

ESGN 463 / 563: Quiz #8 Biogas and Fuel Cells

Name: _____.

You have 20 minutes. Open book and notes. **Target fifteen words per question.** If you draw a blank, guess! Two points per question.

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Question #1: Biogas produced from anaerobic processes has a heating value of 500 to 600 BTU per cubic foot compared to natural gas which has a heating value of 900 to 1200 BTU per cubic foot. Give at least two reasons why the heating value is lower for biogas.

Question #2: Biogas has many advantages over more conventional fuels. Why don't more food processors, landfills, and wastewater plants do on-site cogeneration of electricity to sell back to power plants?

Question #3: In the webcast on fuel cells, the speaker talks at length about the tremendous costs associated with building PEFCs large enough to power an automobile. What metal is needed to make the fuel cell that would add over \$6000 to the cost of the car? This doesn't include costs for the other materials and engineering needed to make a complete system.

Question #4: In the webcast on fuel cells, the speaker expresses his opinion that fuel cells will make their biggest impact for this type of application. Why?

Question #5: What is the primary difference between a fuel cell and a traditional battery?

Bonus: What is a ram pump and how does it work?