Copper Alloys in Aquaculture

Answers

1. How can biofouling of netting affect the fish inside an aquaculture pen?

There are four main effects (you may be able to think of more).

Biofouling restricts water flow through the net. This reduces the oxygen available to the fish and prevents clearance of their waste excretions, which stresses them and reduces their resistance to disease and parasites.

Biofouling also provides a growth environment for parasites and pests that can harm the fish. Parasites and infections have to be reported and treated by skilled staff. Fewer parasites means less medical treatment.

Biofouling increases the weight of the nets, making them dangerous to handle and prone to damage. The escape of fish from pens must be reported as it can affect the wild population in the open ocean, either with the spread of disease or parasites. Nets consequently need to be cleaned frequently. This is a noisy operation that is also a stress factor for the fish.

Finally, biofouling reduces the amount of natural light in the pen. This is yet another stress factor for the fish.

6. What advantages can copper alloy mesh pens have for aquaculture?

Copper alloys have high resistance to biofouling, so reduce the effects listed above. The smooth alloy surface does not have attachment points for the eggs of skin flukes and other parasites.

Alloy mesh pens need much less cleaning. This offers large cost savings for aquaculture companies.

More oxygen, more light and resistance to predators leads to lower use of medication or treatments such as hydrogen peroxide for sea lice and skin flukes. These treatments are expensive and have to be repeated.

Copper alloy mesh lasts tens of times longer than nylon netting. At the end of its life it is also 100% recyclable. Nylon nets are non-biodegradable and difficult to recycle, meaning they can only be burnt or put in landfill.

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