ELECTRICAL AUTOMATION SYSTEMS TOWARDS INTELLIGENT AND ENERGY EFFICIENCY APPLICATIONS

Musse Mohamud Ahmed

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APPLICATIONS

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CHAPTER 31

FAN MOTOR EFFICIENCY REQUIREMENT

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31.1 Introduction

The main objective of this chapter is to discuss fan motors and to analyze the optimization potential of fan systems through interaction point between the fan curve and the system curve. As such the fan static pressure and fan pressure had been chosen for fan selections. From our basic understanding, the fan energy efficiency is a function of flow, even for operation at constant speed. At very low flow, this efficiency is low but increases with increasing flow. At some particular flow, the efficiency reaches a maximum and this value is frequently referred to as 'peak,' or, 'optimal, efficiency. With further increasing flow, the efficiency decreases.

31.2 Fan Motor Efficiency Target

Optimizing industrial fan systems can take on many forms, but any fan optimization project must meet the needs of standard process. The scope of this study is to obtain the fan efficiency based on a scale of energy grades that can be divided into two parts either Fan Efficiency Grade (FEG) or Fan Motor Efficiency Grade (FMEG) for various types of fans. This scale should benefits party, the users and manufacturers in a sense of providing them a guidelines in choosing and designing the proper fans with high energy efficiencies.

Moreover, the outcome of energy efficiency is to promote and maintain the economic efficiency in fan industry in which energy cost will be more expensive and when Malaysia becomes a net importer of energy sometime after 2010 where energy standards will most definitely become mandatory.

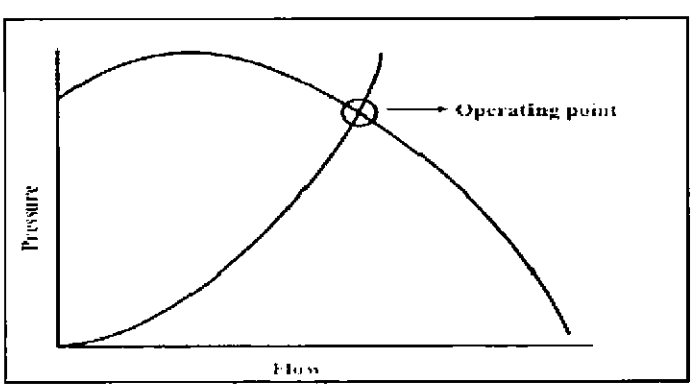

Figure 31.1: Typical Fan Efficiency Curve