
HPGen improves crop yields and reduces maintenance in a greenhouse in Almeria, Spain

- 💧 HPGen increases cucumber yield by >40% through improved irrigation uniformity and root zone oxygenation.
- 💧 Healthier plants thanks to higher water oxygen levels.
- 💧 100 % flowing drippers, with minimal maintenance.
- 💧 Soil organic content increased >10 times from 0.33% to 4% after 6 months of installation.



What is the HPGen solution?

HPGen improves and protects the crop through cost-effective and simple irrigation water treatment. The HPGen A series is designed specifically for the agriculture market and integrates seamlessly with standard irrigation systems. HPGen produces a safe concentration of Peroxide UltraPure™, a very high purity solution of hydrogen peroxide. Peroxide UltraPure™ is injected into irrigation lines, where it prevents biofilm growth, keeps the water system clean and the emitters flowing, and enriches the water with additional oxygen. This ensures an optimal irrigation uniformity, increased nutrient availability and higher yields.



Key benefits / characteristics

- 💧 On-site generation of Peroxide UltraPure™
- 💧 Chemical-input free - Only water, electricity and air as inputs
- 💧 > 99.99 % purity Hydrogen Peroxide, no additives
- 💧 Autonomous – fully automated operation
- 💧 Safe – safe concentration, no risk for operators or crop
- 💧 Cost effective – saves chemicals, storage, handling and labor
- 💧 Eco friendly – Peroxide UltraPure™ becomes water and oxygen after use

Site information

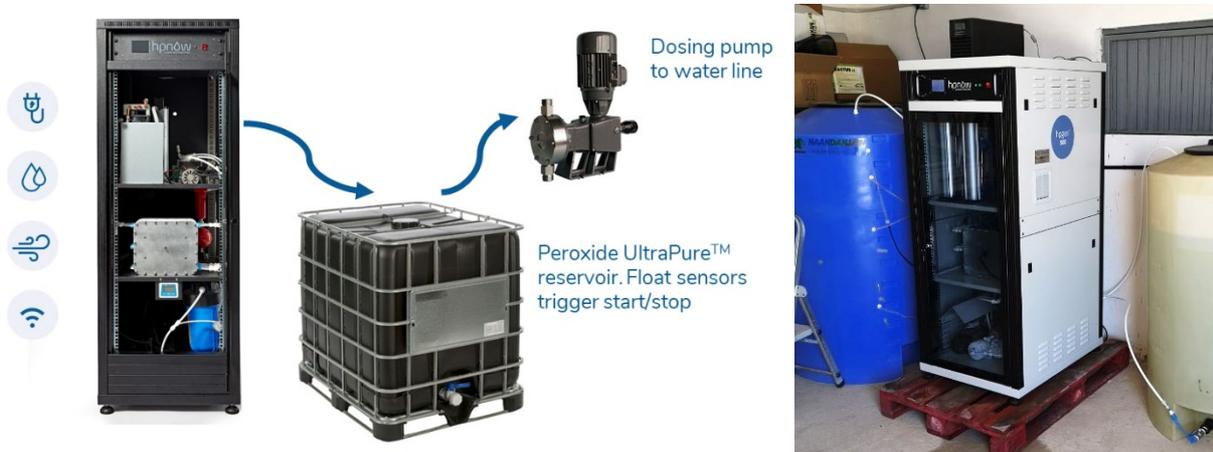
Located in the highly productive greenhouse area in the Almeria region in southern Spain, this grower has a plastic greenhouse with cucumbers in winter and watermelons in summer. The soil in the region is dry, the climate warm and the operators use organic fertilizers. The plants are grown in the typical Almeria sandy soil (enarenado) and are irrigated with a modern drip irrigation system using pressure compensating non-leakage drippers. When assessing the site, it was clear that clogging of drippers leads to non-uniform irrigation and insufficient water and fertilizer delivery to part of the crop. To mitigate this, farm personnel were going through the drippers frequently to “unclog”, a manual process highly costly in man-hours.



Soil quality was also analyzed and the amount of organic matter in the soil, a critical parameter for the healthy growth of the plants, was very low at 0.33%. This is due to poor dissolution of organic matter fertilizers in water, which further exacerbates dripper clogging and decreases crop productivity. To overcome these issues, an HPGen A500 model was installed and integrated with the irrigation system.

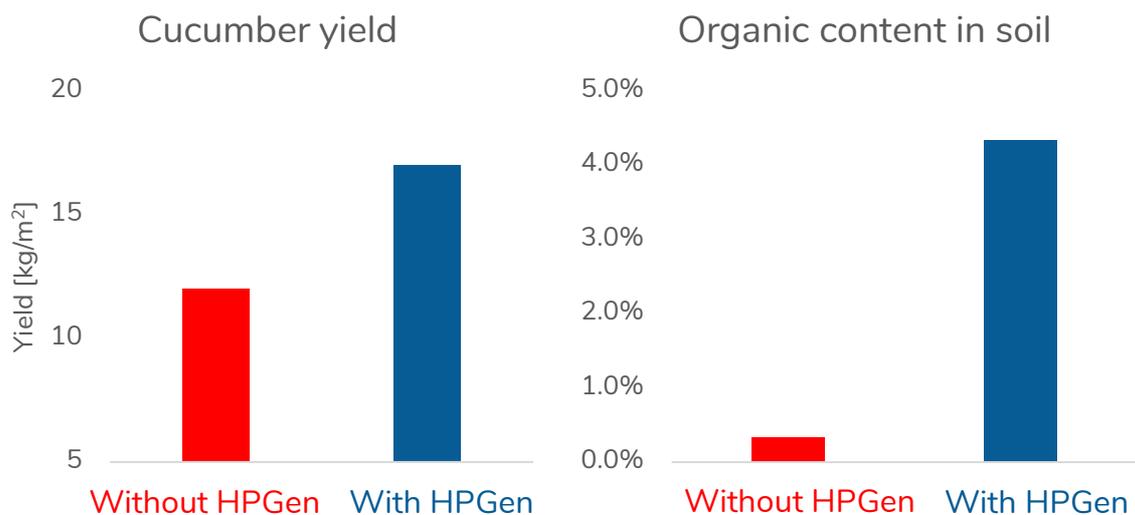
HPGen setup and dosing

The HPGen A500 was installed in the irrigation room and set to automatically fill a buffer tank with Peroxide UltraPure™. Dosing was done through a proportional dosing pump, which is both simple and effective.



Results of HPGen treatment

After a season of cucumber crop with HPGen, yields were compared to previous seasons. The results with HPGen were of 17 kg/m², a record for this grower, substantially higher than the average for the past 5 years of 12 kg/m². In addition, the grower observed the quality of the fruit was improved, and the fruit could remain for longer time in the plant, allowing for optimization in harvesting depending on market prices.



The improvement in >40% in production is explained by two factors:

- Better irrigation uniformity. After two weeks of installing the HPGen all drippers showed a uniform water flow, which allows for an optimal distribution of water and fertilizer throughout the field.
- Increase of soil organic content, which increased by a factor of 10 (from 0.33 to 4 %), which contributed to improving plant nutrition.

Both factors are due to the high oxidizing power of the Peroxide UltraPure™ generated by the HPGen system, which oxidizes organic matter in the irrigation system and makes it available to the crop. This results in a better health and vigor of the plants, and in an improvement in yields.

Learn more about the HPGen system and its benefits for agriculture at:

<https://www.hpnw.eu/irrigation-water-treatment/>

