

Drinking Water Safety

Introduction

For almost 140 years, the addition of chlorine to drinking water has been saving numerous lives by destroying the germs in unsafe water sources. 140 years, a long time! In fact, at the time when chlorination was introduced, the automobile had not yet been invented, and neither had the telephone, or the radio. Had a level of perfection been reached in disinfection of drinking water, that no technical progress has been necessary for over 140 years?

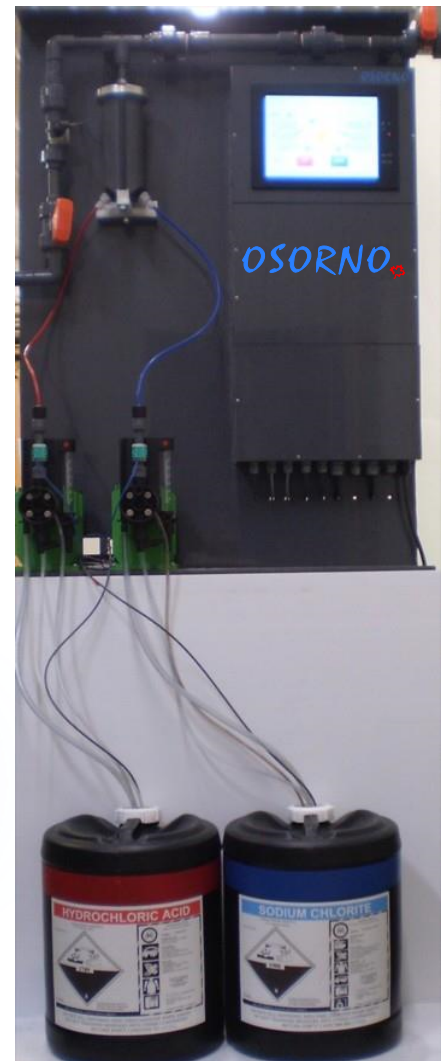
Clearly not, because substantial progress has been made in other parts of the world. For example, according to a 1998 publication of the American Waterworks Association (AWWA), the vast majority of Europeans receive tap water disinfected with chlorine dioxide, as opposed to chlorine. Already sixty years ago, Brussels, the capital of Belgium, was the first major city to change to chlorine dioxide. Thirty years ago, chlorine dioxide disinfection was almost unknown in the USA, while today, more than 12 million Americans drink tap water disinfected with chlorine dioxide. Worldwide, the number is closer to 400 million people. Among those are the 400 first Canadians who since 2004 benefit from chlorine dioxide treated water: the population of Holland, RM of Victoria, Manitoba. Since then, the water taste and quality, ease of operation and cost benefits have led to other installations of chlorine dioxide systems in Canada.

It is important to know that chlorine dioxide is never stored or purchased as such, but rather generated in situ on demand out of two chemicals, hydrochloric acid and sodium chlorite solution as it is shown in the photo. The chemical tanks are usually colour-coded to prevent incidental mix-up.

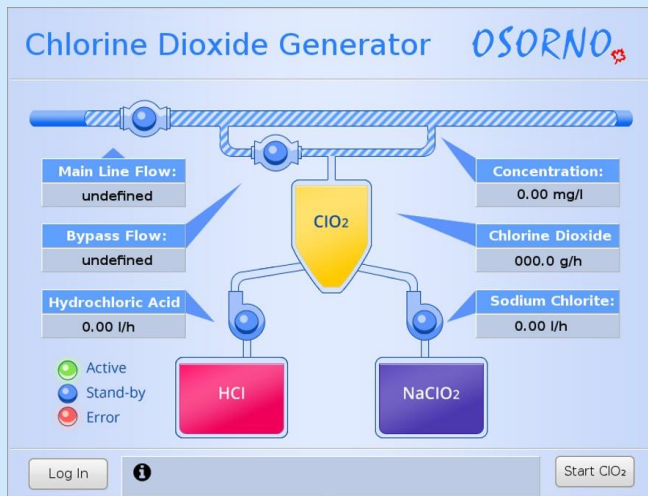
On the photo is shown chlorine dioxide generator manufactured by Osorno. 

Features

- Set-up and operation via human machine interface (HMI) – touch screen computer.
- SCADA with process visualization software.
- SCADA screen is password protected.
- Two modes of operation - constant dosage for constant flow, flow-proportional dosage for changing flow conditions.
- Internet connection capability.
- Optional remote access and monitoring (requires Internet connection).



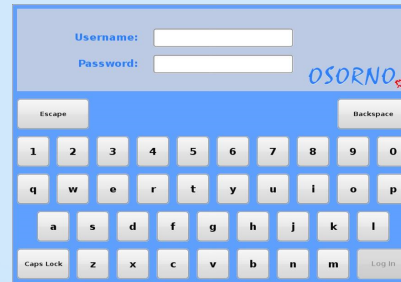
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Main SCADA screen of Osorno chlorine dioxide generator

Advantages

- Simplicity of programming
- Easy monitoring
- Inherently safe
- Continuous process control
- High operational safety



Access SCADA screen of Osorno chlorine dioxide generator

The Holland, MB, Case Study

Like many other small communities, Holland, MB, required in 2003 an improvement of water quality. The taste of the water was not acceptable, because high amounts of hypochlorite were added to the water in order to meet legal disinfectant levels. In addition, the water left stains, because the removal of manganese with conventional methods was difficult and inconsistent. During the initial demonstration project in 2004, the staining and taste problems disappeared. With unanimous praise from the constituency, the RM of Victoria soon purchased a chlorine dioxide system for permanent installation.

The cost evaluation by the RM of Victoria showed that a reverse osmosis system as the alternative to the chosen treatment would have cost approximately \$1.3 million, while the refurbishment of the water treatment plant with the chlorine dioxide treatment has cost only \$250,000, to which in all fairness a market introduction cost share by Osorno of \$75,000 should be added.

The research associated with introduction of chlorine dioxide as a safe disinfectant to Canada by OSORNO was partially funded by the National Research Council of Canada, IRAP program, and the Technology Commercialization Program, Province of Manitoba.

Do you require additional information? Can we give a presentation to YOUR council about our Disinfection Technology? Are you interested in an evaluation of the feasibility to use chlorine dioxide in YOUR community?



Chlorine dioxide generator in Holland, MB

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