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Hot idea from Scots scientists could save energy... and lives

By **Tim Bugler**

SCOTTISH scientists have worked out how to boil liquids by shaking them a million times faster than the flapping of a hummingbird's wings.

The process, using ultra-fast vibrations to heat tiny amounts of liquid, could have major implications in engineering and safety.

Safety

It could, for example, help improve the systems that prevent the build-up of ice on aircraft – which is responsible for many crashes – according to the researchers from the University of Edinburgh. The principle could be used to safeguard wind turbines as well.

The method could enhance cooling systems in smartphones and laptops, allowing them to work for longer with less wear, and make it possible to develop appliances that dry clothes more quickly using less energy.

The team used computer simulations to show how liquid layers one thousand times thinner than a human hair can be boiled using extremely rapid vibrations. The motion of the vibrating surface under the fluid is converted into heat as liquid molecules collide with each other.

But it is only possible to use vibrations to boil extremely small quantities of liquid, a few billionths of a meter above the vibrating surface, the researchers say. Energy from vibrations applied to larger volumes instead produces tiny waves and bubbles, and only a very small amount of heat.

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De-icing systems for aircraft could benefit from the discovery