

CASE STUDY



NIROBOX™

Seawater Desalination for Coastal Resort

- **Location:** Guanacaste Province, Costa Rica
- **Customer:** Reserva Conchal Hotel & Resort
- **Capacity:** 1,500 m³/d
- **Solution:** NIROBOX containerized seawater desalination system

Background

Reserva Conchal resort, golf course, and spa is located in Guanacaste, Costa Rica, a province suffering from a serious water shortage due to drought since late 2014. The shortage posed a significant threat to resorts and hotels in the

province. An immediate solution for a high quality, dependable supply of potable water was needed, that was safe for the environment and wouldn't burden the existing national water network.

Challenges

The Reserva Conchal needed a solution that would not affect the environment and it needed it quickly. Further to the drought, the lack of rainfall led to a high level of salinity in coastal aquifers, and there was no existing infrastructure to import water. The solution had to fit in unobtrusively with the resort's natural setting.

Fluence's Nirobox provided Reserva Conchal with an attractive option. The containerized systems provide all the benefits of desalination within a small footprint and without extensive infrastructure investment. It easily blends with the surroundings without damaging the landscape and its plug-and-play design enables fast delivery, integration, commissioning and operation.



The Solution

In just eight months from order to startup, Fluence provided three Nirobox containerized seawater desalination units with a total output of 1,500 m³ of clean, potable water a day. The modular units required minimal infrastructure and installation work and time. The systems are fully automated and remotely monitored for easy, cost-effective operation and maintenance. They include the entire pre-treatment process of filtration and reverse osmosis in a single container, featuring low chemical and energy consumption.

The Nirobox unique patent pending design provides a 50% recovery rate, which means less waste discharge. A Smart intake and discharge capability was used to minimize the impacts associated with intake suction and to diffuse the brine as much as possible.

Nirobox enabled Reserva Conchal to keep their business AND preserve the environment with a sustainable solution.

The Technology

Three NIROBOX-SW containerized seawater desalination units, with each unit producing up to 500m³/day of permeate water.

The process flow treats a 35,000ppm TDS seawater feed:

- Pretreatment: Disc filters, Ultrafiltration
- Reverse osmosis
- Remineralization to drinking water quality

