

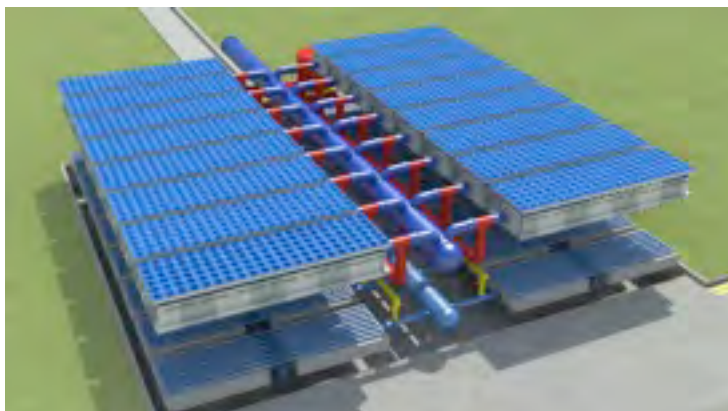
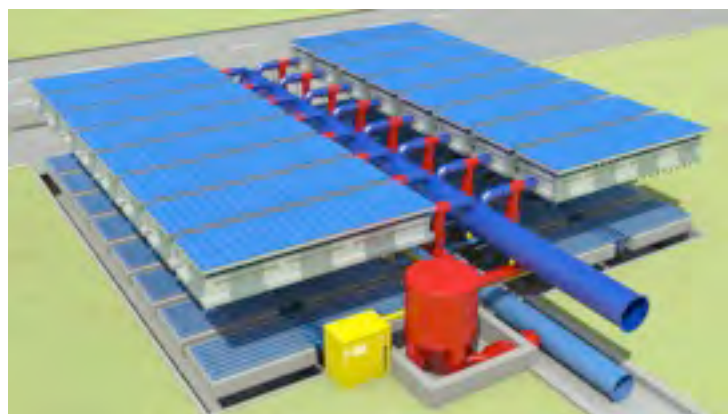
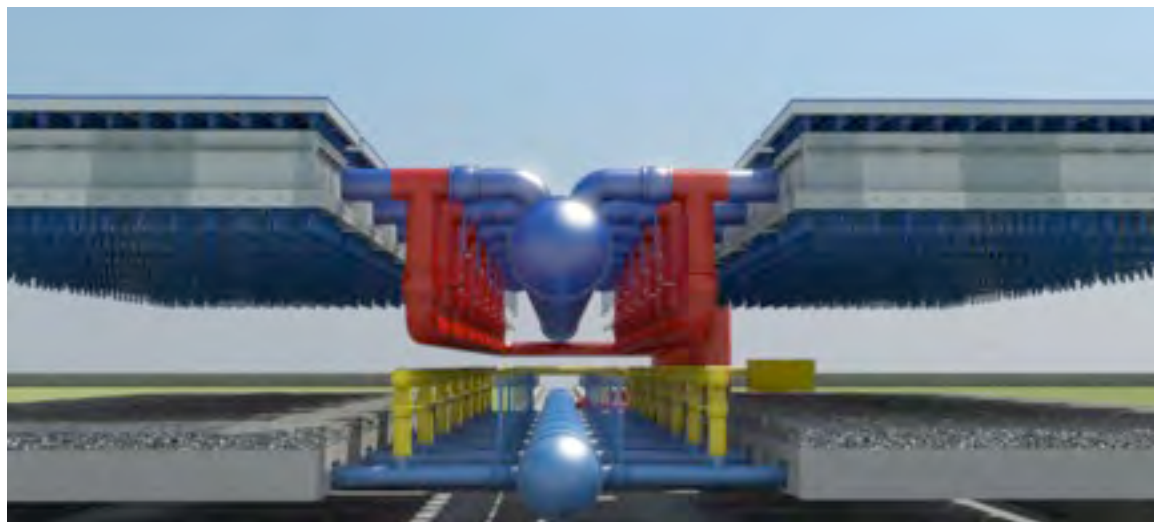
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# DrinTec™ calcite contactor

A recarbonation procedure specially designed for desalination plants

March 2010

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# DrinTec™ contactors

CALCITE BEDS WITH CONTINUOUS FEEDING



*New ideas for a traditional process brings superb control and significant costs savings.*



## General description of the DrinTec™ upflow contactor

The operation of the DrinTec™ upflow contactor is as follows: water enters via the lower part of the concrete or FRP contactor tank and is distributed through a specially perforated piping underdrain or, alternatively, across a FRP nozzles floor. Water flows upwards from the lower part and through the crushed calcite bed. As it moves upwards, its chemical composition changes. The CO<sub>2</sub> dissolved in the incoming water reacts with the calcite forming soluble calcium bicarbonates. That increases pH and water hardness until reaching a chemical equilibrium. Once it has flowed through the bed, the now re-carbonated water enters a no-flow area and then leaves the cell via an internal perimeter overflow weir made of FRP. The overflow is then channeled to an outlet at one side of the tank.

The tanks have an in-built reserve silo in their upper part. A series of small feeding funnels are placed at the bottom of the silo and supported by a steel structure. The funnels guide the calcite from the silo to the surface of the bed located under water. In this way, the product is dosed directly from the silo onto the bed by gravity, replenishing it continuously as it becomes dissolved. As a result, dosing occurs very gradually, approximately one granule of calcite per funnel per minute, under normal operating conditions. This steady dosing allows to operate the plants with a superficial velocity of up to 18 m/h, without turbidity surpassing 1 FNU.

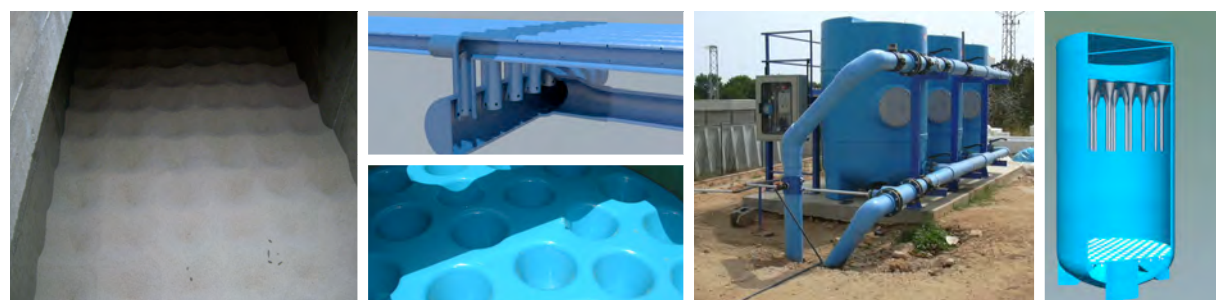
The in-built silo of the tanks allows to operate autonomously for several weeks. The product in the reserve silos remains dry. The calcite is moistened only in the down pipes to the bed and, as the material is relatively inert, i.e. does not absorb water or dissolve easily, there are no problems of obstruction.

Tanks operating in parallel are made identical and with the same bed height. This allows for a stable hydraulic performance, as well as a very precise process control via CO<sub>2</sub> dosing ( $\pm 0.05$  pH units).

The design allows for turbid water control during air or water flushing by means of a turbid water recirculation circuit. Design considerations have also been taken into consideration to prevent flow shocks to affect the calcite beds.

The system operates with the outlet pressure of RO racks (approx. 0.5 atm.), and discharges at atmospheric pressure. Pressurized tank systems are also available. The dosing system working equally well as it is based on gravity.

**References are worldwide and include plants from 0.02 MGD up to 53 MGD.**



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# DrinTec™ contactors



## CALCITE BEDS WITH CONTINUOUS FEEDING

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### INSTALLATIONS REFERENCE LIST

2010 DrinTec contactor dosing for 13,000 m<sup>3</sup>/d consisting of 3 concrete rectangular cells of 3.35 m x 5.02 m. For the desalination plant Telde 1: Canary Islands for Acciona Agua

2010 DrinTec contactor for 16,000 m<sup>3</sup>/d consisting of 3 concrete rectangular cells of 3.35 m x 5.02 m. For the desalination plant Telde 2: Canary Islands for Canaragua an Aguas de Barcelona subsidiary.

2009 DrinTec contactor for 200,000 m<sup>3</sup>/d consisting of 32 concrete rectangular cells of 3.02 m x 7.02 m, working in parallel, for the desalination plant of Barcelona, with turbid water recovery system and control of water shocks to the contactor for Degrèmont, Drace, Dragados and Aguas de Barcelona.

2008 DrinTec contactor for 70,000 m<sup>3</sup>/d expandable to 120,000 m<sup>3</sup>/d consisting of 32 concrete rectangular cells of 2.02 m x 5.02 m, working in parallel, for the desalination plant of Alicante II for Inima S.A and the Spanish Central Government Water Authority.

2007 DrinTec contactor for 12,000 m<sup>3</sup>/d consisting of 2 concrete rectangular cells of 2 m x 6 m, working in parallel, for the desalination plant of Bocabarranco, Gran Canaria for the Canary Islands Water Authority.

2006 DrinTec contactor for 10,000 m<sup>3</sup>/d consisting of 2 concrete rectangular cells of 2 m x 5 m, working in parallel, for the desalination plant of Roque Prieto, Gran Canaria. (2006) for Canary Islands Water Authority.

2002 - present: Over 40 DrinTec contactor tanks made of stainless steel and fiber reinforced plastic, for installations varying between 100 to 4,000 m<sup>3</sup>/d, have been placed into operation in municipalities, hotels, resorts and industrial facilities located in different regions of mainland Spain, the Balearic Isles, the Canary Isles, as well as, Cape Verde Isles, Oman, Taiwan and Argentina.

### SELECTED CLIENTS LIST

- Acciona Agua
- Acuamed
- Aguas de Barcelona
- Aqualia
- Aqualyng
- Cadagua
- Canary Islands Water Authorities
- Degrèmont
- Drace
- GE-Waters & PT
- Inima
- Prince Hotels & Resorts
- Spanish Ministry of Environment and Water
- Waters of Cape Verde Islands