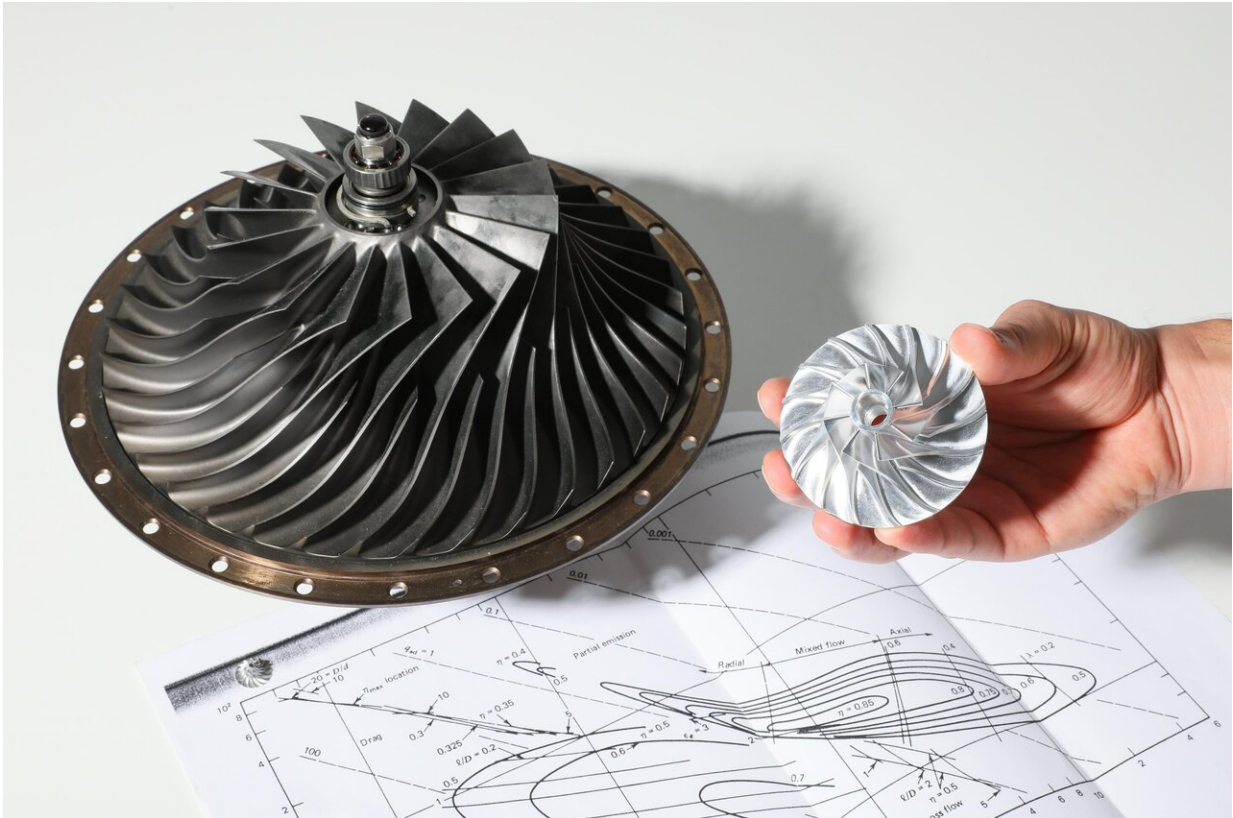


AI-designed heat pumps consume less energy

July 3 2019, by Laure-Anne Pessina



Credit: Ecole Polytechnique Federale de Lausanne

In Switzerland, 50 to 60 percent of new homes are equipped with heat pumps. These systems draw in thermal energy from the surrounding environment—such as from the ground, air, or a nearby lake or river—and turn it into heat for buildings.

While today's [heat pumps](#) generally work well and are environmentally friendly, they still have substantial room for improvement. For example, by using microturbocompressors instead of conventional compression systems, engineers can reduce [heat pumps](#)' power requirement by 20 to 25 percent (see inset) as well as their impact on the [environment](#). That's because turbocompressors are more efficient and ten times smaller than piston devices. But incorporating these mini components into heat pumps' designs is not easy; complications arise from their tiny diameters (

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