

펌프효율분석을 위한 측정시스템에 관한 연구

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A Study on the Measurement System for Analyzing a Pump Efficiency

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Abstract: Pumps are used widely in industry, the commercial sector and ships. A poorly selected pump or a pump that does not run at optimum design duty point is a classic symbol of wasted energy and money. It, therefore, becomes important to evaluate the efficiency of these pumps. This paper analyzes traditional technique and instrument to measure some parameters needed to calculate a pump efficiency. The pump efficiency measuring instrument (PEMI) was made and tested on real pump systems. It has been given the accurate results compared with performance curve given by pump maker.

1. Introduction

The thermodynamic method has recently been established as the standard and required method of measuring pump efficiency and performance in many parts of the world.[1] In this method, pump efficiency is calculated from the pressure and temperature parameters. It requires sensitive temperature probes capable of measuring millidegrees at the inlet and outlet of the pump and result much depend on them. It is very difficult to find out these exact transmitters. The advent of the traditional technique has provided a solution to this problem.[2]

2. Experiment system for pump efficiency measurement

Description of the experimental installation and the measuring instruments is shown in Fig. 1. Fig. 4 is user interface when pump is being operated at 6.2bar. In the upper left corner, there are set points about low efficiency, ratio of current and pressure transducer, etc. Pump performance and efficiency are continuously.

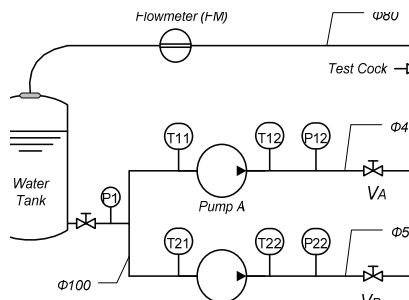


Fig. 2 Configuration of experimental system

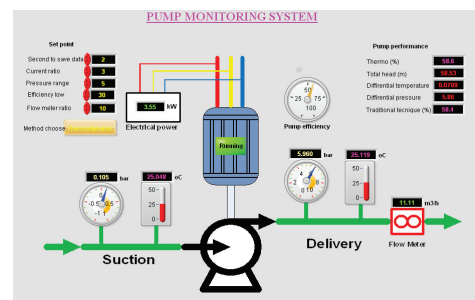


Fig. 2 Monitoring program for a pump efficiency

3. Conclusion

This paper introduced the traditional technique to measure pump efficiency. PEMI was produced and used to measure pump efficiency in application systems. Traditional technique has a high accuracy. Their efficiency characteristics measured by traditional technique have the same of pump producer curve.

Acknowledgment

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References

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- [2] <http://www.pumpcalcs.com/calculators/view/107/>