

Internal Combustion Engines III.

1. Gas exchange process of ICE (influencing factors of gas exchange process and volumetric efficiency; process losses; importance of valve timing; Miller and Atkinson cycle)
2. Valve timing mechanisms (different valve timing systems, parts of valve timing and their functions, valve types, valve clearance and its adjustment)
3. Valve train dynamics (forces in valve train; function of the valve spring, spring types, logic; springless valve timing systems; camshaft driving systems)
4. Variable valve timing systems (goals; types, influence on the engine functions; phasing of the camshaft; variable valve lift; continuously variable valve lift systems)
5. Dynamic charging and supercharging of ICE (goals; types, influence on the engine functions, different groups of superchargers, their advantages and disadvantages)
6. Turbocharging of ICE (goals; types, influence on the engine functions, construction and parts of the turbocharger, types, comparison with superchargers)
7. Cooling of ICE (goals, types and comparison of cooling methods; high-pressure cooling system, parts of cooling system; function at different engine temperatures)
8. Lubricating system of ICE (goals and functions; structure of lubrication system, functions of the different parts; types of engine oils; additives and viscosity classes; oil filters, air filters)