

S.A.W.E.R

WATER ANYWHERE

Solar Air Water Earth Resource

STORY II



Learn the story of the S.A.W.E.R. unit from the beginning of the idea to its design, it will soon start to transform dry and hot desert into green landscape using water from the air and solar energy: The technology developed by the University Centre for Energy Efficient Buildings (UCEEB) of the CTU in Prague will become the centrepiece of the Czech national pavilion at the EXPO 2020 world fair in Dubai. In there, it will irrigate an oasis with plants that would otherwise not survive in the harsh desert environment.

The idea to build the S.A.W.E.R. system emerged in the end of the EXPO 2015 world fair in the head of the Commissioner of the National Participation Jiří F. Potužník, for whom the idea of interconnecting the innovations presented in Milan and show them to the world next time as one functional system. When the Ministry of Foreign Affairs started the selection procedure for the concept of national participation at EXPO 2020 in Dubai, he wrote a proposal for creating a system that would obtain water from air and then cultivate the desert.

1. S.A.W.E.R. started out for a tough test in desert

After finishing the installation and other preparations, we sent the S.A.W.E.R. system on its journey from Buštěhrad to the United Arab Emirates where it should start the test operation of water extraction from air using solar energy in real desert conditions. Ship containers with the unit were unloaded from the Alexander von Humboldt ship after an almost-one-month-long journey, declared and transported to the desert near the city of Sweihan.

2. Our team put S.A.W.E.R. into operation

In spite of many issues, scientists from CTU UCEEB finished the assembly of the unit in 11 days in total. Due to high daily temperatures around 45 °C, they were only able to work during nights and they took a rest during daytime. Meanwhile, they also visited the EXPO 2020 building site where the foundation of the Czech national pavilion was laid at that time.

3. We started to produce water in Sweihan, UAE

We started the test operation of the S.A.W.E.R. unit with the aim of checking how it stands the test in the real desert environment where it had to resist high temperatures, fine sand and other unfavorable influences. Permanent presence of scientists on the spot was not required because they were collecting data from the test operation in a remote way.

4. S.A.W.E.R. got international publicity

Foreign press agencies showed their interest in S.A.W.E.R. and they presented information about our project. We encountered mentions of it not only in European countries as well as in Asia.



5. The unit produces water in full extent after initial issues with electronics

From the beginning of the test operation of the system, we were dealing with many issues but we managed to solve them gradually during several visits of the United Arab Emirates. After the exchange of a faulty part, S.A.W.E.R. worked without any issues and was producing between 75 and 110 liters of water each day.

6. Production of the S.A.W.E.R. unit for the EXPO 2020 world fair was started

The knowledge acquired during the remote monitoring of the operation of the first prototype was used for designing and producing a more powerful unit with the production capacity of 500 liters of water each day. This unit will become a part of the pavilion of the Czech Republic at the EXPO 2020 world fair.

7. We created the website

We put the www.sawer.cz website in English into operation. Foreign readers can find all available information and promotional materials for the S.A.W.E.R. system at one place.

8. The first prototype has successfully completed the test operation

After the half-year-long testing, we slowly started to prepare the return of the first prototype of the autonomous S.A.W.E.R. system to the Czech Republic so that it would leave in January 2020 at latest because of the custom declarations. The experimental unit has shown that it is possible to produce water from air in an absolutely autonomous way without consuming external energy even in a desert environment.

9. The S.A.W.E.R. unit for EXPO 2020 came to Buštěhrad

The unit produced for the Czech national pavilion at the EXPO 2020 world fair was delivered to the seat of CTU UCEEB in order to be assembled, tested and prepared for transport to Dubai here.



2020

10. Our team left for UAE in order to disassemble the prototype S.A.W.E.R. unit

In the first days of the New Year, scientists of CTU UCEEB started out for the United Arab Emirates in order to disassemble the first prototype of the S.A.W.E.R. system in the desert near the city of Sweihan and to prepare it for transport back to the Czech Republic.



11. The leader of the Czech diplomacy visited CTU UCEEB

Tomáš Petříček, Minister of Foreign Affairs, became acquainted with the activities of the University Centre for Energy Efficient Buildings of the CTU during his visit. He appreciated the technical forwardness of the S.A.W.E.R. system and the credit of its creators regarding the promotion of the reputation of the local science as well as the Czech Republic itself abroad. Jiří František Potužník, the General Commissioner of the Czech team, then presented the shell construction of the Czech pavilion, which S.A.W.E.R. will be a part of as well, via a telecommunication bridge.



12. A meeting of the preparatory team took place in Dubai

CTU UCEEB representative took part in the meeting of the EXPO 2020 working team at building site in Dubai fairground where preparations for installing the S.A.W.E.R. system in the Czech national pavilion were being coordinated.



13. The shell construction of the Czech pavilion at the Dubai fairground is finished

Building the Czech national exposition for the EXPO 2020 world fair has advanced from the shell construction to the preparation for the assembly of technologies including the S.A.W.E.R. system that will provide water for irrigation of the surrounding garden.



14. S.A.W.E.R. that should produce 500 liters of water each day started out for EXPO 2020

The unit designated for the Czech national pavilion at the EXPO 2020 world fair was dispatched from the seat of CTU UCEEB on its journey to Dubai.



15. Containers came back to the Czech Republic from the United Arab Emirates

Containers with the first prototype of the S.A.W.E.R. unit came back to the CTU UCEEB in Buštěhrad from the Sweihan desert. This unit will be used for further testing after it is retrofitted.



16. COVID-19 makes the preparations for EXPO 2020 complicated

The measures taken against the spreading of the coronavirus pandemic result in a longer preparation for the assembly of the S.A.W.E.R. system in the Czech national pavilion. Although the unit arrived to Dubai at the end of March as planned, our team was not able to leave due to the air connection having been cancelled. **The EXPO 2020 world fair in Dubai is postponed. It will take place in October 2021 and it will last until March 2022.**



UNIVERSITY CENTRE FOR ENERGY EFFICIENT BUILDINGS

Czech Technical University in Prague
Třinecká 1024, 273 43 Buštěhrad

210 employees

6 research departments

21 laboratories and research teams

www.uceeb.cvut.cz/en

