

Mysore Satish

Biography

Dr. Satish received his B. Sc. and B.Eng. from National Institute of Engineering, India and M.Eng. and Ph.D. degrees from Concordia University, Montreal in the area of Hydraulic Engineering. Dr. Satish has been on the Faculty of TUNS/Dalhousie University since 1987. He has served as a consultant to the industry and government agencies for the last 25 years. He has published more than 150 papers in international journals and conferences. His specializations include renewable energy, environmental fluid mechanics, design of open channel and closed conduit flow systems and design of hydraulic structures such as multiport diffusers for effluent disposal in rivers and oceans.

Presentation Abstract: Energy Recovery from PRV Stations in Water Distribution Networks

When there is a change in elevation from water supply reservoirs to the treatment plants or from water treatment plants to the distribution systems supplying the customers, main pipes carrying the flow often times have an excess of hydraulic energy. This energy in the form of static pressure, in excess of the downstream demand, is dissipated using devices such as a pressure reducing valve (PRV) or through the use of intermediate reservoirs. This excess energy that would be otherwise lost can be recovered to generate electric power (micro-hydro systems) or supply /augment energy to directly run mechanical or fluid systems (ex: desalination devices).

The recovery of energy and production of electricity may be accomplished by the introduction of single or multiple turbines in parallel with the PRV. Installing more than one turbine may become necessary in situations where there are significant variations in flow. Conventional turbines such as mixed flow type Francis Turbines or axial flow type Kaplan Turbines could be conveniently installed in the pipe systems, as dictated by the prevalent site-specific hydraulic conditions and the economic considerations of the project. However, in many cases when the power generated is relatively small, use of the conventional turbines may prove uneconomical. For situations where the flow conditions are steady, pumps may be used in reverse to act as turbines (PAT) and are relatively very economical.

This presentation deals with a comprehensive look at the available flow to wire technology as well as possible opportunities in Nova Scotia.