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Energy tip of the month

Energy saving in multiple pumps with common header

Normally the utility process lines supply cold / hot water , thermic fluid , liquid raw material to various process equipments / machines in a plant. However, these process equipments / machines may not need these fluids on continuous basis. E.g. Pumps to circulate cold water output of cooling tower to process equipments .

So, there are always variations in the flow requirements .To meet these variable flow requirements , one may find different arrangements as follows :

01. Bypassing the excess water flow . Extremely inefficient system. (Hopefully , nobody uses this system now a days)
02. Manual / automatic control valves to control flow. This reduces the pump power consumption as load on the pump is reduced. However , the pump does not run in the high efficiency zone .
03. Switching of the pumps based on the flow requirements . Such system can not respond to faster changes in the flow requirements.

So, a better option is to use an **Intelligent Flow Control System (IFCS**) supported by an accumulator tank .

Such intelligent systems are available which will house :

01. VFD for atleast one pump

02. DOL / SD / Softstarters for other pumps.
03. Accumulator tank (with pneumatic control) to support sudden requirement of flow when all the pumps are in switched off condition .
04. An intelligent controller which is programmed to achieve :
    a. All pumps running with highest possible efficiency
    b. Equal running of all pumps
    c. Maintaining optimum pressure in the pipe lines for all the time .
    d. Reduction in water hammer effect , which results into reduction in flow carrying capacity over the years . (due to scaling from inside walls of piping)
    e. Reduction in pulsations during switching on or off the pumps .
05. Transducer to sense the flow demand .

The automated system will switch the pumps (supplied through starters) as per the demand . The VFD supplied pump will modulate the flow with fine control for accurate control. The intelligent controller needs to be programmed to match the efficiency curves of the pumps so as to ensure pump operation in the best efficiency zone .

Such system **offers best energy savings in pumps** with common header supplying to variable flow requirement. Existing pumps can be fitted with such systems. One can expect **saving to the tune of 40%** depending upon the variable flow requirements.

So, just look for such applications at your plant .

There is great opportunity to stop wastage of energy.....