



PRESENTATION

HELKON WATER® Ionization Technology

***Eco-friendly Water Treatment Solution For The Elimination
And Prevention Of Pathogenic Microbial Biofilms And Scale***



HELKON FLUID TREATMENT SYSTEMS®

Since 1946

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INTRODUCTION

HELKON WATER[®] Ionization Technology

The **HELKON WATER Ionization Technology** is an eco-friendly solution for the **physical (not chemical, chemical-physical nor electrochemical) treatment of water** for a broad range of applications and offers many unique benefits.

When treating water (and other fluids) with the **HELKON WATER Ionization Technology**, the following is obtained:

- Modification of the salt crystals and carbonates;
- Modification of the ion charge from positive (+) to negative (-);
- Increase of the pH value (reduction of water acidity);
- Reduction of the molecular cohesion of the water;
- Bacteriostatic and bactericidal effect on the water – elimination and prevention of harmful microorganisms (algae, fungi, virus and pathogenic bacteria);

Furthermore, due to the above, by using only normal water treated with **HELKON WATER Ionizers**, many plant diseases, and pathogenic microorganisms have been successfully eliminated in many interventions in different locations and weather conditions like:

- **Flavescence Dorée** - disease of grapevines caused by *Phytoplasma*
(Field Test Results: available upon request);
- **Olive Quick Decline Syndrome** - disease of olive trees caused by *Xylella Fastidiosa*
(Field Test Results: see case study below);
- **Legionella; Pseudomonas aeruginosa; Escherichia coli** and other.
(See below: Water Treatment Application / Installation Diagram 0441-E)

HELKON WATER[®] Ionizers

Benefits:

In Irrigation, Spraying and Nebulization Applications

- Eliminate and prevent incrustations/scale in pipes and equipment;
- Eliminate and prevent spray nozzle clogging problems due to incrustations/scale and therefore increasing spray nozzle performance and durability;
- Reduction of water consumption;
- Reduction of operating and maintenance costs.



In Agriculture, Horticulture, Floriculture and Gardening Sector

- Eliminate many harmful crop/plant microorganisms;
- Eliminate and prevent bacterial biofilm growth which cause crop/plant and working tools/surface contamination;
- Revitalize crop/plant energetic state and vital energy;
- Increase crop/plant quality, yield and biomass;
- In healthy crops/plants, improves the immune system and the prevention of diseases;
- Permit crops/plants to be better hydrated and improve nutrient uptake, due to the reduction of the molecular cohesion of water;
- **HELKON Ionized Water** is also used for washing soil contaminated by chemical products used beforehand.

In Plant Bulb Production

By the simple immersion of plant bulbs in water physically treated with a **HELKON WATER Ionizer** for a short period of time, permit to obtain:

- The revitalization of the plant bulb due to the vital energy of the HELKON ionized water;
- The improvement of the plant bulb's immune system and consequently, the prevention of diseases;
- Greater resistance of the plant bulb during transportation;
- Better and faster growth after transplant.

Primary Characteristics of the HELKON WATER Ionization Technology

1. *The bacteriostatic and bactericidal effect on water.*

The **HELKON WATER IONIZER** generates a bacteriostatic and bactericidal effect on water. Due to the **HELKON WATER ionization process**, normal water becomes **IONIZED WATER** which eliminates and prevents growth of pathogenic microbial biofilms and scale.

In the Agriculture and Horticulture sector, biofilms cause plant contamination and blockage of the xylem vessels which serve to distribute water and nutrients from the roots to the leaves. When plants absorb the ionized water, the biofilms are eliminated by the bacteriostatic and bactericidal effect of the ionized water.

2. *The reduction of the molecular cohesion of water.*

The **HELKON WATER IONIZER** reduces the molecular cohesion of water (water molecule clusters become smaller and water surface tension decreases). This enables the **HELKON IONIZED WATER** (bacteriostatic and bactericidal) to penetrate plant roots and cell membranes easier and faster with respect to normal (not ionized) water and as a consequence, enhances the plant immune system, hydration rate, and growth.



Furthermore, other benefits of the **HELKON WATER ionization technology** include the following:

Reduction of

- Fertilizers and pesticides;
- Irrigation water;
- Soil salinity;
- Equipment operating and maintenance costs

Elimination and Prevention of

- Scale/Calcitic Deposits in water distribution lines and equipment (water pumps, irrigation, spraying and nebulization systems, etc.)

Increase

- Plant quality, yield and biomass;
- Efficiency and performance of equipment (irrigation systems, water pumps, heating and cooling systems, etc.)

HELKON WATER Ionizers:

- Do not require electric power nor maintenance;
- Are easy to install;
- Have unlimited durability;
- Are cost-effective, cost is rapidly amortized.

HELKON
conforms with
hygiene, sanitary and ecological regulations



Case Study / March – June 2015 / Italy

HELKON WATER Ionization Technology

Field Test Results

On Olive Trees Infected by Xylella Fastidiosa

Technical Collaboration

Dr. Francesco Vigorelli
Viticulture and Enology Specialist

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INTRODUCTION

On 25th March 2015, our company was contacted by a trusted gardener of home owners with garden, where 2 olive trees of unknown origin and aged 80 years were transplanted.

The olive trees showed signs of suffering caused by the **Xylella Fastidiosa** bacterium (which also cause **Pierce's Disease** of Grapevine and other diseases).

Before the appearance of plant deterioration, the plant soil was irrigated with "Glyphosate" a herbicide to eliminate the weeds, respecting the manufacturer's indications and suggested doses.

The gardener, in an attempt to cure and save the plants, trimmed dead branches and limbs of plant n.1 (see **Ref. A** below); nothing was done on plant n. 2.

FIELD TEST PROCEDURE

On 28th March 2015, we went to the olive tree property and prepared a 1 cubic meter tank with:

water physically treated
with equipment which utilize
HELKON Know-How and Technology



*Portable spraying unit with **HELKON WATER IONIZER***

A first visual control of the olive trees showed a general strong deterioration with extensive defoliation; even the bark showed signs of low vitality and areas of exfoliation.

Once we assessed the conditions of the two olive trees, we determined the intervention protocol for revitalizing the same.

First, we intervened with an intensive washing of the soil and irrigation of the olive trees with **HELKON IONIZED WATER**; therefore showing the gardener and olive tree property owners the protocol to follow which consists in irrigation, spraying and nebulization of the olive trees only with **HELKON IONIZED WATER**. Afterwards, from our location and the olive tree site, we frequently verified the condition of the olive trees and progress obtained.

FIELD TEST RESULTS

On the 30th June 2015, we went to verify the status of the olive trees. We verified their energetic state and vital energy and found they have responded positively to our **HELKON WATER ionization treatment technology**.

We observed a good growth of leaves and limbs at canopy level – limbs, branches, as well as a good stump sprouting ability as indicated in the photographs we took – see **Ref. B** and **Ref. C** below.



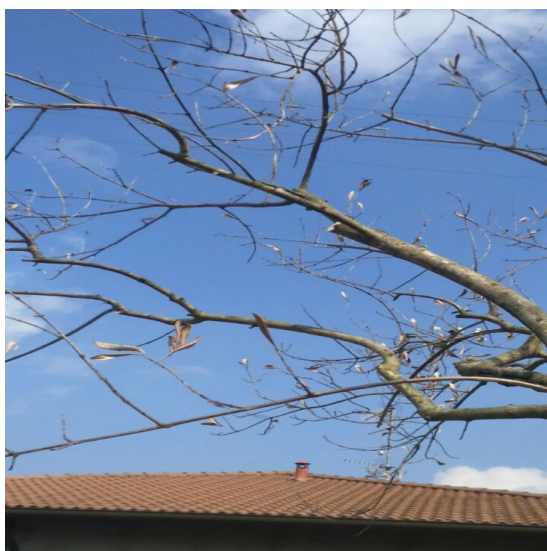
Before **HELKON WATER**® Ionization Treatment
25th March 2015



Olive Tree n. 1



Olive Tree n. 1



Olive Tree n. 1



Olive Tree n. 2

Ref. A



After **HELKON WATER®** Ionization Treatment

30th June 2015



Olive Tree n. 1



Ref.B



After HELKON WATER® Ionization Treatment

30th June 2015



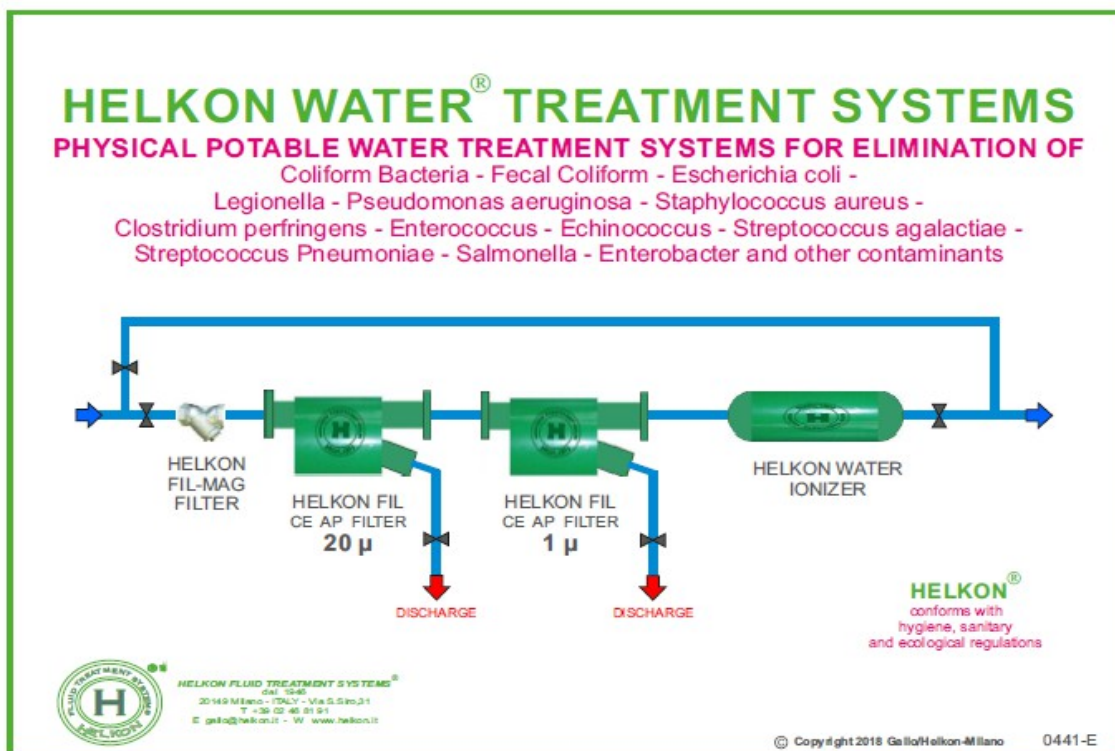
Olive Tree n. 2



Ref. C



Water Treatment Application **(Installation diagram: 0441-E)**



About Us

HELKON Fluid Treatment Systems (a division of **SRI sas – Industrial Services and Representations**, Milano - Italy) is specialized in designing, manufacturing and supplying, under the proprietary HELKON brand, high quality eco-friendly fluid treatment systems for a broad range of applications. Supplies standard and custom made fluid ionization and filtration systems for the Agriculture, Horticulture, Industrial, Commercial, and other sectors which use water and other fluids.

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