ATTACHMENT B

Aquionics UV System Upgrade Proposal For: Laguna County Sanitation District

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June 10, 2019

To: Laguna County Sanitation District

Attn: Marty Wilder

Project: Ultraviolet Disinfection Upgrades

Aquionics Inc. recommends that you consider upgrading the InLine 7500 units (SN 6313, 6314, 6315, 6316) at the Laguna Sanitation District WRF with new Control/Power Panels and completely rebuilding the existing UV chambers.

The current UV units were installed in 2000; they are nearing the end of their expected service life. This upgrade will allow you to minimize costs of outside contractor, eliminate costly engineering fees and legal oversight by working directly with Aquionics as a sole source vendor without a public bid for a new system.

We are supplying larger kW lamps with the upgrade, which can increase the current capacity of the UV units. The current units utilize a 3.5 kW while the new lamp/ electronic ballast combination can provide a 4 kW lamp output.

In addition to bringing this unit up to current equipment levels, the new control/power panels provide opportunities for energy savings by allowing more efficient control. The following items are advantages to this proposed upgrade:

- An Electronic Lamp Driver (ELD) option vs the traditional transformers now used to provide a greater lamp output turndown & greater energy savings with variable flow
- The refurbishment of the internal mechanisms for UV Chamber optimization is only available from Aquionics, Inc. which provides factory parts and a full warranty.
- By refurbishing the existing UV Chamber in place, there is no need for any changes to the piping thus providing an additional savings and avoiding contract laborers.
- All service work to rebuild the chambers and assure the new Control/Power Panels are installed and operating will be done by an Aquionics Factory Service Technician.

The Electronic Lamp Driver (ELD) option is included in the quoted system. By upgrading the InLine 7500 unit to an Electronic Lamp Driver (ELD) power option, the lamp output can be varied from 100 to 35% in 1% increments (54 kW to 19 kW) compared to the standard transformers which operate from 100%, 80% or 60% at three discrete power settings.

Replacing the Control/Power Panel and refurbishing the UV chamber, which is approaching the end of its expected service life, will assure continued operation at peak efficiency, thereby helping to avoid operation outside of the plant's permit. Not only is the new unit more efficient but the maintenance cost and availability will be improved since the existing units use obsolete parts which are more costly and difficult to attain.

Over the past 30+ years of industry experience, the Aquionics closed vessel medium pressure high intensity reactor design has been upgraded to improve performance and energy efficiency. Through these value engineering and energy saving improvements, valuable space is saved, lowering total installed cost and allowing room for other pieces of treatment equipment or retrofits with limited space. As the original manufacturer of medium pressure closed vessel units with over 30+ years experience, we provide the most cutting edge equipment available.

Sincerely,
Steve Doyle
Western Regional Manager
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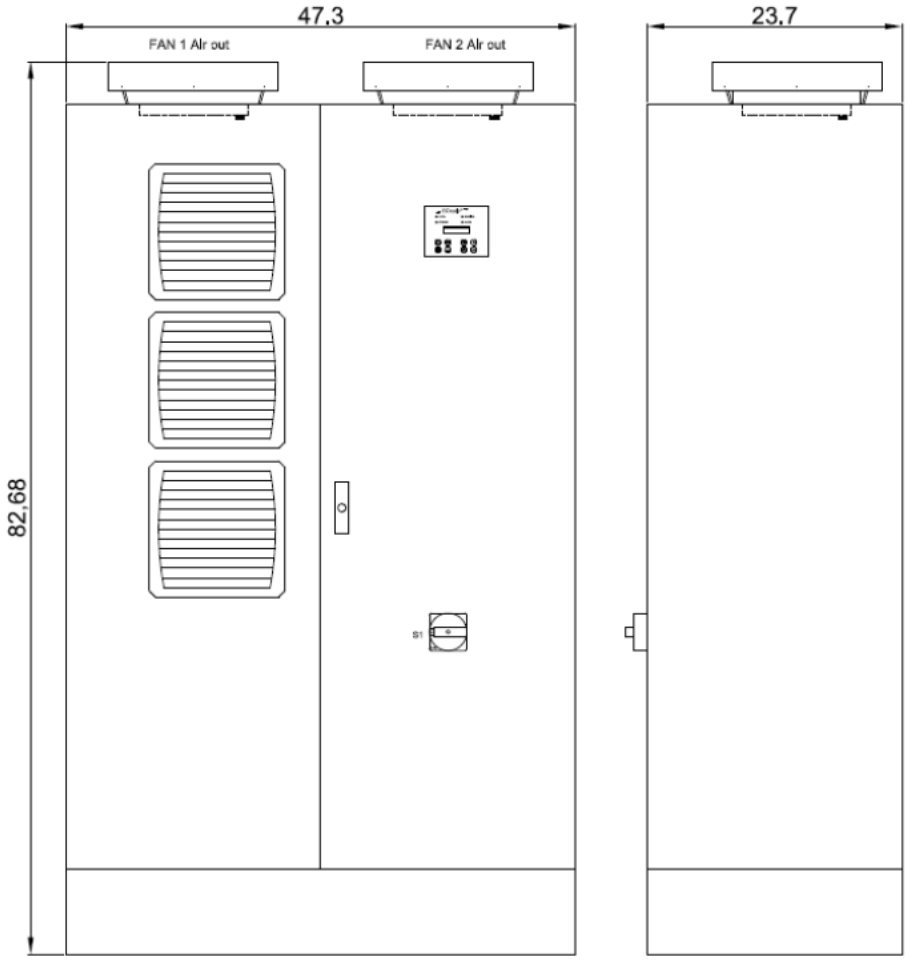
InLine Upgraded Product Overview

Electrical/Control Enclosures

One new combined power/control enclosure in an epoxy coated free standing steel cabinet will be provided. The cabinet has a mechanical locking mechanism that secures the entire length of the door. In additional to the mechanical lock, an electrical isolation switch that prevents opening the front door when the unit is turned on.

The power/control enclosure will contain a PLC based controller with OIT mounted at eye level on the front panel. All information on system status including warnings and alarms will be presented on the operator interface. The power/control enclosure will have the ability to operate the automatic cleaning mechanism.



New Automatic Wiper

The chambers are fitted with an automatic/mechanical cleaning mechanism, which consists of a SS yoke and Teflon bosses. Each boss holds one Viton molded wiper ring which fits over the quartz sleeve. Wiper rings are field replaceable.

Automatic Wiping Mechanism

The cleaning mechanism is electrical/mechanical and is operated by means of a two-pole bi-directional capacitor driven motor and an acme lead screw. Limit switches are provided at the ends of the chamber to signal the controls system to stop the motor when it reaches the end of the chamber.

The cleaning system is field adjustable and can be activated from the control system or manually at the operator interface.

Project Name:	Laguna County Sanitation District	
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Aquionics Bid #:	19-06-SD001	
Date:	June 10, 2019	

Existing Design Criteria

Design Flow Rate	3.7 MGD
Minimum UV Transmittance @253.7 nm	65%
Total Suspended Solids	<5 mg/L
Turbidity	<0.2 NTU
Effluent Fecal Coliform Count	< 2.2 fc/100ml
Minimum Calculated UV Dose	110 mJ/cm^2
Minimum Field UV Dose	200 mJ/cm^2

Aquionics Scope of Supply

Upgraded Chamber Components	
New Lamp Type	B4035E+
New Lamp Power	4 kW
Number of Lamps (each unit)/Orientation	12/Horizontal and Perpendicular to Flow
New Lamp Life (hrs)	10,000
New UV Sensors	4 – wet relative sensors (same as existing)
New Quartz Sleeve and seals	12
New Wiper Mechanisum including yoke, lead screws, limit swithches, motor, seals and rings	Automatic, Electric Motor
New Power Cabinets & Control Cabinets	
Proposed UV Cabinet	InLine 7500
Number and type of Power/Control Cabinets	1 per unit (4) total, Floor Standing
Lamp Driver Type	Electronic (variable output 35%-100%)
Max Power Consumption (each unit)	54 kW; (+/- 5% ballast losses included); Ballast PF is 0.98
Power/Control Cabinet Dimensions	82.7” x 47.2” x 23.62” (HxWxD)
Material & Color	Painted Steel; RAL 7035
Cabinet Protection	NEMA 12 (IP54) -Forced Fan Cooling
Power Supply	480V 3L 60Hz
Controller	Aquionics proprietary UVtronic+ PLC Based Controller with OIT mounted at eye level
Operating Environment	40-95˚F, 0-95% humidity (non-condensing)
Cable included	30 ft – Lamp, temp sensor, UV sensor, limit switches
Cabinet Labeling	UL 508A

Included Onsite Commissioning Service	
Onsite Services Commissioning/Training	2 trips, 8 days

Optional Recommended Spare Parts	
UV Lamps	24
Quartz Sleeves	24
Quartz Sleeve O-rings	48
Wiper Rings	24
UV Intensity Sensor	1

Other – Non Standard Items	
Optional Online UV Transmittance Monitor	1

Customer Scope of Supply

- Modification and preparation of civil structures if required
- **Labor for removing old cabinets and labor for installing the new cabinets and new instrumentation provided (online UVT monitor)**
- Install hydraulic isolation & bypass system if applicable
- Remove old conduit and install new conduit and pull new wiring
- Install all the cable conduits, trays or duct banks.
- Unloading of all components supplied by Aquionics
- Lab fees or other 3rd party costs associated with testing
- Placement in storage of all Aquionics supplied equipment in a clean, dry and climate controlled facility
- Cranage to place new electrical cabinets if applicable
- Flow signal (4-20 mA) from flow meter to each UV cabinet to allow for dose pacing, if applicable
- **Connection to SCADA or existing Master PLC for complete dose calculation for permit**

Price Summary

ITEM NO.	QTY	DESCRIPTION	PRICE
1	**4**	UV System InLine 7500 as defined in scope of supply equipment cost	$448,141
2	**1**	Cost of start-up labor	$10,000.00
3	**1**	Freight charges	$16,074.01
4	**1**	Online UVT Monitor	$8500
5	**1**	Recommended Spare Parts	$14,300

Commercial Notes

1. Ocean Freight (CPT – Carriage Paid To) to jobsite is included in amount. Offloading and arrangement of the equipment is not included.
2. Price quoted is firm and valid for 60 days.
3. Price is based upon the following payment terms (net 30 days):
    a. 90% upon shipment of equipment from factory
    b. 10% upon UV onsite validation
    c. If validation is not completed within 6 months of UV delivery, balance of PO will be due.
4. Submittals are available within 1-3 weeks after acceptance of purchase order.
5. Equipment shipment is within 18 – 20 weeks after approved submittals.
6. Aquionics does not provide for any process utility requirements including electrical power.
7. This pricing and scope is based upon Aquionics General Terms of Business.
8. No taxes, of any kind have been included in this firm proposal.

UV System Warranty

Aquionics warrants the UV equipment for 1 year from beginning of benefical use.

The products are warranted against defects in material and workmanship. They will perform in accordance with the specification of this offer, assuming proper installation, care and handling according to operations manual.

Consumables such as lamps and wiper rings etc. are excluded as they have their own warranty. This warranty is subject to the following conditions:

- The equipment is operated and maintained in accordance with the Operation and Maintenance Manual
- All consumables and spare parts used must be genuine Aquionics parts
- All service and repair work is done by Aquionics Service Technicians or an Aquionics authorized agent.

Lamp Warranty

We manufacture and procure the most advanced and reliable medium pressure and amalgam UV lamps currently available for commercial use. They are developed from unique research programs, using the finest materials available. Occasionally a small number of these lamps can fail prematurely. We operate a fully traceable manufacturing process, and so it is important that we are informed of lamp failures. You will be asked a number of questions to help us determine why the lamp failed. Your statutory rights are not affected by this document.

Any claim on this warranty will require the return of the lamp to Aquionics for inspection and approval, according to the general conditions listed below. You must include the UV vessel model, UV vessel serial number and lamp serial number, lamp position, lamp installation date, failure date, and hours of operation from the system's hour counter, lamp runtime hours and number of lamp starts.

The warranty we offer is as follows:

Medium Pressure Lamps (InLine Systems)

- ***Continuous Operation (24 hours per day)***

Lamps installed in the system are guaranteed to operate for a minimum of 2,000 hours. Replacements will be prorated on the following basis pending the lamp and ballast type:

Electronic Ballast/Lamp Systems	Conventional Ballast/Lamp Systems
0-2000 hours no charge	**0-2000 hours no charge**
2001-5000 hours 25% cost of replacement	**2001-5000 hours 25% cost of replacement**
5001-7000 hours 50% cost of replacement	**5001-7000 hours 50% cost of replacement**
7001-10,000 hours 75% cost of replacement	**7001-8,000 hours 75% cost of replacement**

- **Intermittent Operation (1-6 lamp starts per 24 hours of operation)**

Lamps installed in the system are guaranteed to operate for a minimum of 1,000 hours. Lamp operations will be guaranteed against failure under the following conditions:

1-6 lamp starts per 24 hours of operation will be prorated on the following basis:

0-1000 hours no charge
1001-2000 25% cost of replacement
2001-3000 50% cost of replacement
3001-4000 75% cost of replacement

Note:

1. **More than 6 lamp starts per 24 hours of operation, no warranty is offered.**
2. **Failure to provide requested data in paragraph 2 will invalidate warranty claim**
3. **Lamps beyond 4 years age, determined by manufacture date, no warranty is offered**

Standard General Warranty

We warrant all equipment to be free from defect for a period of 18 months from the date of shipment or 12 months from the start-up date of service (commission date), whichever is sooner. Any defective component/part will be replaced at no cost subject to the limitations elsewhere in this document. The total liability of Aquionics Inc. is limited to the cost of materials supplied. The provision of labor is not warranted.

5 Year General Warranty

Aquionics offers a free extended warranty of 5 years from commissioning or 6 years from date of shipment, whichever is sooner, provided that (i) the warranty registration form has been fully completed and returned to Aquionics within four weeks of commissioning, (ii) the customer has entered into a service and maintenance agreement with Aquionics or a Aquionics approved service provider and can provide documentation of at least one service visit per year, and (iii) the system has been operated and maintained according to the service requirements set out in the Aquionics system manual, including replacement of consumable items at the correct interval with genuine Aquionics replacements.

Warranty Exemptions

Exemptions from the warranty are breakage in transit, physical damage, connection breakage, connection to an incorrect power supply, or the use within the system of any non-OEM parts. Additional exemptions are lamp failure due to overheating caused by, lack of water, or minimal flow rates while system is operating. System must be operating according to Aquionics' Installation and Operating Instructions. Installation of the lamp to commence within 2 years of manufacturing as indicated by the lamp serial number. Warranty cannot be claimed on lamps more than 4 years after manufacturing as indicated by the lamp serial number.

All copies or versions of lamp & equipment warranty that are preceded by this document are void and replaced by this current version