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**PRESS RELEASE**

**Closed-loop shower brings space-age water savings to earth:
Mehrdad Mahdjoubi named European Inventor Award 2018 finalist**

* **Swedish inventor Mehrdad Mahdjoubi nominated for European Patent Office (EPO) prize for world's first closed-loop shower**
* **Based on his work for NASA, Mahdjoubi's "Oas" consumes up to 90% less water and 80% less energy than conventional showers**
* **Shower system has a host of applications, from use in drought-stricken areas to sports clubs, hotels and hospitals – even energy-conscious homes**
* **EPO President Battistelli: "Mahdjoubi's invention is a new way to recycle water in the face of growing scarcity, and an excellent example of the patented solutions SMEs can offer in the area of sustainable technologies."**

**Munich, 24 April 2018 –** Turning on a household tap to access virtually unlimited quantities of clean, disease-free water is a luxury that many living in urban areas in the western world take for granted. But with over two billion people affected by water scarcity globally and the very real possibility of taps running dry in drought-stricken cities such as Cape Town and Sao Paulo, the world is being forced to re-evaluate how we utilise this increasingly precious resource. Among those leading this change is Swede Mehrdad Mahdjoubi, inventor of the "Oas", a closed-loop shower system that conserves water by filtering and reusing it. In comparison with conventional showers, his invention reduces water consumption by 90% and energy consumption by 80%.

For this achievement, Mehrdad Mahdjoubi has been nominated as a finalist for the European Inventor Award 2018 in the category "Small and Medium-Sized Enterprises". The winners of this year's edition of the EPO's annual innovation prize will be announced at a ceremony in Paris, Saint-Germain-en-Laye, on 7 June 2018.

"Mehrdad Mahdjoubi's invention is a new way to recycle water in the face of growing scarcity," said EPO President Benoît Battistelli, announcing the European Inventor Award 2018 finalists. "This invention is an excellent example of the patented solutions smaller companies can offer in terms supporting the development and dissemination of sustainable technologies."

**A new take on an old problem**

It was while working with NASA on its "Journey to Mars" project at the Johnson Space Center in 2012, that Mehrdad Mahdjoubi, a Master of Fine Arts (MFA) graduate of the Industrial Design programme at Lund University in Sweden, conceived his idea for the Oas. Conscious of the need to conserve vital resources during space travel, Mahdjoubi quickly recognised the potential for such technology on Earth, where fresh water shortages are common in many parts of the world.

"We wondered whether we could live under the same conditions on Mars as we do on Earth," Mahdjoubi explains. "Then I realised that we'd have to use our resources as cleverly as possible."

While Mahdjoubi began developing the basic concept for his water-saving shower, he quickly realised that protecting the intellectual property behind it would be vital for commercialisation in a field dominated by large players. Mahdjoubi knew that bigger companies would question nearly every step of the development process, and he needed a rock-solid patent strategy to safeguard the technology and to shore up inventors later: "When we came with new technology it's really important for us to have a patent on this because that protects us as being the newcomers, the innovators, that is basically our biggest leverage point," he says.

After designing a functioning prototype in 2012, Mahjoubi filed for his first patent and then expanded the protection to key components in the system. The OAS is now the subject of several European and international patents or patent applications relating to different elements of the system.

Mahdjoubi's pioneering closed-loop shower, which circulates as little as five litres of water per shower, created a new possibility to save on bathroom water consumption – a field that had seen little change for half a century. While other household devices, such as washing machines and dishwashers, have been developed to be more water- and energy-efficient, conventional showers in Europe continued to spray out about ten litres of water per minute. By those standards, a ten-minute shower – of which only a few minutes are spent rinsing off soap and shampoo – might consume 100 litres of water.

Mahdjoubi's solution was to develop a system that conserves water by purifying it in "real time". The system first analyses the quality of the water by measuring its conductivity – greater conductivity means higher presence of contaminants – then pumps it through two filters to purify it. The first is a micron filter, which removes larger particles such as dirt and skin; the second is a UV filter that neutralises microorganisms in the water, including bacteria, viruses and blood. Any water too contaminated to be purified is detected by the system and automatically flushed out. The purified water next passes through a heater before being returned to the showerhead. As the water temperature drops just a few degrees from showerhead to drain, only a small amount of energy is required to bring it back up to temperature.

Any water removed by the system or splashed out during the shower is automatically replaced. At the end of each shower, the system flushes out the water and replaces it with a fresh supply for the next user. An app allows Oas users to keep track of their water and energy usage, and it alerts them when filters need to be changed and returned for recycling.

**Significant energy saver**

Mahdjoubi founded Orbital Systems in 2012 and commercially launched the Oas in 2017. Fittingly for a shower named for the Swedish word for oasis, the Oas is the most efficient shower in the world in terms of water and energy conservation. It is also the only product of its kind on the market. Since its launch, Orbital Systems estimates the system has saved nearly 13 million litres of water.

Given its sustainable use of water and energy, it is a system that has obvious advantages in places experiencing water scarcity around the world, from Southern California to South Africa. It is also of great benefit in places where a lot of people shower, such as sports clubs and public pools. The fact that it purifies the little water it does consume has obvious benefits for hospitals and nursing homes as well.

Yet in areas that do not experience water shortages, the Oas still has advantages over conventional showers beyond its efficiency and use of disease-free water. In households where water flow is restricted or reduced, it can deliver more than double the water flow. Also, because of its closed-loop system, it is not subject to fluctuations in temperature or pressure as a result of water consumed elsewhere in the house.

**Global potential**

The global market for showerheads and shower panels is forecast to be worth approximately EUR 3.3 billion by 2024. Taking the role as first mover in a new market requires both financial backing and a strong intellectual property portfolio. As such, Orbital Systems has coupled a vigorous IP strategy with raising at least EUR 25 million in investments. This has included backing from Karl-Johan Persson, CEO of Hennes & Mauritz AB (H&M), and Niklas Zennström, co-founder of Skype Technologies S.A.R.L.

Headquartered in Malmö, Sweden, with offices in the US, the company employs over 50 people and produces fewer than a thousand Oas units a year, which cost approximately EUR 3 000 each. CEO and founder Mahdjoubi, however, believes the price of the shower will drop dramatically as production increases, perhaps costing as little as EUR 500 in the next few years. As the company moves away from the overall style of the shower to focus on developing the core technology, the Swede sees the price of the Oas sinking even further, thereby helping to address the needs of developing countries.

"In the future, I envisage the company as more an 'Intel Inside' business, where we enable the core technology and the showerheads and fixtures can be regular brands," Mahdjoubi says. "I don't want to limit this technology from reaching other people because they don't like Swedish design."

**Passion for problem-solving**

The son of Iranian-born architect parents, 28-year-old Mahdjoubi was inspired by the art of designing buildings, but he felt a greater range of possibilities existed in the field of industrial design.

In 2016, Mahdjoubi was included in *Forbes* magazine's "30 under 30" list, which recognises the most promising young industry and business figures in the world. As a result of his work developing the Oas system he has also won a number of awards, including the illustrious Swedish inventor award – the SKAPA Development Award – in 2014. He was named Technologist of the Year by the Swedish Chamber of Commerce in the same year.

The Oas, meanwhile, was awarded the Space Technology seal by the Space Foundation, a not-for-profit organisation based in Colorado, USA, in 2015. The system also won the German Design Award for Excellent Product Design in Bath & Wellness in 2018.

"There is a societal impact on the sustainability side – on water and energy, but I think that in this day and age it isn't just enough to be a greener product, but the other aspects of the product also need to be better. That's one of the main reasons why we have been commercially successful with the Oas," says Mahdjoubi.

**Additional resources**

[**Video and photo material**](http://www.epo.org/news-issues/press/european-inventor-award/2018/mahdjoubi.html)

[**Read more about the inventor**](http://www.epo.org/learning-events/european-inventor/finalists/2018/mahdjoubi.html)

 **View the patent:** [**EP2793667**](https://worldwide.espacenet.com/publicationDetails/biblio?DB=EPODOC&II=0&ND=3&adjacent=true&locale=en_EP&FT=D&date=20141029&CC=EP&NR=2793667A1&KC=A1)

**Download our app "**[**Innovation TV**](https://www.youtube.com/watch?v=rYT_BqgAVIQ)**"** to your smart TV and watch video portraits of all finalists on your TV screen

**When being "green" is no longer enough:**

As sustainability becomes a necessary parameter of good design, products such Mehrdad Mahdjoubi's Oas must still offer users a better experience than their competition to succeed commercially. See other [lifestyle and everyday innovations](http://www.epo.org/news-issues/technology/lifestyle.html) that have struck the perfect balance between form, function and usability. A major benefit of the Swedish inventor's shower technology is that it requires no change in existing user behaviour, reducing barriers to adoption.

[**About the European Inventor Award**](http://www.epo.org/learning-events/european-inventor.html)

[**About the European Patent Office (EPO)**](http://www.epo.org/news-issues/press/background/epo.html)

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