



Engineering Idol 2011

Project Unveiling

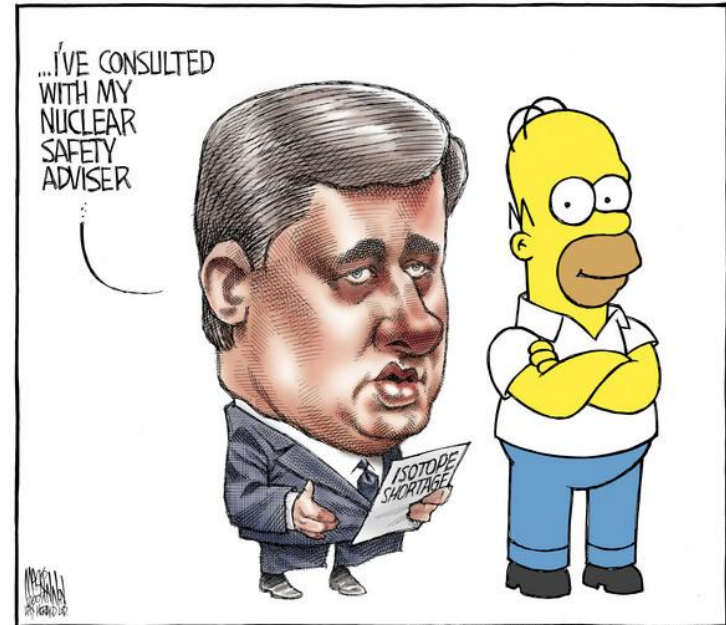
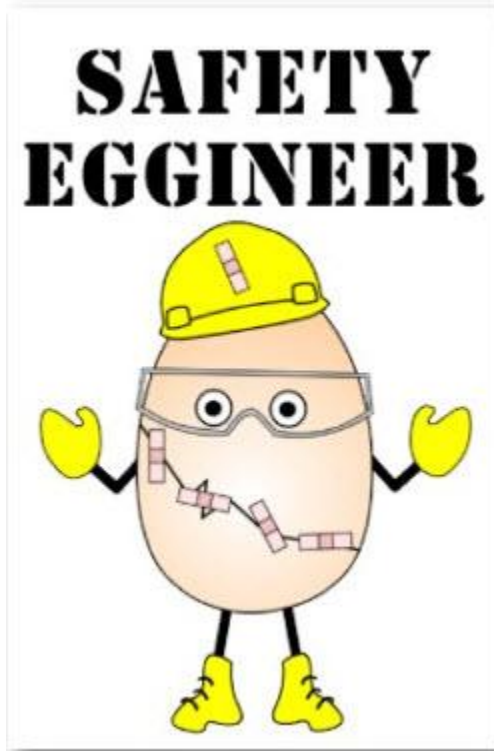
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Engineers working in industry make decisions everyday affecting the long-term performance of Plants

Safety, Environmental Performance and Efficiency are all a function of the decisions made by Engineers at the “design stage” of a project

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Engineering Safety



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Engineering Environment



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Engineering Efficiency

A bicycle



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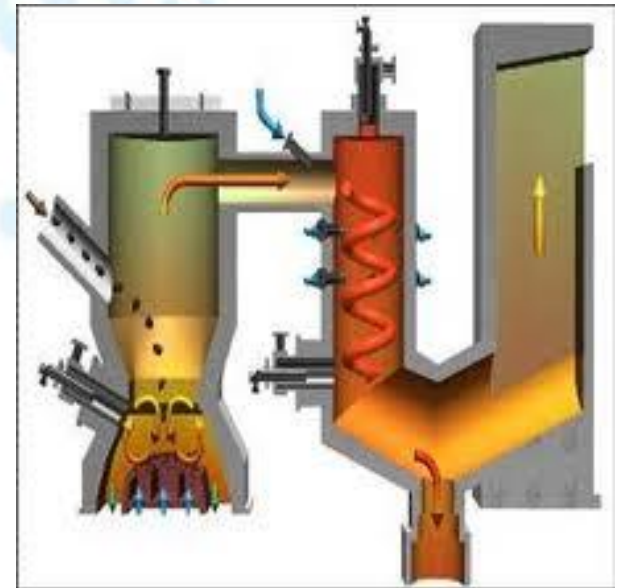


Engineering Idol 2011 Welcomes you to the
“Fluidized Bed” Challenge

“Chemical Engineering is more than just Chemistry”

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Fluidized Bed Challenge



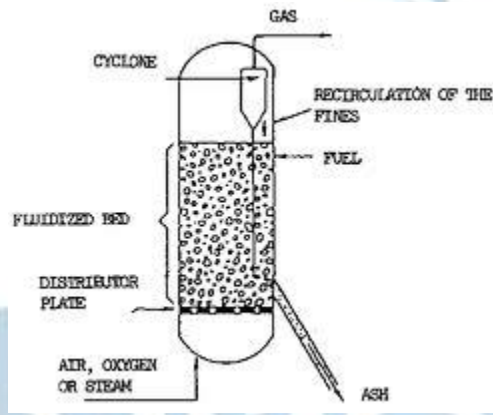
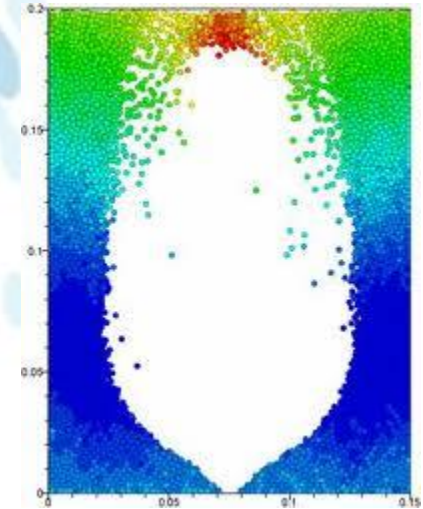
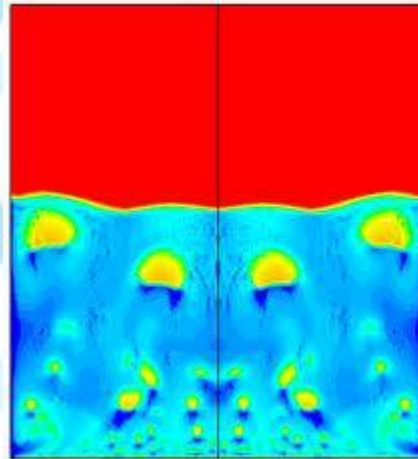
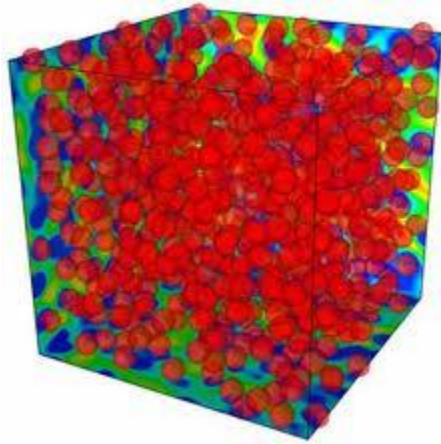
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Fluidized Beds

- Chemical Engineers often use Fluidized Beds for Gas Phase reactions involving Catalysts

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Spheres Suspended in Gas



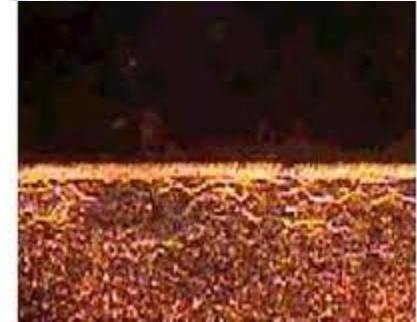
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Fluidized Beds

- Mechanical Engineers use Fluidized Beds in Metals Treatment. Heat Transfer characteristics of fluidized hot particles provide even and controlled transfer of energy.

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Fluidized Bed Heat Treatment



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The Competition

- Your team is a prestigious and innovative Engineering Team with a specialty in designing gas dispersion equipment and Fluidized Beds
- A group of Investors is holding a Trade Show at York University on Saturday, March 5th, 2011 and your team has been invited, along with several others, to present and demonstrate your design
- The Investors will award \$400 to the first place team, \$300 to the second place team and \$200 to the third

York University



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What do the Investors Need?

- The Investors have an interest in Environmental projects.
- They operate Heat Treating operations Globally
- Horrible molten lead baths are currently used in their processes to control the post heating of their metals
- They want to replace these molten lead baths with the best Fluidized Bed Technology they can find

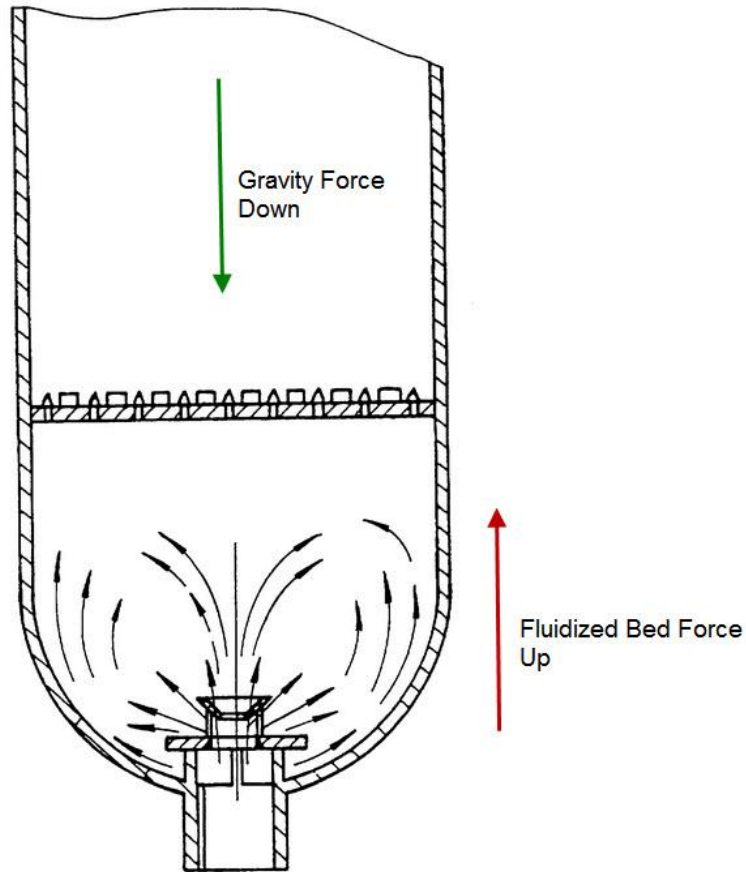
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The Science

- In Physics, you learned about Forces and how these would apply to a particle affected by gravity in order to keep it in suspension in a gas stream

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Fluidized Bed Forces



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The Science and Engineering

- During this project, you will learn how Engineers use these calculations to design Fluidized Beds
- You will find all the information you require in the “Unveil Package” posted on www.engineeringidol.com

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Air Source

- The Unveil Package details the characteristics of the low pressure, high volume air source that will be used for this project
- Your job is to design your prototype so 6 inches of particulates will be fluidized

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Particulate

- The “Unveil Package” defines the Particulate for this project as being regular Sifto Table Salt
- You have the option, however, of choosing a different Particulate as long as you get approval from Engineering Idol first

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Judging Criteria

- The Unveil Package details all the judging criteria.
- There is, however, a challenging decision facing your team

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Design Decision

- The ability to diffuse an incoming gas stream evenly in any process is a challenging Engineering problem at the best of times
- The investors understand that it is much more difficult to evenly diffuse gas over a large surface area than it is over a smaller one
- *Will your team play it safe or go for impressing the judges and demonstrate the ability to fluidize over a large surface area?*

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Other Notes About the Challenge

- The Unveil Package is designed to answer most questions you may have about the project
- There is also an Email address published in case you need to contact us with specific questions

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Engineering Idol

“the opportunity to experience the Profession of Engineering”

This is the 4th year Etobicoke Chapter of PEO together with OACETT have run this challenge

Each year a different technology has been featured including Wind Energy, Heat Recovery, Water Treatment and now Fluidized Beds

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Past Champions

- Congratulations to everyone who is involved with the competition this year. We acknowledge the students who participated in past challenges, and especially our past Champions:

Wind Energy – Michael Power / St. Joseph

Heat Recovery – Martingrove Collegiate

Water Treatment – Richview Collegiate

Fluidized Bed – will it be you?

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