

for more please visit :  
<http://articlopedia.gigcities.com>

# NewScientist.com

## Steam fires underwater jet engine

19:00 29 January 03

Ben Crystall

A revolutionary new steam engine, described by its inventors as "an underwater jet engine", may soon be powering dinghies and speedboats more efficiently, cleanly and safely than a conventional outboard motor.



The underwater jet engine

The Pursuit Marine Drive produces thrust by using the energy from high-pressure steam to draw in water through an intake at the front and expel it at high speed through the rear. The steam emerges at high speed from a rearward-facing ring-shaped nozzle into a cone-shaped chamber, where it mixes with the water (see graphic). Shock waves created as the steam condenses are focused by the chamber to blast water out of the back.

The drive was invented by Australian engineer Alan Burns and developed in Britain by engineers at Pursuit Dynamics in Royston, Hertfordshire. Last week, **New Scientist** witnessed a version just 20 centimetres long develop around 30 horsepower (22 kilowatts) in a test tank, enough to power a speedboat. But the company says it can be scaled up to about 300 horsepower.

A crucial element of the design is that water flowing into the engine draws in air through a vent ahead of the steam jet. The air bubbles change the way the steam mixes with the water, and this significantly increases the engine's efficiency.

### Heat scavenger

Computer simulations have shown how this works, but Pursuit Dynamics is keeping the details secret. "We know the answer," says Mike Todman, the company's chief technical officer, who was previously chief engineer with the marine engine division of Rolls-Royce. But he says it will not be revealed until patents are granted.

Steam for the drive is generated in a small boiler burning diesel or petrol. If the drive is being used to assist propulsion in a ship, the boiler can scavenge waste heat from conventional engines. It can be fed by seawater if necessary.

The boiler may be built from corrosion-proof materials, and if the steam flows fast enough it will blast out any other deposits. With no moving internal parts, and no propeller, the engine should be cheap to manufacture. It is also robust, and can easily cope if seaweed or rope are drawn into the inlet.

Water emerging from the engine is no more than 3 or 4 °C warmer than the water it draws in, so there is no danger of scalding. And as it does not leak oil like conventional outboards, and has no propeller that could injure large sea creatures, it should be less damaging to the environment.

The steam drive can also function as an extremely robust pump. It can shift water, sewage or oil, and in a demonstration for **New Scientist**, Todman shoved large quantities of lard and cardboard into the inlet without the pump suffering any ill effects. It could even mix materials used by the food industry. "It doesn't simply mix -- it macerates," says Todman.

Pursuit Dynamics itself does not plan to manufacture the engine. Instead, the company hopes by the end of the year to have licensed other manufacturers to make it.

19:00 29 January 03

[Return to news story](#)

© Copyright Reed Business Information Ltd.