generalfusion

Rethinking Energy. Rethinking Fusion. How fusion energy has the potential to save the world

Agenda

- 1. World's Energy Problem
- 2. Introduction to Fusion Energy
- 3. Benefits of Fusion Why it can Save the Planet
- 4. About General Fusion



Look down on our world during the day...

Now let's look down on our World at Night

We are everywhere and ...

We are a Voracious Energy Consuming Species

Fossil Fuels....



Population...

World Population Growth



Greenhouse Gasses are rising...



Global Warming...



Energy Mix...



Problem Statement

• Create safe, environmentallysustainable energy on a global scale

- 1. Fusion is the process which powers the sun and the stars
- 2. It is energy that makes all life on earth possible
- Fusion energy is produced by fusing together light atoms, such as hydrogen, at the extremely high pressures and temperatures
- 4. This process results in a large amount of energy/heat





To meet the energy needs of a city of 1 million people one would need: Either 250,000 tonnes of oil Or 400,000 tonnes of coal Or 60 kg of fusion fuel 60

*Fuel cost/kwh

Fusion Benefits No.1 – Abundant Fuel Source!



Fusion Benefits No.2 – Clean / Pollution Free!



Fusion Benefits No.3 – Safe!



Fusion Benefits No.3 – Nuclear Fusion vs Fission!



Fusion Benefits No.3 – Nuclear Fusion vs Fission!



Fusion Benefits No.4 – Energy for the World...



Why Fusion?

UNLIMITED

ABUNDANT

SAFE

CLEAN

Magnetic Fusion

Laser Fusion





Laser Fusion...How it works....

THE NIF'S FUSION STRATEGY

As the NIF's laser beams hit the gold hohlraum capsule (1), they generate X-rays that blast the outer layer of the pellet (2), compressing the hydrogen isotopes until they fuse (3).



Fusion Programs – Laser Fusion







Fusion Programs – Laser Fusion



Magnectic Fusion...How it works....



Fusion Programs – Magnetic Fusion



Fusion is closer than people think....



Nuclear fusion hits energy milestone

 Total energy input still far higher than output

 By Emily Chung, CBC New
 Posted: Feb 12, 2014 1:30 PM ET
 Lst Updated: Feb 13, 2014 9:56 AM ET



The fuel capsule in the experiment was hit with 192 lasers from the world's largest and most energetic laser system, which gets an energy boost from the preamplifiers shown here. (Lawrence Livermore National Laboratory)

MISSION

- 1. Demonstrate net gain from fusion
- 2. Demonstrate economically viable approach for fusion energy
- 3. Generate value for investors, enabled by strategic partnerships and a clear path to commercialization





About General Fusion

- 65 Employees
- 54 R&D staff: 32 engineers, 12 PhDs
- Started in 2002



Global Syndicate of Partners



BEZOS EXPEDITIONS



\$50 Million





Entrepreneurs Fund

GROW IN GOOD COMPANY

GROWTHWORKS



Phone Calls.....





Magnetized Target Fusion



General Fusion's Acoustically Driven MTF







Largest Plasma Injectors ever built

Record spheromak plasma energy (~100 kJ)

Plasma temperatures over 200 eV (>2.3M C)

Density of 10¹⁶ cm⁻³





Progress...

Shockwave through lead-lithium blanket



Plasma (spheromak)



Compression of plasma





Plasma Injector Simulation





Plasma Injector Simulation



System Integration with Industry



Breakthroughs Can Quickly Change the World



People are interested in Fusion!



« Back to TED.com



Tuesday, March 18, 2014, 11:00am-12:45pm PST Session 3: Reshape





Urban planner

David Kwong

David Kwong Cruciverbalist



Matthew Carter Type designer

2014 marks TED's 30th anniversary, and the theme for TED2014 is simply Chapter." We'll be seeking to understand what are truly the most significant the last 30 years ... and applying that knowledge to understand what's aheac makes it easy for us to reach out to the world's greatest minds and challeng shape a program better than any in our history — in an unforgettable custon for talk.

Tuesday, March 18, 2014, 6:00pm-7:45pm PST Session 4: Wish



Gavin Schmidt Climate scientist



Melinda Gates (with Bill) Philanthropist



Philanthropist



Zak Ebrahim Peace activist

We Can Do It....!



Clean energy. Everywhere. Forever.

general fusion

Susan Koch

CFO susan.koch@generalfusion.com 604-439-3003 x2017

Michael Delage

VP Strategy and Corporate Development michael.delage@generalfusion.com 604-439-3003 x2026