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The Swiss fish-like airship

[A New Fish-Like Airship](#)

It employs electroactive polymers

A Swiss team has created a new model of blimp that swims through the air like a fish. The fish-mimicking airship employs artificial muscles fabricated from electroactive polymers (EAPs) to move itself forward. The unique silent non-rigid airship employs its artificial muscles to power through the air like a tuna swimming in the ocean. It imitates the same "bending-rotation-stroke" employed by fish in their movement through the water, by bending its body in one direction and its tail in the other. "This technique can be transferred directly from water to air. A blimp moving through the air is, in terms of the physics involved, exactly the same as a fish moving through water. In both cases a body is moving through a fluid and is subject to the same laws of fluid dynamics (see simulation)," has said Dr. Silvain Michel, leader of the research team that have patented the airship. The blimp's electroactive polymers have been developed by EMPA (a Swiss research group). The EAPs represent elastic polymer films which, when an electrical voltage is applied to them, turn thinner and expand in the area. It is exactly this deformation that can propel the airship forward. As EAPs transform electrical energy directly into power without employing electric motors and gear systems; EAPs presents efficiencies of up to 70 %. The EAP sheets merge into the airship structure at four locations. Under electrical charges, they expand, making the hull execute the fishy "bending-rotation-stroke". The team sees a lot of possible applications for this invention, like relay stations to enhance line-of-sight signal transmission, communications platforms or silent spacecraft to watch animals in their natural habitat. The fish-like blimp idea is not so novel. There was a game for the PS2, Rule of Rose, employing a fish shaped blimp. A fish-blimp was also exposed in 1988 at RoboFest I in Austin, Texas; but that model employed a mechanical flapping fin for propelling.