

City of Weatherford

Specifications for Chlorine Dioxide Generator

For Water Purification Plant (WPP)

Bid# 2021-005

1.0 Scope of Supply

Bidder shall furnish and install one 250-pound Chlorine Dioxide (ClO₂) per day flow paced generator using liquid sodium chlorite and chlorine gas, and one manually operated 250 pound per day chlorine dioxide generator. The generators shall produce Chlorine Dioxide which shall be injected into the raw water supply pipe. The generators shall maintain a minimum of 95% generator efficiency (with a maximum of 10% excess chlorine). The flow paced generator shall be capable of proportional flow pacing in correlation to plant raw water flow rate (4-20 mA signal) and user designated dosage rate (ppm). The owner shall be able to maintain a constant dosage rate at the point of injection in variable flow rate raw water line. The generators to be provided shall be in very good physical and operating condition and be able to meet these specifications in continuous operation when needed. All pre-cursor chemicals shall be vacuum fed and the generators shall stop generating chlorine dioxide upon water flow loss.

Installation, start-up with chemical analysis and commissioning shall be included. Installation of the Chlorine Dioxide generators and ancillary equipment shall not interfere with WPP operation and the production of drinking water. Installation and start-up shall be completed within 48 hours.

Bidder shall be a NSF 61 Listed Chlorine Dioxide Generator manufacturer and supply two complete systems; one batch generation system that is flow paced and one that is manually operated, with capability to overcome 90 psi in raw water line 3,000 feet from generator. Chlorine Dioxide solution line is a 2-inch PVC line.

Bidder will provide one laboratory amperometric titrator that is approved by the TCEQ and the Palintest with training, and provide for the monthly analyses with written report of three distribution system samples for the DBP chlorite by a TCEQ certified lab. The City of Weatherford shall collect the samples and send them to the laboratory as directed the bidder.

Bidder will be responsible for providing all parts and labor necessary to maintain generators for the contractor term at no additional cost.

Bidder shall provide official training, and O&M manual for all equipment, and materials and safety data sheets for all chemicals provided.

The owner reserves the right to cancel the contract with the selected bidder, should the bidder fail to repair damaged or broken equipment within two (2) weeks of written notification by the owner.

Bidder shall supply EPA Listed; ANSI/NSF 60 listed 25% Sodium Chlorite which shall meet the latest AWWA B303 specifications for sodium chlorite. Bidder must supply this documentation with their bid.

2.0 Performance Criteria

The auto generator system must be able to communicate with a Modicon PLC. Utilizing a Modicon PLC would be preferred by the City. All data points both real and calculated will be identified on an Excel spreadsheet. This data shall include address and scaling. [Example: Address %mw0401 is 0 to 100 PSI line pressure and scaled 400 to 20000 counts]. All interfacing of the two PLC systems shall be the responsibility of the supplier. The City of Weatherford shall make required protocols available to the supplier.

3.0 Required Site Visits

The generators shall work with existing site conditions and bidder shall arrive within 24 hours of notification by the Owner in an emergency. Bidder shall be in the normal business of supplying and servicing municipal drinking water plant chlorine dioxide systems and pre-cursor chemicals and have a minimum of 3 current customers in the State of Texas where they are supplying similar services to this bid. Bidder shall maintain a staffed office location in the State of Texas with various backup generators and service parts stocked in Texas. Bidder must supply their office location and contact information for the 3 current customers documentation with their bid.

Bidder shall make one site visit per month, not counting emergency site visits, for equipment calibration, measure generator efficiency and to perform preventative maintenance on the generators. Date of monthly site visits to be determined by the Owner.

A field service report shall be prepared after each monthly visit. The report shall include:

- 1) Generator Data
 - i) Generator identification
 - ii) Production set point
 - iii) Rotameter setting with corresponding chlorite ml/min and chlorite lb/day feed rate
 - iv) Educator gpm flow rate
- 2) Service and Maintenance Activities Performed
- 3) Analytical Data
 - i) Generator efficiency
 - i. Percent chlorite converted to chlorine dioxide
 - ii. Percent excess chlorine
 - ii) Chlorine Dioxide concentration

- i. Raw water-titration steps A,B,C,D chlorine Dioxide concentration, chlorite concentration, and chlorine concentration

4.0 Basis for Bids

Bids shall be based on the requirements in this specification, a three-year period, and the chemical usage as described in Attachment A.

Appendix A

MGD	H ₂ O lb/gal	ClO ₂ ppm	=	ClO ₂ lb/day	ClO ₂ lb/yr	ClO ₂ lb/3yr	25% NaClO ₂ lb/day	25% NaClO ₂ lb/yr	25% NaClO ₂ lb/3yr
Plant maximum flow rate									
14	8.34	2.12	=	247.5			247	90,000	270,000
Plant average flow rate									
4.5	8.34	2.12	=	79.56	29,039	87,118			

25% sodium chlorite weighs between 10.05 and 10.15 lbs./gal depending on vendor

Each lb. of chlorine dioxide requires:

5.64 lbs. of 25% sodium chlorite

0.56 gallons of 25% sodium chlorite

0.55 lbs. 100% chlorine (g)