

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, valve clearance and its adjustment)
3. Valve train dynamics (forces in valve train; function of the valve spring, types and designing process of valve train; 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)