Public Abstract

First Name:Jorge

Middle Name:Fernando

Last Name:Abad Moran

Adviser's First Name:Bin

Adviser's Last Name:Wu

Co-Adviser's First Name:

Co-Adviser's Last Name:

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Title:AN INVESTIGATION INTO THE FACTORS AFFECTING INDUSTRIAL IMPLEMENTATION OF COMBINED HEAT AND POWER (CHP)

This dissertation investigates the factors affecting adoption rate of combined heat and power (CHP). CHP, also known as cogeneration, is an efficient approach to producing electricity and thermal energy simultaneously from a single fuel source close to the point of use. CHP is an energy efficiency (EE) initiative with several economic, environmental and societal benefits. However, its full potential has not been achieved due to the presence of barriers and the creation of what is called “CHP gap” or “CHP paradox”. To overcome this “CHP paradox”, this dissertation developed a framework for the effective promotion and implementation of CHP initiatives. This framework was analyzed using Industrial Assessment Center database and the results of a survey taken by CHP stakeholders. Twelve hypotheses were tested using logistic regression and ANOVA models. It was found that payback period and savings generated by CHP projects are the most important factors that influence CHP adoption rate in the early stages of the CHP evaluation process. During the latest stages of the CHP development project, utilities programs, outreach programs and supportive regulation are the significant factors that influence CHP adoption rate. With the information generated during this dissertation, an implementation guide was developed. This implementation guide takes all stakeholders into consideration and presents two tools that will help industries in the early stages of the CHP decision-making process.