by Doug Guenther

# Peristaltic pumps deliver with reliability

As one of KRWA's Technical Assistants, I work with hundreds of water systems west of US Highway 81 in Kansas. Cities and rural water districts commonly use groundwater as their water source. The treatment is simple, predominantly with either gas chlorination or calcium or sodium hypochlorite. Normally the solution types are injected into the water system via a pulse or diaphragm pump. Recent opportunities to work with another type of pump, a peristaltic pump, have shown these unique pumps to have abilities that provide very reliable service. Two water systems in Kansas' western region are using this type of pump to inject chlorine solution. Operator experience shows that it takes far less maintenance than the typical pulse pump commonly used.

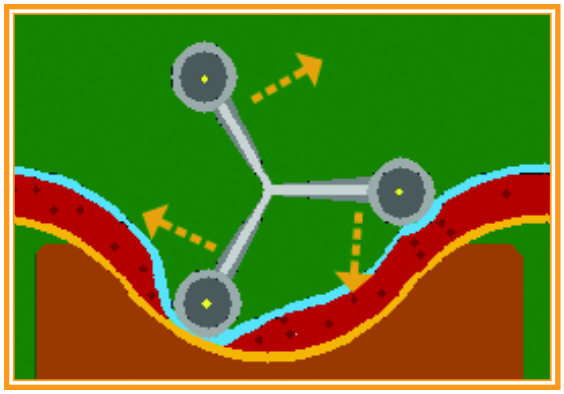
*Doug Guenther*
*Tech Assistant*

A peristaltic pump uses rotating rollers that press against special flexible tubing to create the pressurized flow. The tube is compressed at a number of points in contact with the rollers or shoes. The material is moved through the tube with each rotating motion. Individual components of peristaltic pumps include a pump head, drive, and tubing. With further research, I've found that peristaltic pumps are also referred to as flexible member pumps, flexible tube pumps, dispensing pumps, or dosing pumps.

Of special interest for the application of chlorine solution is mainly the advantage that components of the pump may be chosen when the integrity of the media is a requirement of the application since the material being pumped does not contact any internal parts. Seals and valves are not needed as in other pumps.

Of special interest for the application of chlorine solution is mainly the advantage that components of the pump may be chosen when the integrity of the media is a requirement of the application since the material being pumped type does not contact any internal parts.

Unlike diaphragm pumps, no foot valve, air bleed or bypass are needed. The inlet line in the solution container doesn't have to be straight. The pump can lift 20 to 30 feet depending on the model. Only a check valve is needed at the injection point. Peristaltic pumps don't have to be primed and can also pass air or gas. My experience is that air entering a pulse pump is often the cause for pumping failure. Peristaltic pumps are also reversible and can be flushed to clean out the tubing or hose.



*In this example, three rollers on rotating arms pinch the tube against an arc and move the fluid along. There are usually three or four sets of rollers.*

Peristaltic pumps should be sized in a similar way that diaphragm pumps are in that the dose should be in the middle range of the pump capacity. The tubing or hose and pump head configuration can be selected. The pump head in peristaltic pumps can have a specified number of rollers. The tubing material and length can often be specified based on the requirements of the situation. The hose and fitting materials need to be compatible with chlorine or any other chemicals being used. Peristaltic pumps probably will not work in high-pressure situations. Most models I have looked at have about a 100-psi maximum operating pressure.

Numerous small water systems in Kansas have part-time


*Gary Clark, operator at Mitchell County Rural Water District No. 2, checks adjustment on a peristaltic pump that supplies sodium hypochlorite to a contact basin in an effort to reduce TTHMs.*

*The city of Esbon's application of liquid chlorine solution has been trouble free since beginning use of the peristaltic pump. Operator Bob Windmuller is pictured above checking the unit.*

or new operators and diaphragm pumps and consistent chlorination becomes an issue because the maintenance and understanding of the operation of the pump is not understood. Sometimes, just by sitting idle, gas forms in the lines of pulsating pumps. A pump that was new and working the day before doesn't the next.

Peristaltic pumps are very new to me. I'm impressed with the applications that I've seen. If you are having problems with chlorine solution feed pumps, you may want to give the peristaltic pump a try.

*For more information call KRWA at 785/336-3760 or check the Association web site at www.krwa.net.*


***Left:*** *The photo shows a spec tag on a vertically mounted Stenner unit with a 5-gallon per day maximum pump rate.*

***Above:*** *A cam action of another pump unit can be seen at the right of the photo.*