



CASE STUDY (020-C-En)

Hospital, Greece

Water Treatment System for Hemodialysis

LOCATION

Heraklion, Crete

PROJECT DELIVERY DATE

July 2018

PROJECT COMPLETION TIME

2 months

PROJECT DESCRIPTION

Complete water treatment system with double pass reverse osmosis with the ability of hot water (thermal) disinfection for the production of 1500 litres/hour of water to be used in hemodialysis, along with the construction of deionised water distribution loop made of material suitable for hot water disinfection, serving 20 hemodialysis stations.

SUMMARY

Under the framework of an open national public tender, TEMAK was awarded the contract for the project of delivering a new water treatment system for hemodialysis at a General Hospital in Crete.

The hospital had previously installed and was operating an old hemodialysis system.

The contract was completed as part of the hospital modernization programme, to provide the best possible water quality to its patients. The special feature of this project lay in the ability of the water treatment system to undergo disinfection using hot water (thermal disinfection), versus the conventional chemical disinfection method (using sodium hypochlorite or other disinfectants).

CERTIFICATES

Certification according to Chapter V of Directive 93/42/EEC, concerning water treatment systems for the production and dilution of hemodialysis solutions.

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THE CHALLENGE

The thermal disinfection system should operate continuously without causing as much as a single day of interruption to the hemodialysis wing and sessions. In addition, the timetable for delivery or such an innovative system for the Greek market was only two months.

THE SOLUTION

The system consists of two reverse osmosis units in full 316L stainless steel construction, with hygienic type triclamp connections. All the main treatment stage equipment is made of materials that are resistant to temperatures of 85°C (high pressure pumps, membranes, membrane vessels, accessories, flowmeters, pressure gauges, pressure transmitters etc.).

The unit is equipped with a thermal disinfection CIP system which comprises a 316L stainless steel double-walled tank, with special thermal insulation to reduce heat losses, and roughness coefficient $Ra < 0,8$ micron to ensure the smoothest surface possible, thereby minimizing microbial growth in the pores of the tank walls. Furthermore, it contains a spray ball system for the water returned to the disinfection tank, so that the entire surface of its inner walls is covered, thereby reducing the possibility of microbial growth in blind spaces.

- The system was installed in a different area than the one originally intended.
- There was no shutdown or interruption of hemodialysis wing and sessions, which would have been impossible if the old system had to be removed and the new one installed (which would have required its shutdown for at least 15 days).
- The hospital kept the old system in reserve, as a back-up solution in case it is needed in the future.
- The unit is the first installed in Greece that is equipped with thermal disinfection of the reverse osmosis and deionized water distribution loop.

THE RESULT

1500 litres/hour of water for use in hemodialysis machines, of quality according to European Pharmacopoeia and AAMI (United States) standards, i.e. suitable for patient hemodialysis sessions without the presence of microbial infection.

Since 1980, TEMAK has been at the side of local communities covering their needs with reliability and consistency, having a full range of certified water treatment products. Thanks to the systems manufacture in Greece and the high expertise of its specialized staff, TEMAK is able to offer total water treatment solutions, from study and design to manufacture and installation of required systems. The 750.000 m³/day of clean potable water or water for general uses, produced daily from TEMAK's installed systems in Greece and 26 abroad countries, constitute the proof of our experience and know-how in water treatment.