

The Derivation of Plank's Statement for the Second Law of Thermodynamics from Clausius's¹

Nabeel Abdo²

Abstract

Nowadays there is a number of experimental statements for the second law of Thermodynamics. All these statements have a common content, which means that they do not contradict each other. Two of these statements are:

1)Max Plank Statement: "It is impossible to construct an engine, which operates on a cycle, and produces no effect except raising a weight and cooling a heat reservoir". This statement confirms the impossibility of continuously getting mechanical energy (Raising the load) when one heat reservoir is available. This reservoir loses heat, and the lost heat transforms into work.

2)Clausius Statement: Heat can not transfer by itself (spontaneously) from one body to another having higher temperature than the first body has.

In this paper we shall derive Plank's Statement for the second law of thermodynamics from Clausius's statement.

Key words: Reversible process; Irreversible process;

¹ For the paper in Arabic see pages (113-125).

² Lecturer in Faculty of Agriculture Damascus University.