

**SPECIFICATION OF SUPPLY AND INSTALLATION
OF UV DISINFECTION SYSTEM**

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SPECIFICATION OF SUPPLY AND INSTALLATION OF UV DISINFECTION SYSTEM

1. General

This specification provides for the supply & installation of all materials connected with UV treatment system. Design water quality parameters are given in the particular specification.

UV disinfection shall be manually adjustable. Accuracy of UV indicator shall be defined with 255nm-280nm range wave length and most effective at wave length of 264 nm.

2. UV Disinfection Units System

In UV disinfection, the water to be disinfected is exposed to short wave length UV light. This UV – radiation is a quick and effective germicide.

This will include

- Radiation chamber
- Lamps with corresponding lamp protection tubes
- Control cabinet containing electronic ballasts
- System Controller

It is necessary to design or install UV disinfection system to ensure that the water flow remains within the maximum and minimum permissible range. Disinfection cannot be guaranteed otherwise which is specified in particular specification. When UV disinfection systems operate for a long period without a through –flow of water especially in large systems, monitor the water temperature and shut down system if necessary. The system should be located in a dry frost proof area. It must be protected against chemicals dyes and fumes. The ambient temperature and the re-radiation temperature in the immediate vicinity shall not exceed 40⁰ C. If the water to be disinfected contains suspended or dissolved solids a suitable filter shall be installed upstream from the disinfection system. Ensure that the maximum permissible operating pressure given in the accompanying data sheet shall not be exceeded.

3. Calibration of Instruments and meters

UV disinfection unit shall be calibrated in the metric units as follows:

- (i) Pressure shall be indicated in metric water column.
- (ii) Flows shall be indicated in cubic meters/hours.
- (iii) Quantities shall be indicated in cubic meters
- (iv) Water levels shall be indicated in meters

4. Commissioning of Equipment

After the satisfactory completion of all tests, the contractor shall operate the equipment for 7 days, and during this period, instruct any person nominated by the Engineer regarding the operation and maintenance of the equipment.

5. Spare parts

Spare parts recommended by the manufacture shall be provided for 5 years of period. List of spare parts with their prices shall be provided by Contractor.

6. Maintenance Period

During the specified maintenance period of one year the contractor shall attend to any repairs and make good all defects that may be detected or may arise in the equipment during the maintenance period. He shall also replace any equipment or part of the equipment which fails or does not give satisfactory performance during the maintenance period. These repairs and replacements shall be carried out within 07 days of being notified to do so and all expenses involved in this connection shall be borne by the contractor.

7. Power Supply

Power supply is available at site. A suitable power cable shall be provided by the Contractor to obtain the necessary power supply to UV Unit. The Contractor should also carry out all necessary connections and provide suitable switches, accessories etc. in order to ensure satisfactory operation.

PARTICULAR SPECIFICATIONS

1. Design Water Quality Parameters

| Water quality parameter | Expected influent value to UV disinfectant |
|-------------------------|--|
| Turbidity | [insert value] |
| Temperature | [insert value] |
| Iron | [insert value] |
| PH | [insert value] |
| Total hardness | [insert value] |
| Colour | [insert value] |
| Manganese | [insert value] |
| TDS | [insert value] |

2. UV equipment

| | |
|---|---|
| Minimum Flow Rate | [insert value] |
| Maximum Flow rate | [insert value] |
| Average Flow rate | [insert value] |
| Operating Pressure | [insert value] |
| Maximum system pressure at the UV reactor | [insert value] |
| Protections and Indicators [select as appropriate to the application] | Lamp or ballast failure/- High temperature/Wiper failure /UV lamp status/UV reactor status/ UV intensity, Level/flow of the channel inlet shall be interlocked with UV operation. |
| Instrumentation and Control [select as appropriate to the application] | Lamp cleaning cycle/UV lamps on/off/UV reactor on/off control /Manual/Auto lamp cleaning cycle control |
| Options & features needed [select as appropriate to the application] | UVT analyzer/monitoring window of the UV sensor/Anti fouling wiper mechanism/UV sensors |
| Type of piping & valve | [give details] |
| UV sensor | [give details] |
| Controller pipe | [give details] |
| UV indicator | [give details] |
| Type of indicator | [give details] |
| Feed range adjustment | [give details] |
| Safety arrangement | [give details] |
| Lamp dimensions | [give details] |
| Allowable pressure for lamp sleeve | [give details] |

| | |
|---------------------------|----------------|
| Power requirement | [give details] |
| Power quality tolerance | [give details] |
| Cleaning mechanism | [give details] |
| Dose maintaining strategy | [give details] |
| Materials of construction | [give details] |
| Dimension | [give details] |