MAK 3031- İçten Yanmalı Motorlar

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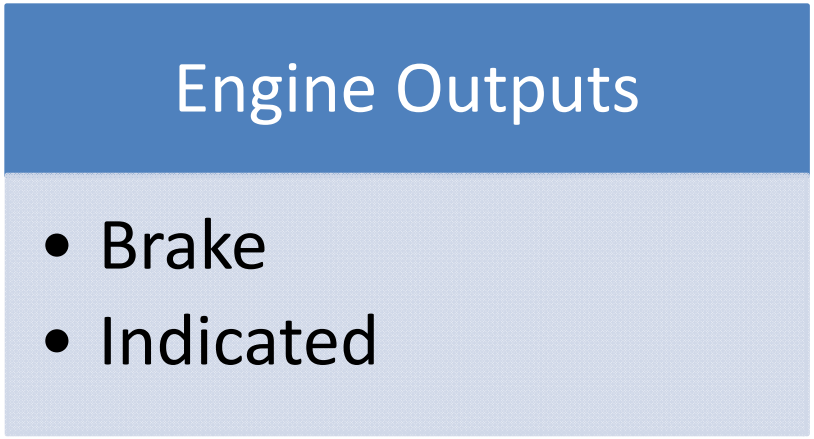
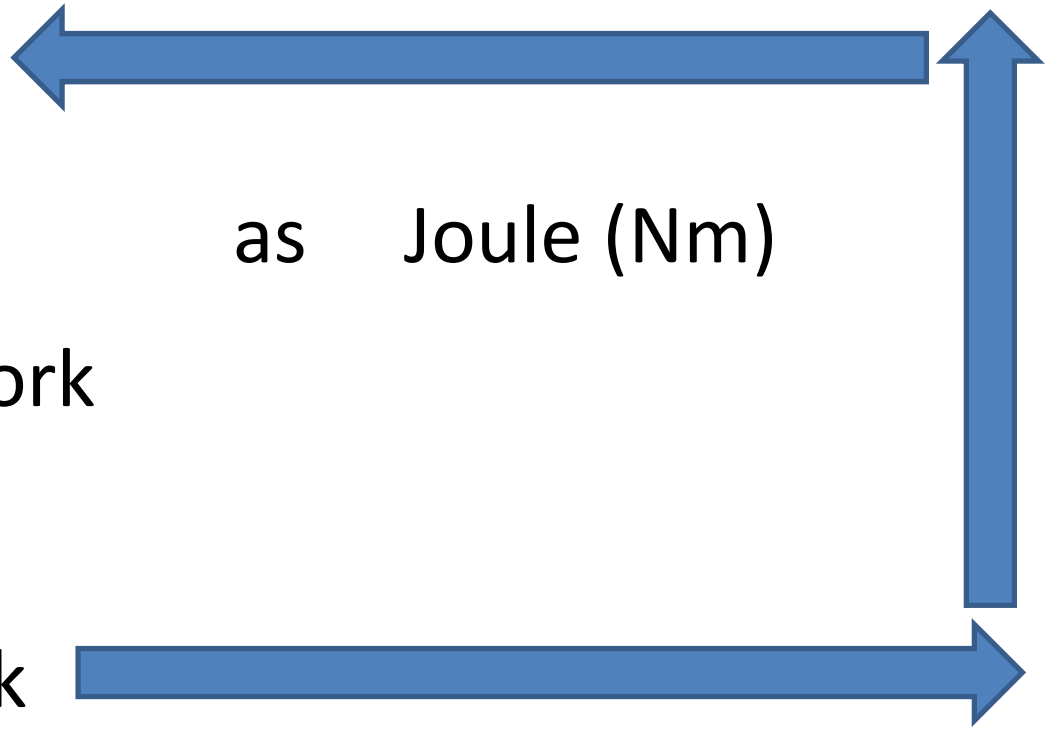
Definitions

- Parameters that define the engine output measures are classified as Brake parameters and Indicated parameters.



Indicated work per cycle

- Indicated Work
- $W_{c,i} = \oint P \frac{dV}{d\theta}$ as Joule (Nm)
- Gross indicated work
- $W_{c,ig} = \oint_{180}^{540} P \frac{dV}{d\theta}$
- Net indicated work
- $W_{c,in} = \oint_{0}^{720} P \frac{dV}{d\theta}$



Engine Power

- Engine power is defined as the work done by crank shaft per finite time. Such as joules per second.

$$P = 2\pi NT$$

Where

P=Engine power (Watts)

T=Engine Torque (Nm)

N=Revolutions per second (1/s)

Brake/Indicated Engine Power

- $P_{Brake} = 2\pi N T_{Brake}$
- $P_{Indicated} = 2\pi N T_{Indicated}$
- $P_{Indicated} = \frac{W_{c,i} * N}{a}$
- a=2 for four stroke engines
- a=1 for two stroke engines

Engine Torque

$$T_i = \frac{W_{c,i}}{2\pi * a} \text{ as Nm}$$

$$T_{Brake} = \frac{W_{c,b}}{2\pi * a} \text{ as Nm}$$

- Torque is not equal to work done by cylinder. Which indicates peripheral force transmitted by wheel or flywheel to application area.

Indicated mean effective pressure

$$IMEP = \frac{W_{c,i}}{V_H}$$

$$BMEP = \frac{W_{c,b}}{V_H}$$

Engine Power

$$\mathrm{Ni} = \frac{\mathrm{Pmi} * V_H * n * z}{60 * a}$$

$$Pmi = IMEP$$

Ni=Pindicated