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# Copper-Alloy Nets Resist Fouling in Abrasive Environments

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## Challenge

Fish farmers in Korea deal with a range of problems as a result of fouling on traditional synthetic netting materials. Fouling blocks the flow of dissolved oxygen through the nets, leading to unhealthy conditions for fish. To combat the challenges, fish farmers tried anti-fouling coating on nylon nets to prevent the growth of organic matter, but this solution only offered a temporary solution and added pollution to the sea. Korean fish farmers require a more permanent alternative to nylon nets.

## Solution

A local fishery, Insung, joined forces with the International Copper Association and its Korean members, LS-Nikko and DaeChang, to introduce copper-alloy mesh as the ideal solution to fish-farming complications. Two large copper-zinc brass net pens were deployed off of Tong-Young City, located on the southern coast of Korea, in late October 2011. This environmentally friendly copper-net system takes advantage of copper's natural ability to resist the growth of organic matter, preventing fouling matter from attaching to the mesh and allowing the fish to mature in a healthier, more oxygenated environment.

The two deployed net pens are 25 m in diameter, 12 m deep and weigh 8.5 tons. The DaeChang fabricated mesh is a 3.5 mm chain link with 40 mm square mesh openings. The mesh was designed to resist corrosion and abrasion by high waves and is anticipated to last eight years.



## Results

Insung plans on farming red sea bream (*Pagrus Major*) in the pens for two years. Red sea bream are known for their strong teeth, which enable them to escape by easily biting through nylon nets. Insung will be regularly collecting fish growth and feed conversion rate (FCR) data. They anticipate a higher growth rate and a lower FCR based on the increased dissolved oxygen flow to the fish.

Insung will be able to use the copper-zinc brass nets for up to eight years, and when the nets are ready for disposal, the original material can be recycled, as compared to nylon nets that must be disposed and cannot be recycled.