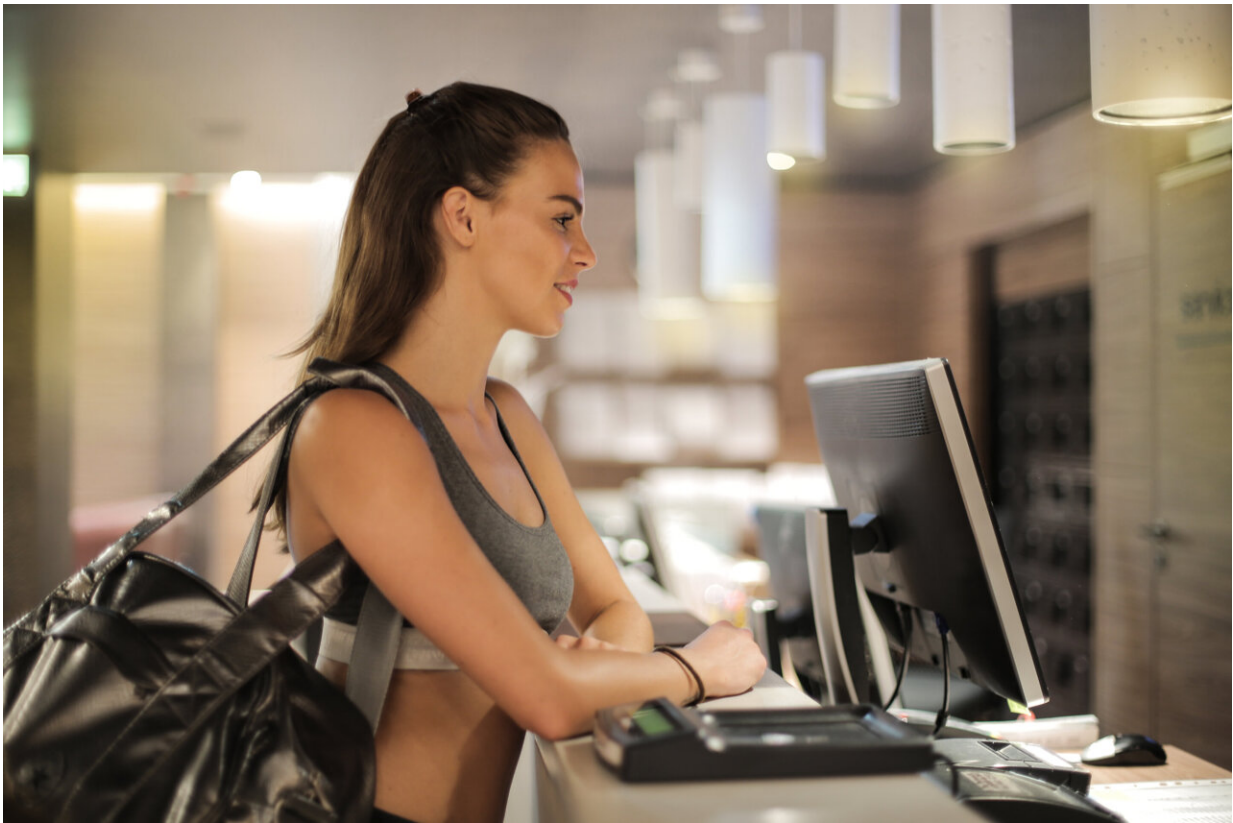


15 ton supercomputer provides access to water, energy and the internet

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Credit: Andrea Piacquadio from Pexels

A new machine called the Watly offers solutions to three of society's most important challenges – ensuring access to clean water, sustainable energy generation and reaping the benefits of the evolving digital

revolution. Supported by funds from the Horizon 2020 project, the innovative SME behind the project is now nearly ready to unveil its first full-scale Watly machine.

1.1 billion people worldwide still do not have access to a safe source of drinking [water](#), causing more than 4 200 deaths from water-related diseases every day. 1.3 billion people lack access to electricity (more than a fifth of world's population) and 5 billion worldwide still have no access to the internet. Water and energy are highly interdependent and crucial to human well-being and sustainable socio-economic development. Watly, a trailblazing SME based in Spain and Italy, has devised a truly revolutionary way to tackle all three of these challenges with one machine.

The Watly machine comprises a central array of solar panels connected to four wing units, each of which houses a bank of vapour compression distillation tubes that can boil unsafe water from sources such as rivers and produce safe, [clean water](#) fit for human consumption.

But a crucial factor is that the energy used to drive that water purification process is not the electricity generated by the panels. Instead, the process is driven by waste heat harvested from the panels by an air circulation system – an ingenious technique that founder and CEO of Watly, Marco Attisani describes as effectively self-powering. 'It does not use any energy,' he confirmed.

In turn, this generates a number of associated benefits. These include optimisation of the [solar panels](#) – which are kept at their most effective operating temperature of 25°C irrespective of ambient conditions – and the delivery of all the generated electric power to support other more appropriate applications. These can vary from mobile phone recharging through 'cloud' connection to the internet to conventional electricity supply via an internal inverter that carries out DC-AC conversion.

Since March 2013 Attisani and his team have been devoted to the project and they have since developed two prototypes, one which was tested in Ghana with the support of a mixture of private funding, a crowdsourcing initiative and nearly EUR 1.5 million of funding from Horizon 2020.

The amount of power that a machine could generate rests on several important factors, though Attisani believes that 150kWhr per day could be achievable. The output of purified water from a fully functional machine operating at peak efficiency would potentially be around 5 000 litres per day. Finally, the machine's IT capabilities promise to go beyond simply supporting personal communications, such as email – the company reckons that each machine could have a wireless connectivity zone with a radius of up to 1 kilometre.

Because of the purification process being one of distillation, the machine can also eradicate any type of contamination from the input water, bacterial, chemical and physical. In fact, Attisani claims that results from the purification process is so pure that the output water's mineral content is effectively zero, something that Watly has addressed by providing the space for rocks to be packed into the machine so that water can be 'remineralised'.

However, don't expect to be able to install a 3.0 Watly machine anytime soon into your own home. Currently, given the volumes that Attisani is talking about, from end-to-end the machine is currently 40 metres in length and could cost up to around EUR 600 000 to 1 million, depending on the technologies built into it. Moving forward, Attisani recently announced that the company is currently working with the European Space Agency to create an application that would allow the machine to guide in a drone aircraft to deliver urgent supplies in crisis zones.

The full 3.0 Watly machine is due to be unveiled in May 2017 (also the official end of the self-named Horizon 2020 WATLY project) and the company currently has the capacity to manufacture 50 [machines](#) per year, with the first five units going to customers by the end of 2017.

More information: Project page:
cordis.europa.eu/project/rcn/198937_en.html

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