Applied Fluid Dynamics

2 units (selection)

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Target〉 This theme is concerned with Flow-induced vibration and noise. The aimof this theme is to understand the generation mechanism and to learn the prediction and countermeasure techniques

Outline〉 In application of fluid dynamics, there are two aspects such as the performance and safty of turbomachines. This theme discusses how the fluid dunamics is applied to the safty design about several examples described below. 1. Vibration of turbomachine blade, 2. Flow-induced vibration of structures in a piping syatem. 3. Vibration of heat exchanger tube bundles, 4. Areroacoustics, 5. Self sustaine tone, etc. The aim of this theme is to understand their generation mechanisms and to train the ability of obtaining the countermeasure's plan

Keyword〉 ***aeroacoustics, flow-induced vibration, self-sustained tone, noise***

Relational Lecture〉 "**Energy Conversion System**"(0.5), "**Advanced Applied Dynamics of Machine**"(0.5)

Requirement〉 Fundamental knowledge of fluid dynamics and vibration engiuneering is necessary

Notice〉 not specified

Goal〉 training of researcher and engineer in an enterprise

Schedule〉

1. Guidance(Flow-induced vibration and noise)
2. Fundamental knowledge of acoustics(1)(Nature of sound)
3. Fundamental knowledge of acoustics(2)(Distant attenuation of sound)
4. Fundamental knowledge of acoustics(3)(Difraction of sound)
5. Intermediate tesut(1) and samarise
6. Aeroacoustics(1) (Present state of investigation of aeroacoustics)
7. Aeroacoustics(2) (Kind of aeroacoustics and basic equation)
8. Aeroacoustics(3) (Prediction method of sound from cylindrical body)
9. Aeroacoustics(4) (Prediction method of sound from plate)
10. Intermediate test(2) and samarise
11. Flow-induced vibration(1) (Examples of trouble)
12. Flow-induced vibration(2) (Cause of vibration of cylindrical structure)
13. Flow-induced vibration(3) (Shirking of self excited vibration)
14. Flow-induced vibration(4) (Steady drag force and random vibration)
15. Flow-induced vibration(5) (Vibration of tube array)
16. Final test

Evaluation Criteria〉 aberage of tests (1)~ (3) and reports are summed with the weights of 7 and 3, respectively, and the passing mark is 60%.

Textbook〉 prints

Reference〉 not specified

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216578

Student〉 Able to be taken by only specified class(es)

Contact〉

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