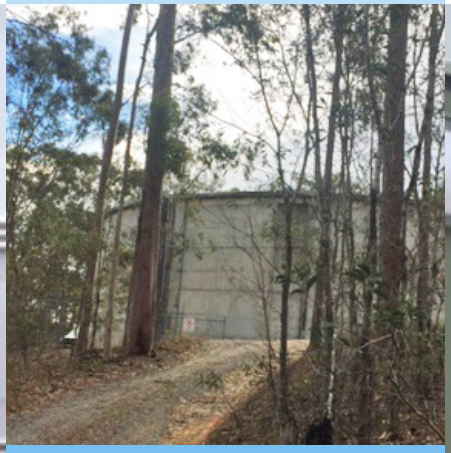
Water Treatment

Re-chlorinated Drinking Water
Albany Creek Reservoir, SE Queensland



Case Study: Constant Chlor® MC4-50

The Situation

Seqwater - a state-government-owned water entity, is responsible for capturing, storing and treating bulk water at 46 water treatment plants across SE Queensland. The treatment involves Chloramination - a disinfection process which includes the addition of chlorine and ammonia to preserve the high microbiological quality of drinking water.

Unitywater - a local business established as part of the Queensland Government water reform program, 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.

At Albany Creek 9 Ml reservoir, the pumped in chloraminated water must be re-chlorinated before distribution in order to maintain the desired total chlorine level of 1 ppm, ensuring sufficient sanitization standards are met at point of use.

The Problem

Sodium Hypochlorite

The liquid chlorine (Sodium Hypochlorite) water treatment system being used for re-chlorination was proving to be ineffective in many aspects:

- The absence of an in-line chlorine monitoring/controlling device created inconsistent chlorine concentrations at point of use.
- Daily (total) chlorine testing was conducted manually and slow response time resulted in regular over/under dosing of chlorine in the distribution network.
- Potential swift decline of chlorine concentration present in the Sodium Hypochlorite solution, led to inconsistent disinfection and required frequent adjustments to dosing rates.
- There was a potential risk of chlorate formation and its subsequent addition to drinking water.
- Manual handling of 200 litre liquid bleach drums caused health and safety and storage issues.

Constant Chlor® MC4-50 dry chlorine system

The liquid chlorine system was replaced with the proven low risk and cost effective dry chlorine system - Constant Chlor® MC4-50 from Lonza. It was designed as a complete package with all necessary pipe work, valves, dosing pumps and control panel all contained in one compact, mobile Skid unit.

The Constant Chlor® MC4-50 prepares and automatically delivers a fresh, consistently accurate dose of 1.1–1.5% Av Cl_2 liquid chlorine for water disinfection applications, via a hopper filled with (68% Av Chlorine) HTH® Briquettes and spray technology. This system can supply up to 24kg of available chlorine per day on a sustained basis without the storage and handling issues associated with liquid chlorine or chlorine gas. Larger capacity systems are also available from Lonza.

Dosing pumps

Consistent Chlorine Dosage

The Cl_2 level of the solution in the 9ml holding reservoir Is monitored by a dedicated measurement module. The reservoir is also equipped with a mechanical mixing device to improve chemical contact time on the entire reservoir content. If the Cl_2 level falls below 1 ppm, an automatic dosing system based on a diaphragm duty metering pump will be activated to add the desired amount of freshly prepared 1.1–1.5% Cl_2 solution.

Remote Monitoring

An additional Level Measure Sensor installed on top of the briquette hopper, remotely monitors the briquette level. This sensor is connected to a SCADA control system and has a 'low level' alarm.

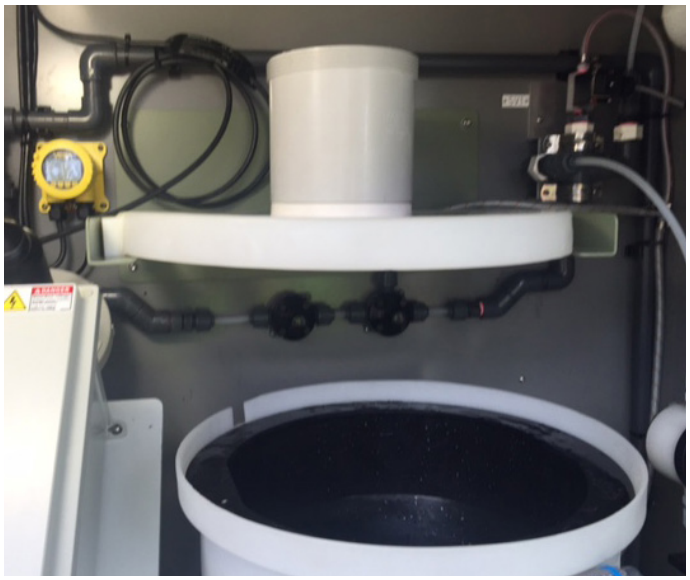
Technical Information

Dry chemical capacity	34kg HTH® Briquettes
Chlorine feed rate (at 21°C)	0.4–24 kg available chlorine per day
Dosing rate of 1.1-1.5% Av Cl_2 solution	up to 95 litres per hour

Site requirement

Water inlet	3.8 LPM @ 3.45-10.34 bar
Electricity	220-240V / 50Hz (10 amp circuit)

Level Measure Sensor to monitor briquette levels



Removable lid for hopper access

Corrosion Protection

The cabinet is custom manufactured and consists of 3mm aluminium, powder coated to client specifications. It has a galvanized plinth for ease of transport via crane or tilt truck.

Chemical Safety

The rear and side walls of the cabinet have been lined with PVC sheeting to facilitate any drips or spills to fall into a PVC Bund. The bund area is 1.5 times the batch tank size and includes a tap for ease of draining any liquid. The cabinet is also fitted with a built in safety shower/eyewash station.

Benefits of the Constant Chlor™ MC4-50 system

- Continuous, constant and monitored chemical dosing ensures safe drinking water
- Easy, cost effective installation and operation
- The mobile unit can be transported easily between reservoir sites and allows for a quick site installation
- Compact unit has relatively small footprint
- Bespoke design solutions available from Lonza
- Available with a SCADA PLC to allow remote monitoring and dosing
- Dry chlorine product offers safer alternative to liquid chlorine in terms of handling and storage
- Minimal storage area required for 10kg HTH® Briquette pails
- HTH® Briquettes have relatively longer shelf life compared to liquid chlorine

Lonza can deliver standard or custom built systems to suit most client specifications:

- Various dimensions, connection locations and installation options to suit site and customer requirements
- Choice of materials and accessories
- Pumps, electrical / SCADA PLC controls, containment systems and optional measurement and control instruments

Drain taps from the bund

« For more information about Constant Chlor® chlorination systems, please contact us directly or visit our website. »

Electrical Panel housed within cabinet

www.lonza.com
www.lonzawatertreatment.com.au

Technical Service

Lonza's technical laboratories can provide a range of testing as part of our customer support program. Please contact your local Lonza sales manager to take advantage of these customized services.

Risk Assessment and Management

Lonza professionals have a wide expertise in the field of Health, Safety and Environmental protection. Lonza is committed to providing this expertise to assist you in your choice of product and its suitability for specific applications. Your local Lonza sales manager remains at your disposal should you have any question in this area.

Health and Safety

Product Safety Data Sheets are supplied upon request. They should be read and understood by all supervisory personnel and employees before using the product. If there is any doubt please contact your local Lonza sales office for advice.

Total Quality

Lonza hold a number of ISO 9001 Quality Management registrations covering our product range. The scope of each registration is specific to the location or entity named on the Registration Certificate and our products are supplied to ISO 9001 Standards.