



САМАРСКИЙ УНИВЕРСИТЕТ

SAMARA UNIVERSITY

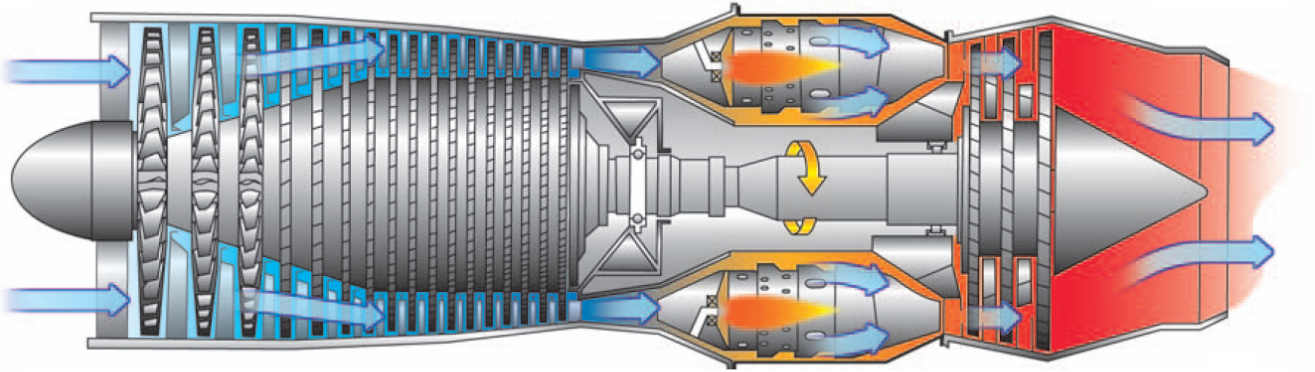
федеральное государственное автономное
образовательное учреждение высшего образования
«Самарский национальный исследовательский университет
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Institute of Engine and Power Plant Engineering
Department of Aircraft Engine Theory

Gas Turbine Engine Theory

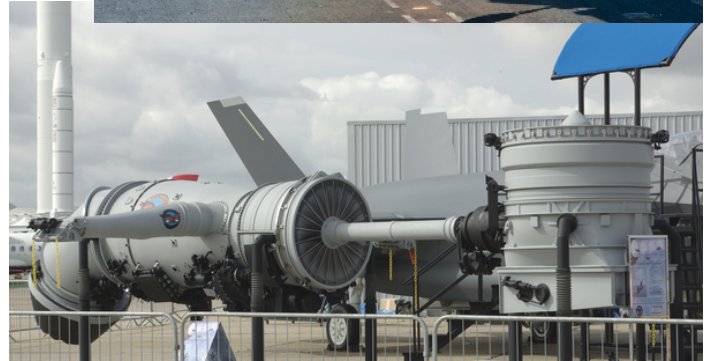
Introduction

The studied object is Gas Turbine Engine (GTE).



Gas turbine engines have a wide range of applications:

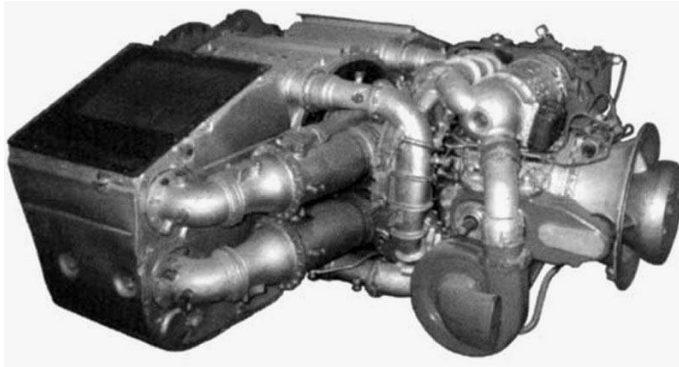
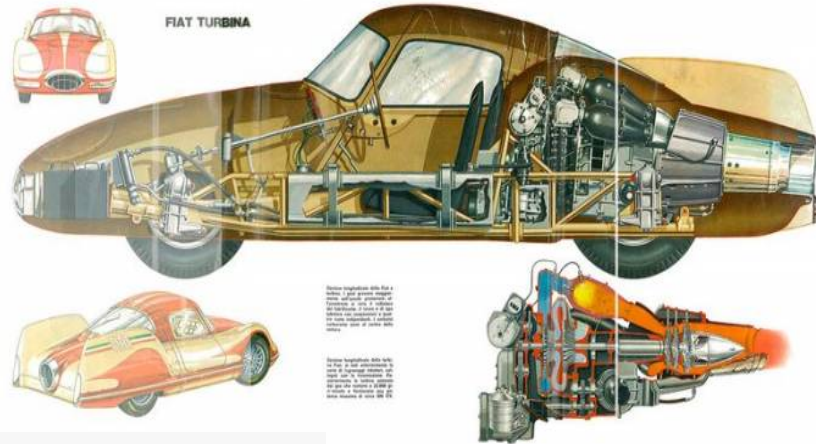
- as part of airplane powerplants



- as part of helicopter powerplants



- as a powerplant for land transport, ...



... not excluding train



- on river and sea ships, ...



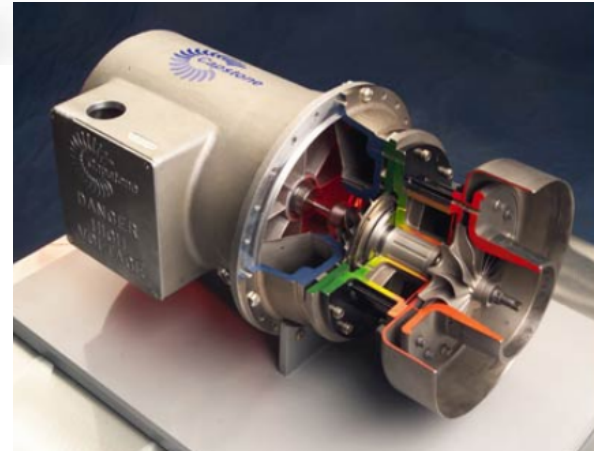
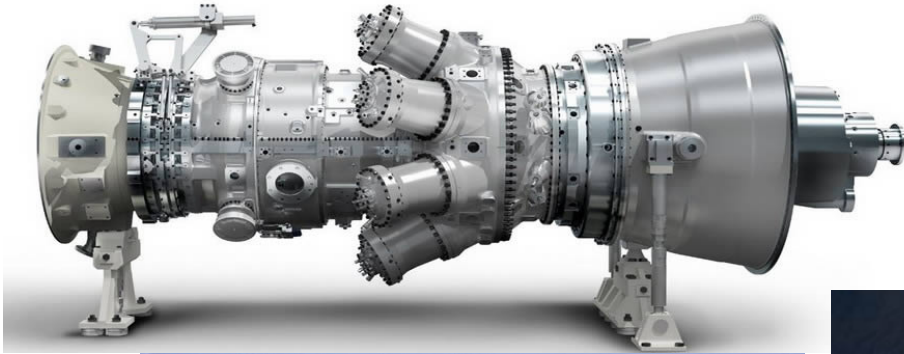
... ekranoplanes



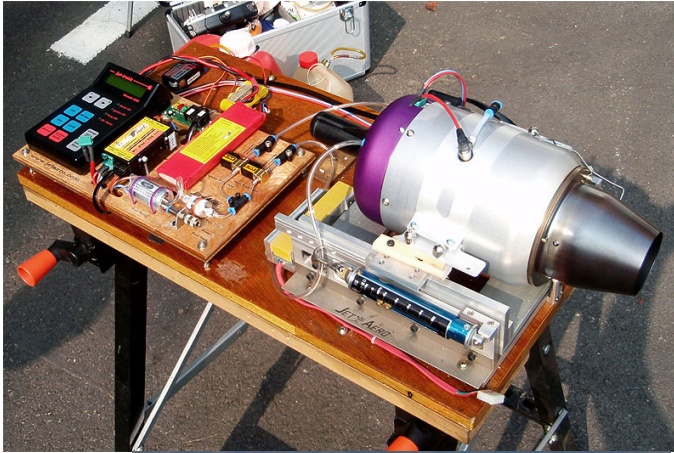
- as auxiliary powerplants of aircraft, helicopters and land transport



- in power plants



- in aeromodelling



and so on ...

Advantages of GTE usage are most clearly revealed in aviation when they are used as aircraft engines and aircraft auxiliary power plants.

In comparison with piston engines, they allow to obtain greater thrust, have a greater thrust-to-weight ratio and are characterized by a more profitable relation of thrust on flight velocity and altitude.

Comparing with rocket engines GTEs have a higher efficiency, since only fuel is stored on the aircraft board, and atmospheric air is used as an oxidizing agent.

Subject of this course is thermodynamic performance of the gas turbine engine.

Gas Turbine Engine Theory deals with

- possible types and configurations of GTEs and their applications;
- cycles and thermodynamic processes;
- design and off-design operation;
- models and methods for computer aided concept designing;
- etc.