

Introduction to Chemical Engineering Thermodynamics.

Chapter 1

▣ The Scope of Thermodynamics.

19

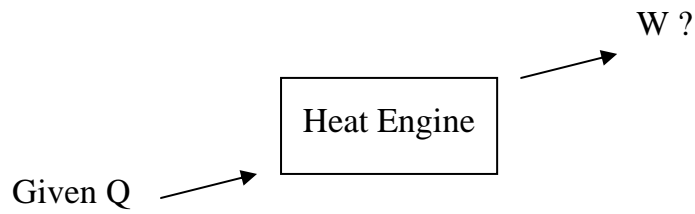
Thermo – (Heat)

Dynamics – ()

19

Power

가



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(
가

Carnot Engine

,)

engineer

(, ,



3가

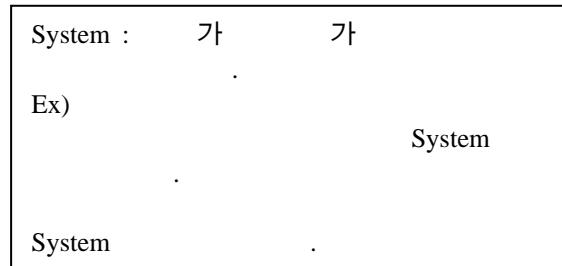
Surrounding : system

Surrounding System

Universe() System

Surrounding 가 ()

Surface



Dimensions and Units : Surrounding System

Dimensions



Dimensions Units

■ Force

(Force) = acceleration rate * mass

mass Weight가

Weight = mass * g (가)

■ Temperature

(Hottness) 4가

Unit가

°C = 0, 100

°K = T(°K) = T(°C) + 273.15

°R = °K * 1.8

°F = T(°R) - 459.67

■ Volume

(length) 3

■ Pressure

▣ Work, Energy, Heat

Work

$$dW = \vec{F} \cdot d\vec{L} \quad (1)$$

가

0 . (1)

$$dW = -P \cdot dV$$

-가

system 가

$$W = - \int_{V_1}^{V_2} P dV$$

Energy

가

()

가

()

mechanical system

가

Potential energy : $E_K = mgh$

m : mass, h : height, g : gravity acceleration rate

Kinetic energy : $EP = mu^2 / 2$

m : mass, u : velocity of the body

Work Energy

Work

Energy

가

Energy

Heat

System Surrounding

가