Is There an Oversight in UV Reliability: Examining the Critical Role of Reliable Power in UV Disinfection

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FORMAT

30 minute presentation

KEYWORDS

UV, Reliability, Power, Power Quality, Regulations, Control

ABSTRACT

Ultraviolet (UV) installations in the US are rapidly expanding in drinking water facilities. Especially as the EPA and DHS tightens chlorine regulations around Disinfection Byproducts, storage, tracking, and transportation.

There has been a lot of literature published on who UV can be used instead of chlorine. These papers talk about proper techniques, validation procedures, and reactor design criteria for proper treatment. But all of this literature and requirements make one general assumption. The assumption is that the lights are on. For this to occur, power must be available.

But is power reliability critical? Literature on this aspect of UV is sorely lacking. What is known is that the EPA allows up to 5% of a facilities monthly flow to be discharged without the proper amount of UV Treatment. Some believe that this requirement negates the need for power quality, or power reliability beyond a generator backup. But is this really true?

This presentation takes a deep analysis into the realm of power in UV systems. It looks at the EPA requirements and demonstrates why the above assumption is incorrect, and the possible ramifications of making this assumption. This presentation then examines what the EPA, AWWARF, IEEE, NEC, and other organizations and experts are saying about power quality and power reliability. The result is a list of requirements that must be met to assure proper power system design and maintenance.

This presentation then takes this list and shows various design examples and how these requirements are met. These solutions include design techniques, and equipment required for large facilities, medium sized facilities, small facilities, and package plant applications.

The intent of the presentation is to make the attendee more aware of the power system design of the UV application, and to start the discussion on the power requirements of UV.

About the Author:

Grant Van Hemert, PE is a water wastewater applications specialist for the Schneider Electric Water and Wastewater Competency Center. He has 17 years of experience in water and wastewater automation, power, and efficiency. Mr. Van Hemert is the past chairperson for the AWWA Instrumentation and Control Committee.