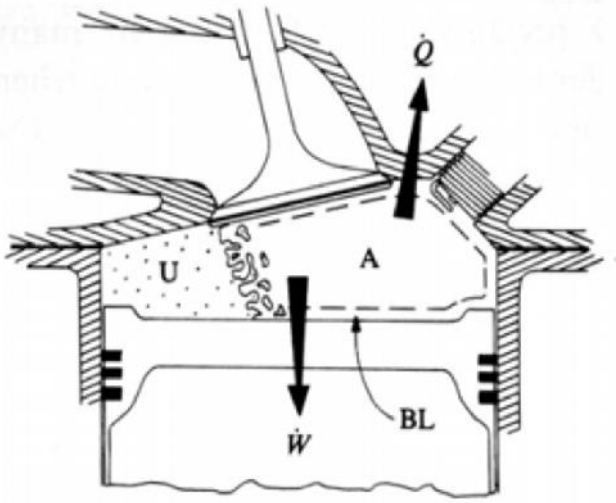
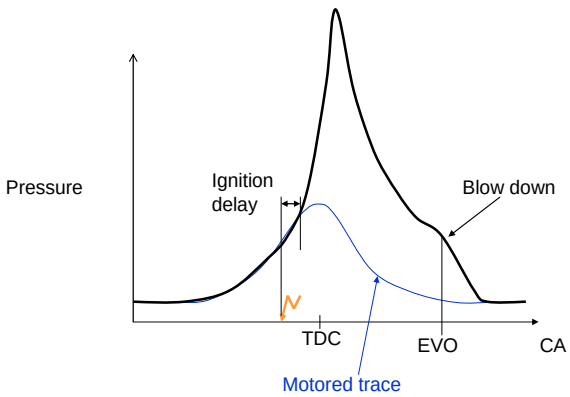
COMBUSTION ANALYSIS



This seminar serves as a comprehensive overview of combustion analysis of 4-stroke engines. Thermodynamics of the Internal combustion Engine (ICE) are covered as related to the thermodynamic combustion cycle of both spark ignited and compression ignited engines. Combustion heat release is discussed including special attention to spark and flame kernel formation and cycle-to-cycle variation, ignition delay, required ignition energy, flame propagation, “Fast burn” heat release, and flame quenching. The resulting combustion chamber pressure is modeled as a result of thermal processes plus heat addition from combustion. Actual pressure traces are analyzed for heat release rate and mass fraction burned curves. Engine acceleration compensation in data analysis is covered in detail. Finally mention is made to the effect of combustion rate on engine efficiency and knock.

Covered Topics Include:

- Engine Thermodynamics
- Heat Release Rate
- Spark Energy Considerations
- Combustion efficiency
- Ignition Delay
- Mass Fraction Burned
- Turbulence and Flame Speed
- Engine Efficiency
- Flame Quenching



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