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MEC299

INVESTIGATION ON PRESSURE VARIATION OF STEAM ON EFFICIENCY OF STEAM POWERED MOTOR

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ABSTRACT

A steam engine is a heat engine that performs mechanical work using steam as its working fluid. The steam engine uses the force produced by steam pressure to push a piston back and forth inside a cylinder. This pushing force can be transformed, by a connecting rod and crank, into rotational force for work. However, for high efficiency, the steam must fall through a wide temperature range because of its expansion within the engine. In this study, different pressure of steam relative to different load weight and different engine motor speed on a steam powered motor. The result for efficiency from the research and experiment will be taken. The pressure 1 bar to 3 bar and the weight from 0 gram to 50 gram with interval of 10 gram. The steam may be heated beyond the temperature at which it is produced by boiling water. The efficiency of steam motor may increase along with higher temperature and lower load weight.

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CHAPTER 1
INTRODUCTON

1.0 Introduction

1.1 Background of Study

The steam engine continues to play an important role in the British industrial revolution's economic history. Traditional descriptions of the industrialization process, such as those of Rostow (1960) and Landes (1969), are now widely acknowledges to have conflated the economic importance of the steam engine with its early dissemination. In fact, data on the cost effectiveness of early steam engines, together with accessible facts on the rise of steam power in the British economy, indicate that steam power contributed only a little amount to aggregate productivity growth until at least the 1830s (Tunzelmann, 1978). However, it is important to keep in mind that these revisionist interpretations are concerned with the timing of the economic effects of the diffusion of steam power technology and do not attempt to cast doubt on the technology's basic role in long-term economic progress. As a result, Cipolla (1962) and Wrigley (2004) describe steam power as a major technology accomplishment that transformed the energy balance of the British economy by allowing inorganic fossil fuel deposits to be tapped (coal).

This brief overview implies that the basic contours of the relationship between steam power diffusion and economic growth have most likely been successfully delineated. However, this only applies to the diffusion process's overall dimensions. In fact, various contributors have suggested that a full understanding of the economic development processes that occurred throughout the British industrial revolution requires a regional perspective (Pollard, 1981; Langton, 1984; Hudson, 1989; Berg and Hudson, 1992).

Kanefsky (1979) and Kanefsky and Robey (1980) have compiled a thorough data collection on steam power's introduction in Britain during the eighteenth century. They have created a quantitative descriptive sketch of the diffusion process based on these facts (Kanefsky and Robey 1980). This paper has two purposes. The first goal is to build on Kanefsky and Robey's work by offering a fresh quantitative characterization of the timing, rate and geographical breadth of steam engine spread in the eighteenth century, using a

framework based on technological diffusion economics. The second objective is to determine the elements that influence the adoption of steam engine technology in various areas. We aim to investigate the influence of coal prices, which von Tunzelmann (1978) and Kanefsky (1979) identified as a crucial factor affecting steam engine usage. It's worth mentioning that both von Tunzelmann's (1978) and Kanefsky's (1979) analyses were based on cost-effectiveness estimates of "representative" Newcomen and Watt engines at various coal prices, supplemented with anecdotal data (e.g., von Tunzelmann 1978).

1.2 Problem Statement

Uncontrolled heating can cause the steam pressure in the boiler to rise to a stage where it bursts, causing serious injury to people. The steam engine's temperature may then decrease because of the changed load weight.

The pressure in the steam connection drops, which causes the valves to throttle. As a result, the steam pressure at entry is lower that the boiler pressure and it continues to fall until cut-off. Because the valve closing isn't instantaneous, cut-off isn't a precise point. The valve takes a long time to open during the release stroke. Before the end of the stroke, the exhaust valves close, trapping a large amount of steam in cylinder. Because the steam acts as a cushion, the piston rod is less stressed. Before the end of the exhaust stroke, live steam is admitted.

1.3 Objectives

The main objectives of this project must be achieved are:

1. To investigate the impact of varying pressure and load weights on the performance of a steam-powered engine.
2. To analyses the efficiency and performance of steam motor.