MAK 3031- Internal Combustion Engines

Asst. Prof. Dr. Levent YÜKSEK
Yıldız Technical University-Automotive Sub-Division
Internal Combustion Engine Laboratory

Week Topic

- Engine thermodynamics

Week-3/Engine Thermodynamics

Main Assumptions-1

- Inducted charge act as ideal gas and no property change occurs during a cycle.
- Real engine cycle is simulated as a closed loop cycle by assuming exhausted gas portion re-entered to cylinder. Thus, a certain amount of charge is cycled infinitely. (m=constant).

Week-3/Engine Thermodynamics

Main Assumptions-2

- Combustion process is modelled as constant volume and constant pressure heat input (Q_1)to Otto and Diesel cycles respectively. Additionally in Dual cycle, combustion is modelled as both constant volume and constant pressure heat input.
- In all three cycle models, exhaust process is modelled as heat output (Q_2) from the system.

Week-3/Engine Thermodynamics

Main Assumptions-3

- All cycles are reversible and adiabatic and hence compression and expansion processes are isentropic.
- In-cylinder pressure during intake and exhaust strokes are constant.