ABSTRACT

Abstract

In Singapore, the predominant cooling technology employed for commercial and industrial space cooling is electric-driven cooling. This phenomenon may be set to change, as natural gas-driven cooling may be applicable here in the near future. Currently, natural gas is used only for power generation. However, natural gas will soon be available for direct retail to *industrial and commercial consumers*, and our manufactured gas network will be converted to transport this natural gas. Coupled with the recent advances in natural gas cooling technologies, as well as the benefits they offered, including simple economics, reduced ozone depletion, higher resource efficiency and better indoor air quality (IAQ), the future application of absorption, engine and desiccant gas cooling in Singapore is never rosier.

This dissertation aims to provide an insight into the development natural gas cooling technologies and their potential applications in our local context. First, the development of the gas and electric industry in Singapore will be traced. Next, the author will examine the factors favoring the application of natural gas cooling technologies. This is followed by reviewing the three primary types of gas cooling machines that are currently available on the market. And finally, an economic feasibility study is conducted to ascertain the possibility of replacing electric chillers with gas-driven chillers.

**Keywords:** electric-driven cooling, natural gas-driven cooling, natural gas cooling technologies, benefits, gas and electric industry, economic feasibility study.