

# MC4 Constant Chlor Feeder

Unitywater Caloundra Reservoir, Australia.

Potable Re-chlorination

Case Study



## Background

Unitywater QLD - a statutory authority that provides water and sewerage services to the Moreton Bay, Sunshine Coast and Noosa local authority areas on behalf of their citizens. They are governed by an independent Board and have a Participation Agreement with Moreton Bay and Sunshine Coast Regional Councils and with Noosa Shire Council.

Seqwater, a state-government-owned water entity, is responsible for capturing, storing and treating bulk water for the region. They treat the bulk water at 46 water treatment plants across SE Queensland. Unitywater then distributes the water to final users via an extensive network of reservoirs, pumps and pipes. Regular monitoring programs are in place to constantly check the quality of the drinking water through the entire supply chain.

## The Problem

At Caloundra Reservoir, Sugarbag Rd, Unitywater re-chlorinates pre-chlorinated water, stored in a 50 megaliter water storage tank, in order to maintain a chlorine residual level of 1.2 ppm. The water is treated with liquid chlorine stored in a large 5m<sup>3</sup> footprint 5000 liter storage tank.

Not only was the liquid chlorine storage tank found to be leaking, causing a risk situation, but there was also degradation of the liquid chlorine, raising some concern. Replacement costs and alternative systems were

investigated - a new storage tank was costly, Chlorine gas was too unstable in the hot humid conditions and unsuitable for the densely populated local area and Chlorine dioxide OSG was too expensive.

## The Solution

After consultations the decision was made to replace the system with a small footprint, proven low risk and cost effective, dry chlorine system with low risk installation and low capital cost - the MC4 LITE Constant Chlor Feeder using hth<sup>®</sup> Briquettes.



MC4-50 LITE installation

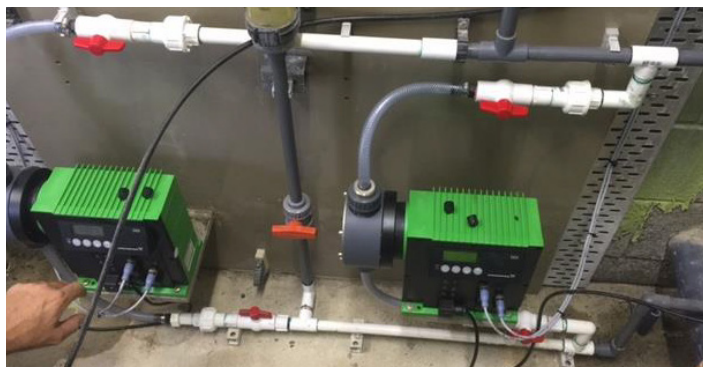


The Sodium hypochlorite storage tank

### Monitoring

The Cl<sub>2</sub> level of the water that now leaves this reservoir at an average rate of 1180 m<sup>3</sup>/h is monitored by a controller unit.

A second controller unit will measure the Cl<sub>2</sub> level of the water after chlorination and the control room will manage the level of chlorine to the desired level (1.2 ppm) by controlling the dosing pumps (2 x DDi-AR- 150 4 Digital Diaphragm 150 l/hr at 4 bar). Dosing rate on metering pumps (7 – 80 LPH) get activated and controlled by a set point on SCADA control system and can be altered by the control room only



### DDi (150 LPH each) dosing pumps

If the Cl<sub>2</sub> res level is below 1.2 ppm, the metering pump will dose the desired amount of 1.5% Cl<sub>2</sub> solution created by the Constant Chlor MC4-50 LITE chlorinator into the transfer pipeline from the 50 MI reservoir to the next storage reservoir from where the re-chlorinated water is distributed to the final user via the Caloundra water distribution system.

This unit is effective in maintaining the chlorine residual level at minimum 1.2 ppm in the transfer pipeline from 50 MI reservoir to the 2 smaller reservoirs each (4.6MI and 9.1MI each).

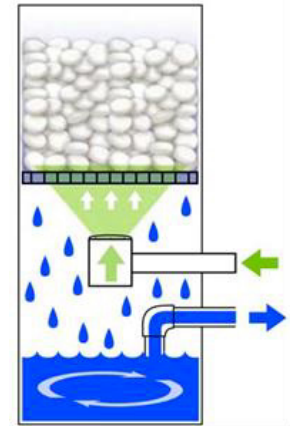
### SCADA Control

Unitywater distribution system is completely SCADA controlled and the LONZA units have capabilities to connect to SCADA.

- a) Additional level measure sensor was installed on top of the briquette hopper in order to monitor the hth<sup>®</sup> Briquettes level inside the hopper remotely. This sensor is connected to SCADA control system.
- b) Also required was an alarm signal to indicate (i) low chlorine solution level in tank, (ii) power failure on chlorination unit and (iii) recirculation pump failure. The recirculation pump relay terminal #71 and #72 were connected to SCADA for this requirement.

### Lonza patented spray technology

Prepares and automatically delivers a consistently accurate dose of liquid available chlorine for disinfection applications. The feeding system can supply up to 23kg of available chlorine per day on a sustained basis without the storage and handling issues associated with liquid bleach or chlorine gas. This highly customizable feeder uses hth<sup>®</sup> Briquettes and a patented spray technology to produce and maintain a fresh 1.5% Av Cl<sub>2</sub> liquid chlorine solution.



### Technical Information

- Dry chemical capacity - 34kg hth<sup>®</sup> Briquettes.
- Chlorine Feed rate (21°C) - 0.4-23 kg available chlorine per day.
- Dosing rate of 1.5% Av Cl<sub>2</sub> solution - 0 – 95 liter per hour.
- Site requirement –
  - a. Water inlet: 3.8 LPM @ 3.45-10.34 bar
  - b. Electricity: 220-240V / 50Hz ( 10 amp circuit)

### Benefits

- No manual handling of liquid chemicals.
- Small footprint feeder and product storage space compared to large sodium hypochlorite storage tank
- Stability of hth<sup>®</sup> Briquettes ensure less logistics cost
- Low risk installation and chemical storage
- Easy, cost effective installation and operation
- Continuous chemical dosing ensures safe drinking water.
- The MC4 Constant Chlor Briquette feeder unit has proven reliability

www.lonzawatertreatment.com.au

Contact +61 3 9417 2428

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