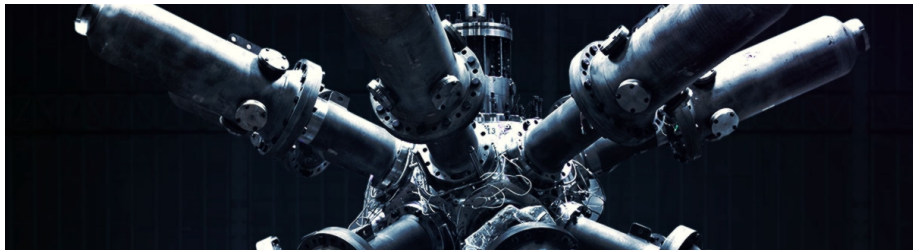


# Energy of Tomorrow: General Fusion

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April 1, 2015

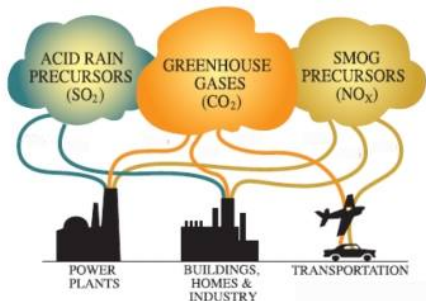


# Overview

- 1 Introduction
- 2 What is Fusion?
- 3 Why is Fusion Important?
- 4 Why Don't We Have it?
- 5 Progress Towards Fusion
- 6 Advantages of General Fusions Reactor
- 7 Final Thoughts

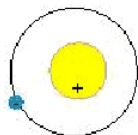
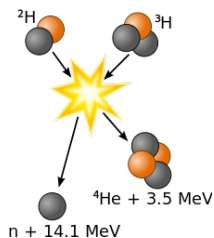
# The Current Situation

- U.S. Department of Energy predicts a 50% increase in global energy consumption by 2035
- Fossil fuels currently generate the majority of the world's power
- What if there was an alternative?

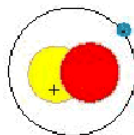


# What is Fusion?

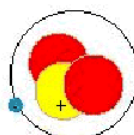
- A constituent of the Atom is the nucleus
- Composed of nucleons: protons, neutrons
- Nuclei can be split or fused, resulting in heat energy
- This energy arises from the interaction of two forces
- Nucleons exert a binding force amongst themselves at very close distances and protons exert a columbic repulsion
- Energy source of stellar bodies



Hydrogen



Deuterium



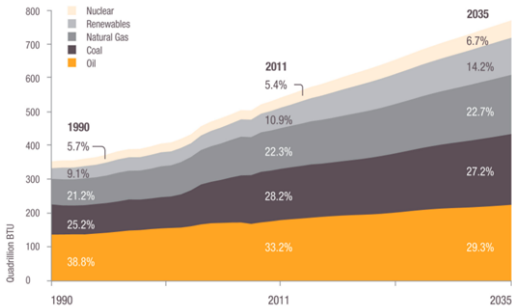
Tritium

# Why is Fusion Important?

- Energy Consumption/ Population Growth
- Abundant/Accessible Fuel
- Low Pollution

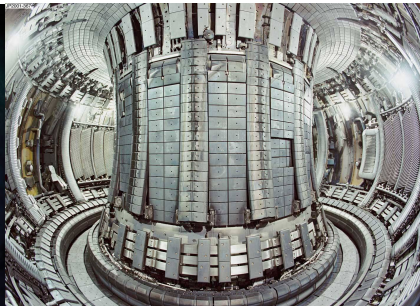
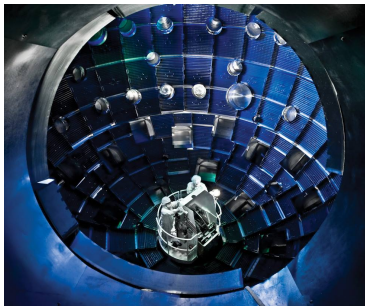
## Future Global Energy Demand

The world will require 45 percent more energy in 2035 than it did in 2011.



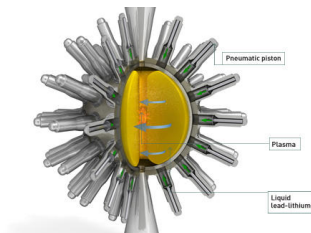
# Why Don't We Have it?

- Fusion only occurs naturally in stars
- Technology to generate and withstand extreme conditions is complex
- $Energy_{in} < Energy_{out}$
- Multiple reactor designs



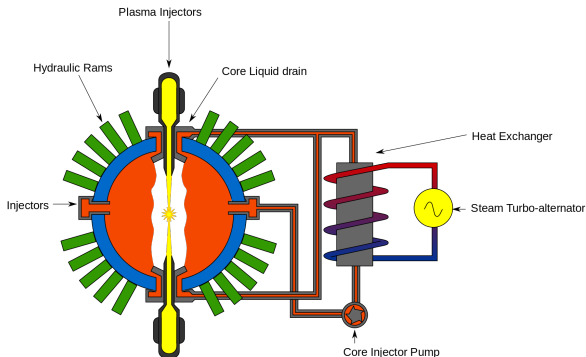
# Progress Towards Fusion

- Multiple reactors internationally
- General Fusion
- Magnetized target fusion
- Reactor design
  - Pistons slam into liquid lead alloy filled shell
  - Pressure waves catalyze fusion of Deuterium and Tritium
  - Liquid lead absorbs and exchanges heat
  - Breeds one of the fuel ingredients
  - Smaller/cheaper than other reactors



# Advantages of General Fusions Reactor

- Small Cheap reactor
- Direct Energy extraction from Liquid Lead
- Tritium Breeding from Neutron Bombardment
- Scale Reactor Construction in Progress





# Final Thoughts

- Fusion Provides Answer to Growing Energy Demand
- Abundant and Clean Fuel Source
- Only Technical Issues hindering Progress
- General Fusion Provides answer for Cheap Efficient Reactor



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# Thank-you