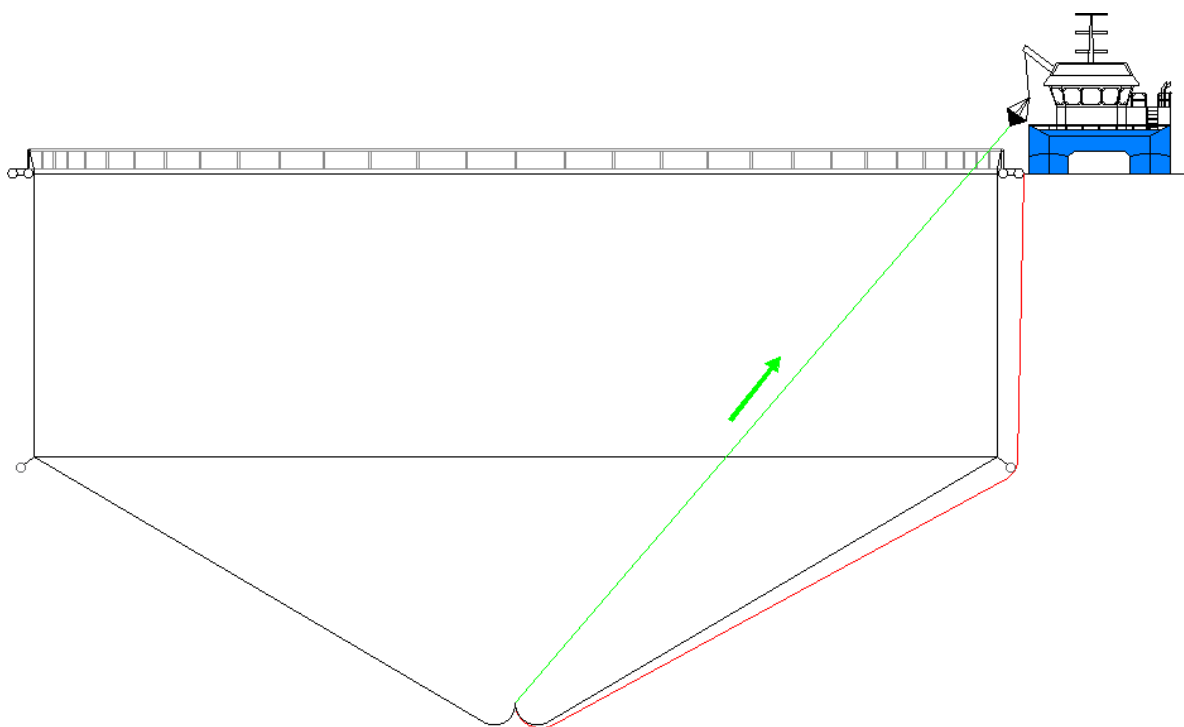


The illustration below shows the use of a dead fish collector with a dead fish collector rope inside/outside the net

The red rope indicates the rope that is attached to the center weight. This is used when mounting and removing center weight. The green rope indicates the dead fish collector rope.



Dead fish collector on the way up to the surface.



Dead fish collector pulled up.

6.2 GENERAL INFORMATION FOR USING DEAD FISH COLLECTORS AND DEAD FISH COLLECTOR ROPE INSIDE/OUTSIDE THE NET, WITH CENTER WEIGHT

- If you suspect that components are weakened or damaged, you must immediately take steps to clarify the situation. As a supplier, it is very difficult to foresee every conceivable scenario that a component may be exposed to if a situation arises that has not been previously analysed. Therefore, users must continuously assess the hazards and risks that may arise.
- Raising and lowering the dead fish collector results in an increased load on parts of the net construction. The dead fish collector must be raised and lowered in a controlled manner. Rope (and other objects) can become wedged between the ring/nylon plate and the dead fish collector rope, or a knot in the rope can prevent the rope from passing through the ring/nylon plate.
- Heavy center weights require more powerful mechanical equipment for handling. The use of mechanical lifting equipment with high lifting capacity/traction increases the risk of not detecting that something is wrong during an operation. If you use powerful mechanical equipment, this must be taken into account in risk assessments related to the local situation.
- If there are any abnormalities during an operation with a dead fish collector, the operation should be stopped until the condition is resolved.
- The equipment used, as well as local conditions such as weather, wind and depth, will influence the forces that can arise during an operation. Therefore, in situations where there is a strong current and/or large waves, pay special attention to the forces that can be applied to the various components. For example, it would not be prudent to uncontrollably winch a dead fish collector rope using a powerful crane or spar from a work boat that is pitching and rolling in high waves. The movement of the work boat and floating collar/net could become out of synch, which may cause large jerks in loads in the system, which in turn exceed the load capacity. This is especially true if you are using a shorter mort collector rope (see Figures 4 and 5 below).
- Local conditions and adaptations must be reflected in a local risk identification process.

6.3 DEAD FISH COLLECTOR ROPE INSIDE/OUTSIDE THE NET AND CENTER WEIGHT DEPTH

The illustrations below show differences that arise when using different lengths of dead fish collector rope inside/outside the net and how this affects the shape of the net during operations with a dead fish collector. If you use a short mort collector rope that runs inside/outside the net, there is an increased risk of transferring unintended loads to individual components. Combined with a heavy center weight, this will increase the risk of wear and tear and/or breakage.

The example used in the illustrations is a straight-wall net with a circumference of 160 m. The depth of the bottom rope is 15 m and the depth to the center bottom is 30 m. The diagonal distance from the main rope to the centre bottom is thus approximately 39 m. The illustrations do not take into account waves and currents.

Figures 1 and 2 show a scenario where the dead fish collector rope, measured from the center of the bottom of the net to the center weight, has a length greater than the diagonal distance of 39 m. In this case, it is possible to raise the dead fish collector without there being a particular risk of the weight coming into contact with the netting. Normally, the lower part of the bottom will follow the rope a short distance upwards before it falls back into place. This is because of friction and the angle between the dead fish collector rope and ring/nylon plate.

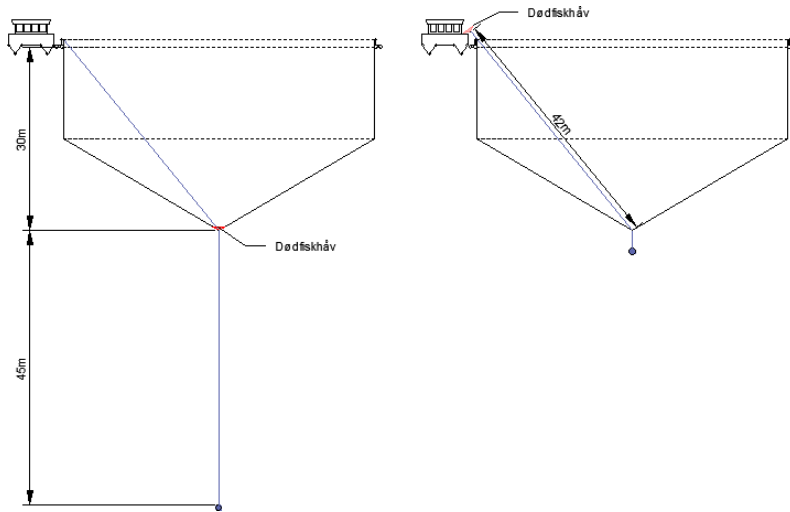


Figure 1: Dead fish collector rope inside/outside the net with a depth of 45 m from the center bottom of the net to the center weight

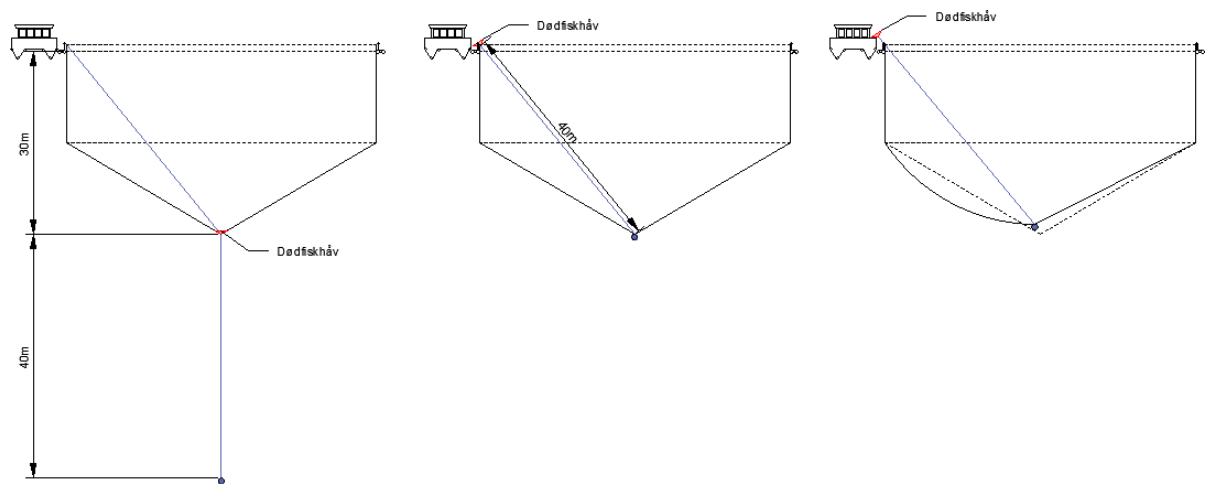


Figure 2: Dead fish collector rope inside/outside the net with a depth of 40 m from the center bottom of the net to the center weight

Figures 3, 4 and 5 show scenarios where the distance between the center of the bottom of the net and the center weight is less a diagonal distance of 39 m. In these cases, the bottom of the net will be pulled upwards somewhat because of the weight underneath.

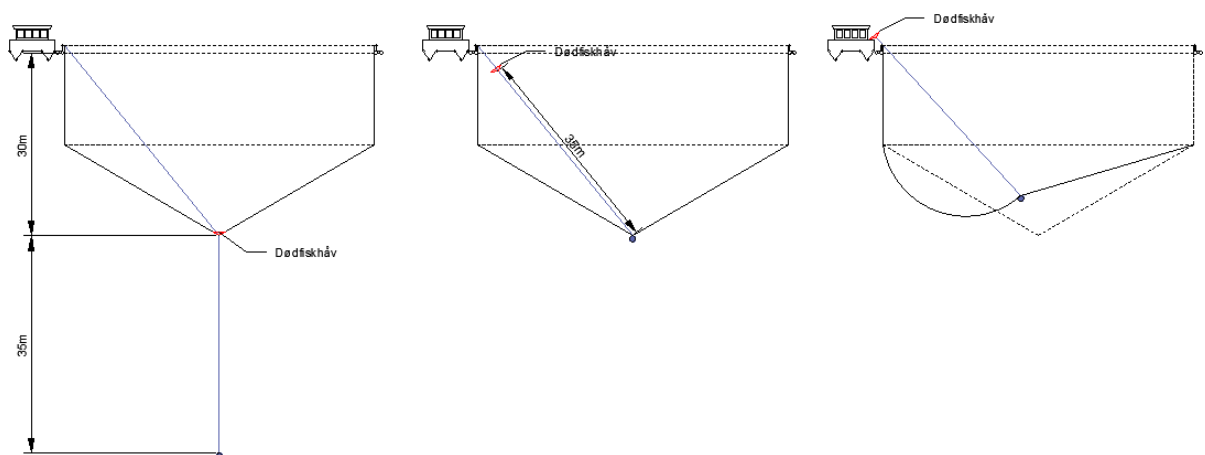


Figure 3: Dead fish collector rope inside/outside the net with a depth of 35 m from the center bottom of the net to the center weight

Figures 4 and 5 show a scenario that can cause large jerks in loads if the work boat and floating collar/net become out of synch.

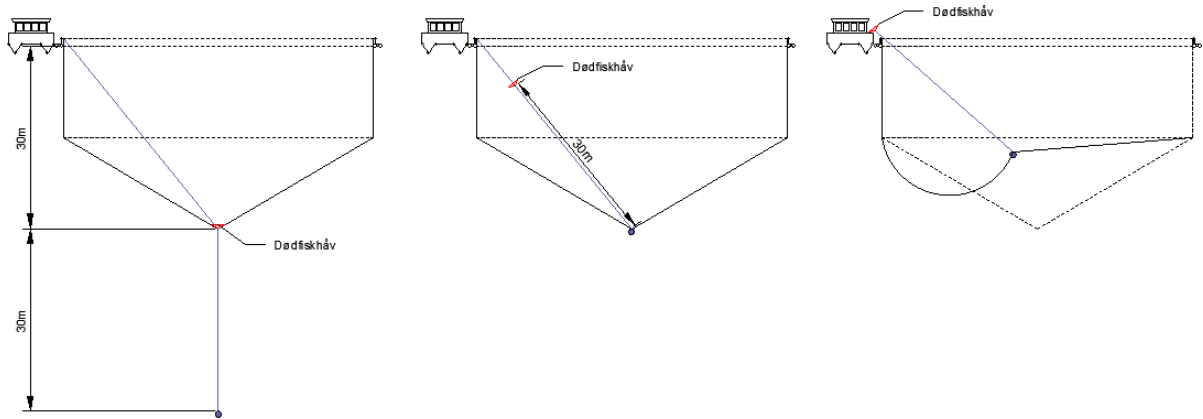


Figure 4: Dead fish collector rope inside/outside the net with a depth of 30 m from the centre bottom of the net to the center weight

Figure 5 shows a situation where the distension system (single weight or bottom ring) must clearly be moved out of position for the dead fish collector to reach the surface.

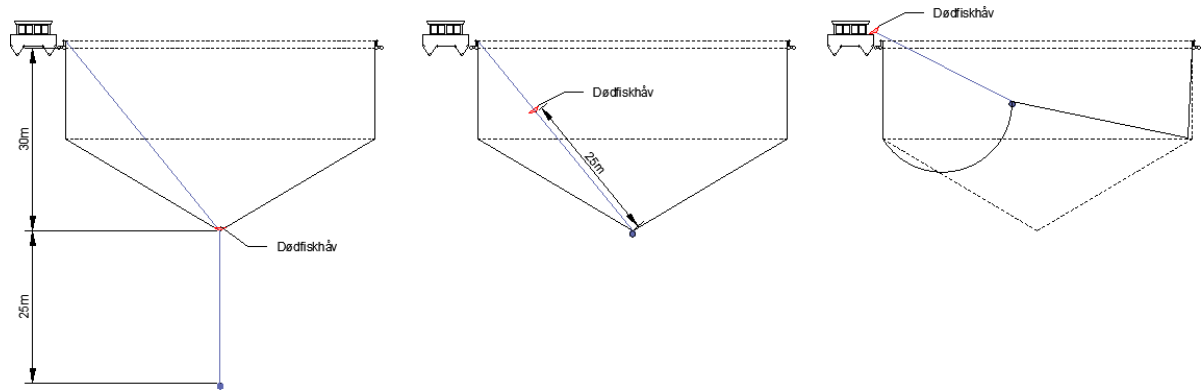


Figure 5: Dead fish collector rope inside/outside the net with a depth of 25 m from the center bottom of the net to the center weight

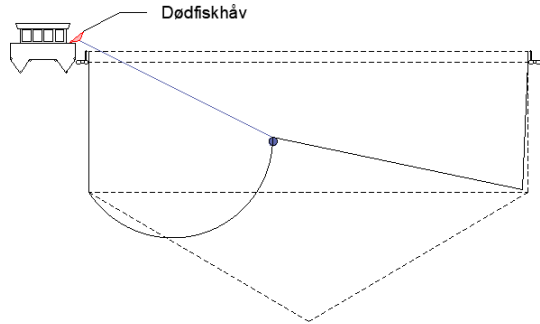


Figure 5b: Lifting the bottom and the distension system



In this situation, the rope will lift the bottom of the net, the weight on the dead fish collector rope and the distension system upwards. When this is done in rough seas from a work boat that is moving opposite to the rest of the system, uncontrollable forces could arise.

The image below is taken from a model experiment in a tank, where we have tried to recreate what happens if the distance between the bottom centre of the net and the center weight is less than the total vertical depth in a straight-wall net. The deformation observed will be enhanced if the rope is attached to a work boat that moves out of synch with the net.

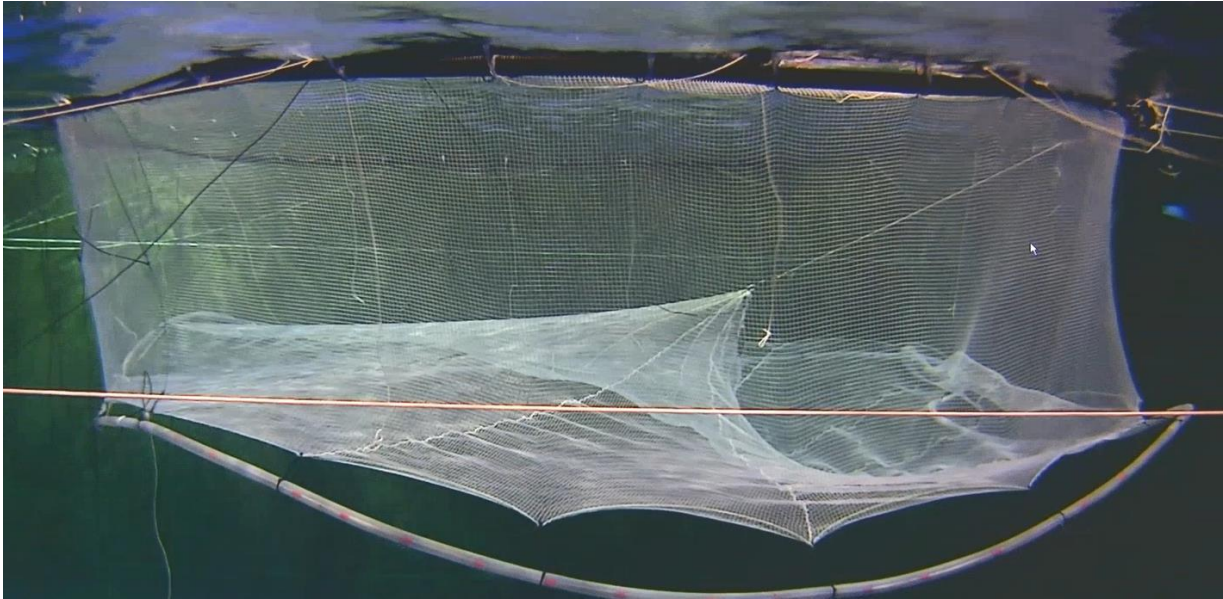


Photo 1: Visualisation of operation in model tank

7 HANDLING

7.1 Handling / risk factors during use

dead fish collectors must be handled by personnel who are familiar with the use of the equipment and who are aware of the risk factors that may arise. A risk factor that can be difficult to detect is if the dead fish collector becomes hooked on the netting/rope, causing a risk of creating holes in the net. This is especially true if you are using high-powered lifting equipment. One measure would be to place restrictions on lifting capacity, e.g. use a spar with a maximum capacity of 1000 kg or use a crane equipped with a line hauler so the maximum lifting capacity can be controlled.

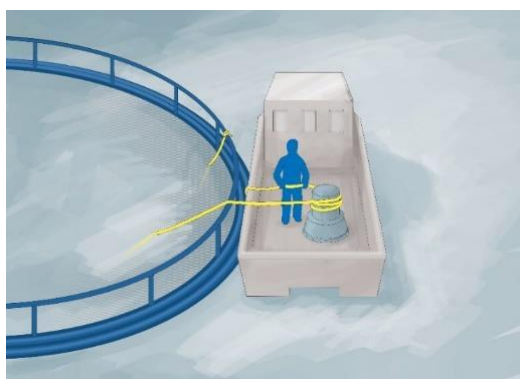
If abnormalities are suspected or detected while handling a dead fish collector, stop the operation and investigate the situation. Since a scenario where a dead fish collector becomes hooked on the net can be difficult to detect, it is better to check any irregularities and find nothing than not to check, believing that there is no risk.

Handling dead fish collectors in strong currents and/or high waves requires an assessment whether it is appropriate to perform the operation. Remember that a work boat will move differently than the net and the mort collector. This can result in heavy loads on the dead fish collector rope or other components, and equipment could be damaged. To reduce the load, it is better to lift the mort collector in the same direction as the current. Lifting the dead fish collector against the current increases the load.

If a dead fish collector rope breaks, it is important not to install a much stronger rope without assessing the reason it broke.

If the dead fish collector/ring becomes deformed from banging into the work boat, overload or the like, the dead fish collector must be discarded. This is because a deformation can cause weakening of the steel, which in turn can lead to breakage and the risk of tearing holes in the netting.

Raised dead fish collector ropes can pose a potential danger to the operator if the dead fish collector suddenly falls back into the sea and the operator is caught in the rope. In the worst case, the operator could be dragged overboard. One solution might be to let the hoisted dead fish collector rope drop back into the sea so that a minimal amount of rope is collected on the floating collar or boat. The rope can also be coiled in a bucket before being letting it out.



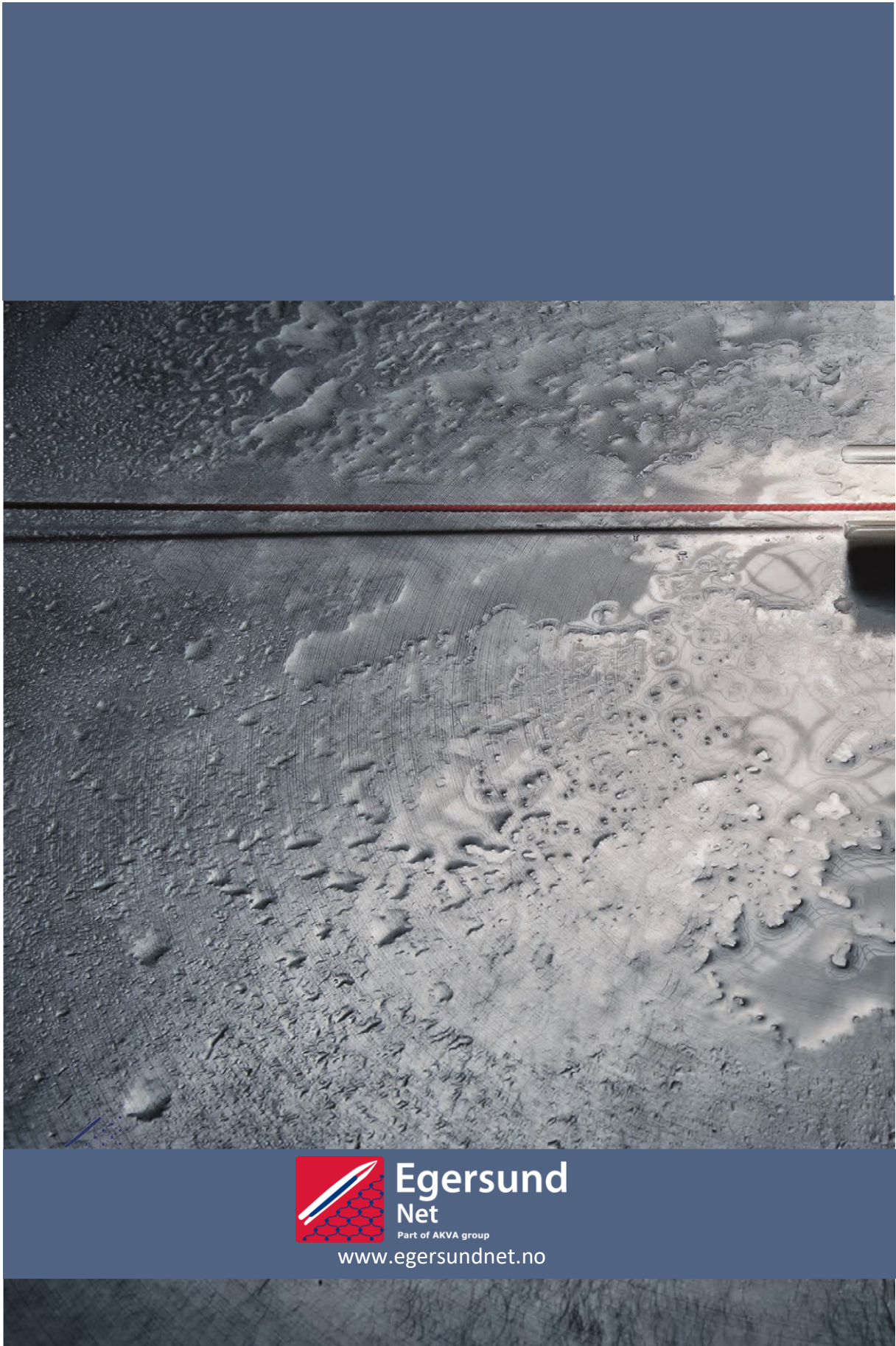
8 INSPECTION AND CONTROL

We recommend creating checklists for the components included in regular inspections of the facility and after severe storms or other unforeseen events that may have damaged the dead fish collector or net.

The following points should be included in procedures for regular inspection and overhaul of dead fish collectors:



Checklist item	Inspection
Placement of dead fish collector	Regular check of dead fish collector placement to prevent it from becoming displaced from the center of the bottom.
Lifting of dead fish collector	When lifting the dead fish collector, it is important to ensure that the dead fish collector is not caught in the net and tears holes in the netting. Approved lifting equipment must be used. Lift the dead fish collector slowly, with the least possible load.
Steel frame (ring) in the dead fish collector	Check that there is no corrosion on the steel ring. Do this every time the dead fish collector is at the surface.
Netting in the dead fish collector	Check that the netting has no tears or large holes that will allow dead fish to fall out. Major damage must be repaired.
Rope/straps for lifting	Check that ropes or straps used for lifting the dead fish collector are intact.
Center of the net	When using a dead fish collector rope that runs inside/outside the net, always inspect the bottom center of the net. Do this when the dead fish collector is at the surface or a few meters above the center bottom. Visual inspection of the ring at the center, look for wear and tear, deformations or abnormal placement.
Additional inspection	At least once a month, perform a more thorough inspection where the dead fish collector is lifted out of the water so that the entire collector can be inspected more closely. Check the steel ring, netting and rope/straps during this inspection.



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