It Is Watt It Is: An Exploration of Watt's Curve

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Abstract

Watt's curve is formed by the movement of two wheels and a rod that connects them. The term "Watt's curve" refers to any of a family of curves that take on a variety of different shapes and sizes depending on a set of parameters. Watt's curve came about as a byproduct of improvements to the steam engine made during the Industrial Revolution. There exist several derivations of a general polar equation of Watt's curve; this paper provides a derivation of a general parametric form of the curve instead of the typical proof of the polar form. Furthermore, this paper attempts to create a general formula to describe the area enclosed by any given Watt's curve. Several special forms and properties of Watt's curve are examined in the process. Formulas that describe the area enclosed by several different parts of Watt's curve are found through the research process, but none of the formulas are successfully proven within the paper.