

SUMMARY OF DISCIPLINE

1. Name of discipline TPP Superchargers
2. Symbol (code) in the curriculum DISTS.V.M.1.6
3. Direction (PLO) 13/03/01 THERMAL POWER AND HEAT
4. Profile of preparation Thermal Power Plants
5. Qualifications (degree) Bachelor
6. Providing Unit Department of APEC ENIN
7. Teacher NN Galashev, tel. 564170 E-mail gal@tpu.ru
9. The results of the development of the discipline

P8: the ability to analyze scientific and technical information, set to decide and publish the results of solving problems

integrated engineering analysis using basic and

expertise, regulatory documentation, modern

analytical methods, and methods of mathematical analysis

simulation of theoretical and experimental research;

P11: the ability to use the methods of analysis and modeling

equipment of electric power facilities.

10. Contents (list of the main topics (sections))

1. Introduction. The importance and role of the delivery equipment

modern thermal power plant. General classification of the delivery equipment

TPP.

2. Basis of bladed machines theory

- 2.1. Parameters and characteristics of vane compressors. Innings,

pressure, total pressure and specific work. Bernoulli equation. Energy,

streamed into the plenum. Useful and spent energy,

efficiency (efficiency) of the machine and its consumption

power. Features vane compressors. 2.2. Basics centrifugal superchargers. Geometric

characteristics of the centrifugal impeller. Changing the speed and the pressure in the flow channels of the machine blade. Parallelograms (Triangles) velocities entering and leaving the impeller. Moment interaction between the impeller and the flow. The theoretical energy transmitted upstream impeller and an infinite number in a finite number of working blades. Theoretical pressurization and theoretical head blade machine. Real pressure. The impact angle downstream from the centrifugal wheel by the amount of theoretical energy (Pressure head), streamed from the wheel. Euler's equation, correction for a finite number of blades. Understanding calculation centrifugal wheel.

2.3. Basics axial blowers. Geometric

Characteristics of the axial impeller. Power flow and interaction lattice axial wheel profiles. Theoretical energy (pressure head) created grate axial wheel profiles; the actual pressure and head. Understanding the calculation of the axial wheel.

2.4. Similarity bladed machines. Basic machines scaling laws

(The influence of the size, wheel speed, fluid density, moved like machines, in their submission, pressure, pressure, power). Effect of changes in the impeller geometry on exit hydraulic characteristics of centrifugal pump: the pressure and the pressure. The specific speed and specific speed as a factor Features such as blade machine. Stretch characteristics

machines. Technique of selection and calculation of bladed machines dimensionless

the characteristics of the model cars.

2.5. superchargers Networking. network features. Concurrent and the series connection of blade machines. feed control vane machines change the impeller speed, throttling rotating impeller blades, the blades rotating guide vanes, bypassing and changing the number of working machines. Stability superchargers work on the network.

2.6. Axial and radial forces. Axial forces in centrifugal and axial pumps, the causes. Centrifugal force in centrifugal pumps. Methods for discharge from the axial and radial forces.

3. Pumping Equipment

3.1. Types and construction of TPP pumps. Types of pumps TPP. Features nutritious, condensate, circulating and network pumps.

3.2. Pump suction height. The height of the pump and its suction limit value. The concept of cavitation and its influence on height pump suction. Minimum suction.

3.3. Calculation and selection of pumps. The calculation of the centrifugal impeller.

Calculation of volute. Selection of pumps.

4. Fans and dyamosy4.1. Types and characteristics of fans. Classification and Marking of fans and smoke exhausters TPP. Basic design types and schemes of centrifugal and axial fans. Evaluation of efficiency their work and ways to improve it. Features fan.

4.2. Operation of fans in a network. network features. Parallel and consistent work of fans. Regulation of centrifugal and axial fans. Stability of the fans on the web.

5. Compressors

5.1. Processes in compressors. Thermodynamic methods definition of theoretical compressor operation cycle. Adiabatic and isothermal efficiency of the compressor machine. The energy transferred flux in degree, the degree of reactivity. stage efficiency. Work in process uncooled compressor stage.

5.2. Centrifugal compressors. The scheme of the flow steps centrifugal compressor. Multi-stage compressors.

Bezlopatochny and vane diffuser, reverse guide vanes.

The degree of compression in one stage and around the compressor. Characteristic compressor. Application of intermediate cooling

5.3. Axial compressors. Stage axial compressor. Energy, the transmitted flux in degree. Stage axial compressor with different degree of reactivity. stage efficiency. The degree of compression in step multistage compressor.

11. Course 3 Semester 6 Number of credits 4

12. Prerequisites "Mechanics", "Materials Science and Technology structural materials ", " Engineering Thermodynamics " "Fluid Dynamics".

13. Korekvizity "centralized production technology power ", " Alternative and renewable energy sources. "

14. Type certification (exam, test) POINTS

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