Energy conversion systems

2 units (selection)

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Target〉 To understand principle of energy conversion and to consider improvement of energy conversion technologies on the point of saving energy consumption and decreasing environmental damages

Outline〉 About 90% of world primary energy demands are provided by fossil fuel that is converted into heat, electricity, and power by combustion. The lecture will give you some information and idea about the details of combustion phenomena, and then the latest technologies of energy production and the environmental problems accompanying with energy production will be denoted. This subject is concerned with industry.

Style〉 Lecture

Keyword〉 ***energy conversion, energy resources, energy problem, climate change, combustion***

Requirement〉 None

Notice〉 None

Goal〉 To understand principle of energy conversion, environmental effect of energy conversion and present technologies of energy conversion, and to recognize the importance of improvement of energy conversion technologies against environmental protection

Schedule〉

1. Present energy problem
2. Combustion chemistry 1
3. Combustion chemistry 2
4. Thermal and fluid dynamics in combustion phenomena 1
5. Thermal and fluid dynamics in combustion phenomena 2
6. Premixed combustion 1
7. Premixed combustion 2
8. Non-premixed combustion 1
9. Non-premixed combustion 2
10. Spray combustion 1
11. Spray combustion 2
12. Toxic emissions by combustion 1
13. Toxic emissions by combustion 2
14. Energy saving technologies (Present technologies)
15. Energy saving technologies (Future technologies)

Evaluation Criteria〉 Appraise the understanding of the content of the lecture by setting some reports

Textbook〉 Takashi Niioka, ”fundamentals of Combustion Phenomena

Reference〉 None

Webpage〉 http://www.eco.tokushima-u.ac.jp/w3/miwa/index.html

Contents〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216567

Student〉 Any students other than this course can take this subject

Contact〉

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Note〉 Need to submit some reports