

## **Modeling Energy Saving in Operation of Pressurized Irrigation Systems**

### **Abstract**

In the most of the irrigation systems, pumping station equipped with constant speed pump. These pumps waste a lot of energy and water. Providing a method for adjusting the operation of the pumps and control of system pressure can improve efficiency of water distribution and energy consumption. Using of variable speed pumps make high efficiency with the least energy consumption and is consistent with system demands. In this study variable speed pump station are designed at 80 ha olive cultivated area in Qazvin, Iran for different growing season using Water GEMS model. Water and energy losses were evaluated and compared with operation of the constant speed pumps. The results showed that amount of water losses in the constant speed pumping stations with perfect design is 10 to 51 percent in the growing season with maximum water needs, depending on type and operation of station, while the use of variable speed pumps in the pumping stations decreases about 49 percent energy consumption.

**Keywords:** Irrigation Systems, Variable Speed Pumps, Iran, energy