

## Peristaltic Metering Pumps Create Fool Proof Fluoridation System for WTP

Orange Water and Sewer Authority - Jones Ferry Road Water Treatment Plant  
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The WTP chief operator, Dusty Martin, of the Orange Water and Sewer Authority located in Chapel Hill, NC, was content with his present use of pulsating pumps for the fluoride system. However, since the Jones Ferry Road Water Treatment Plant serves as a model for state of the art improvements and is routinely used as an engineering maintenance example for the student engineers studying at the local university as well as at universities worldwide, Dusty was curious to compare a peristaltic pump in that same application.

The Jones Ferry Road Water Treatment Plant can treat up to 20 million gallons of raw water daily drawn from two nearby sources, University Lake and the Cane Creek Reservoir. Daily water use by the 70,000 people in the Carrboro-Chapel Hill area



averages about 9 million gallons per day. The water treatment process encompasses several phases. The first phase is the addition of powdered carbon to the water supply from the lakes to improve the taste and control odor in the water. Secondly, the solid particles are separated from the water in settling tanks. Once that process is complete, the water is then filtered through layers of sand and anthracite coal. Lastly, chemicals are added for disinfection and public health. The chemicals include chlorine, ammonia, and fluoride. Although fluoride is not necessary, it is encouraged by the Board of Dental Health and approved by both the N.C. State Public Water Supply and the OWASA.

The fluoride ( $H_2SiF_6$ ) treatment process consists of using one primary pump and one backup. Each pump is able to do 120 GPD, 24/7. The fluoride output is generally in the range of 63 mils/min or about 1 GPH. The fluoride process treatment is the final chemical stage before the water is sent to the channel of finished water. The pumps are wired via 4-20mA into the SCADA (Supervisory Control and Data Acquisition) system for monitoring and alarm responses. Dusty stated that he was amazed how easily the peristaltic pump hooked up into their SCADA system. Continual monitoring using powerful graphic and alarm software programs allow the SCADA system to ensure the exact amount of chemicals have been dispersed into the water supply. Presently, the peristaltic pump has been running about 3200 hours without any type of maintenance issues. The tube life is generally the major concern for peristaltic pumps but in this application very little output pressure is experienced. Most importantly, Dusty cites that the dosing is much more precise, accurate, and consistent using a peristaltic pump compared to a pulsating pump. Furthermore, he added that the peristaltic pump is not effected by any air pockets that may enter the system every once in a while through the day tank. Overall, Dusty highly recommends a peristaltic pump over a pulsating pump for fluoride injection.

Additionally, Dusty Martin has installed peristaltic pumps on all of his chlorine injection, both on the pretreatment and finish water sides. The finish water stage injection sees an 80 psi in which the peristaltic pump has performed exceptional albeit with a planned motor reversal every 400 hours. All in all, the peristaltic pump has proven very reliable and accurate for many chemical injection applications associated with water treatment.