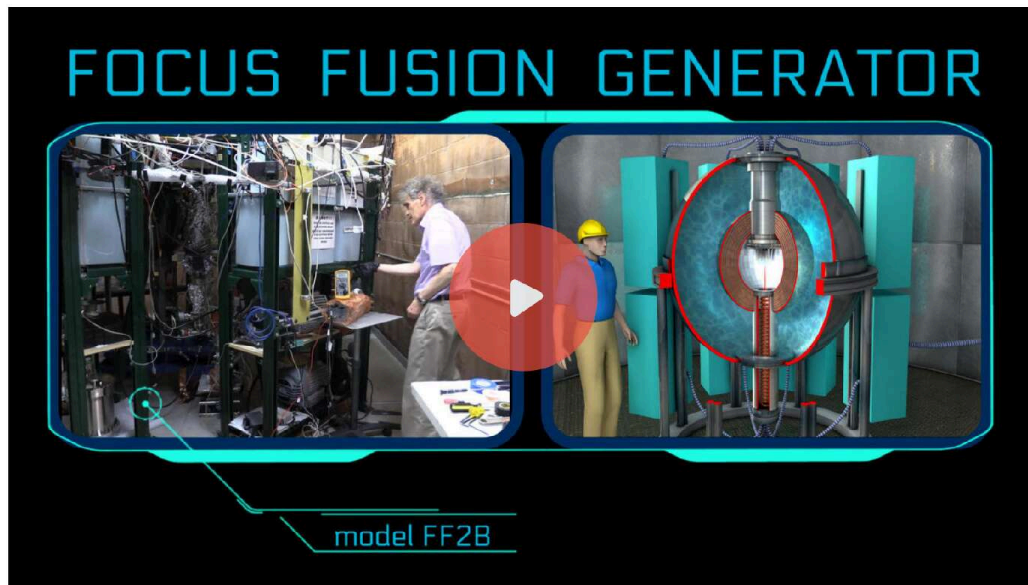


# Zero Emissions Zero Nuclear Waste Decentralized Energy

☒ PITCH VIDEO ☐ INVESTOR PANEL



[lppfusion.com](http://lppfusion.com) Middlesex NJ    

Hardware Technology Infrastructure Social Impact  
Manufacturing

## Highlights

- 1 Achieved the highest confined temperature of any fusion experimental device, over 2 billion degrees, sufficient for hydrogen-boron fusion.
- 2 Highest fusion energy output per unit energy input of any private fusion experiment, more than a thousand times the closest competitor.
- 3 Highest product of temperature, density and confinement time of any private fusion experiment.
- 4 Patents issued in the U.S., China, Australia, Canada, and the European Union, with patent pending in India.
- 5 Raised over \$9 million from over 1000 investors.
- 6 Research published in leading peer-reviewed journals documenting the LPP Fusion device as the most advanced, privately funded fusion experiment in the world.
- 7 Easiest path to fusion by using natural instabilities of plasmas, not fighting them. We imitate nature.
- 8 Highest plasma purity of any fusion experiment.

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## Our Team



**Ivana Karamitsos** Chief Information Officer, Communications Director

Ivy studied mathematics and classical music in the former Yugoslavia and received a degree in Computer Science from Binghamton University, SUNY in 2003 before joining our team in 2010.



**Dr. Syed Hassan** Research Scientist

Dr. Hassan, a plasma physicist, has more than 20 years experience with the dense plasma focus device. Before joining LPPFusion in 2015, he worked for Purdue University's School of Nuclear Engineering.



**Rudolph Fritsch** Mechanical Engineer, Secretary

Rudy has been President of Allsteel, a manufacturer of industrial metal-forming equipment, for 15 years. As an engineer and entrepreneur, he ran a successful family business in Canada for decades.



**Dr. Warwick Dumas** Simulation Researcher

Warwick earned a Ph.D. in Applied Mathematics from the University of Leicester before joining LPP in 2012, where he simulates the plasma filaments that form when the capacitor banks are discharged.



**Dr. Robert Terry** Computational Physics Consultant

Dr. Terry has had over 35 years of experience in simulation of plasma phenomena, including over 20 years at the US Naval Research Laboratory developing innovative methods for modeling the Z-pinch.



**Eric J. Lerner** President and Chief Scientist

Active in dense plasma focus research for 40 years, Eric developed an original model of the role of the quantum magnetic field effect and has tested theories with funding from NASA's Jet Propulsion Laboratory.



**Dejan Simurdic** IT Administrator

Dejan is a Software Developer/Data Analyst with over 13 years of experience. He worked in multiple industries and in over 20 different coding and database platforms. He was born in Serbia and spent 3 years in Africa before coming to the US.

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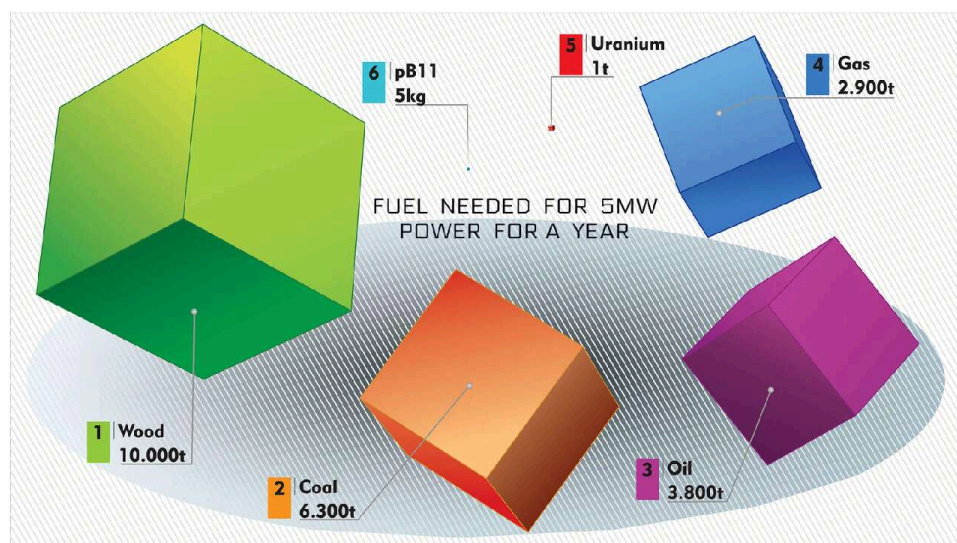
## For Humanity to Move Forward, We Need Fusion Energy Now



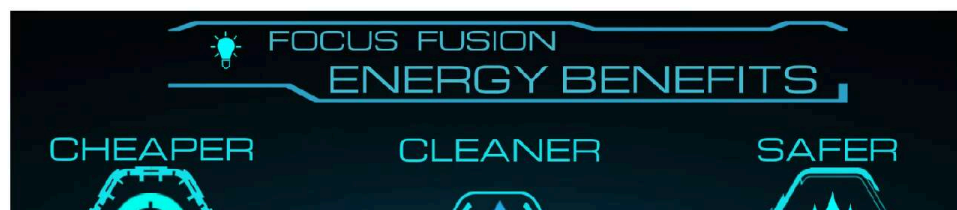


## Fusion Energy - Freedom From Pollution and Prosperity for All

Fossil fuels have too little energy density for our needs, so we have to burn 14 billion tons per year, creating pollution that kills 7 million a year. To move past the polluting fossil fuel age, we need technologies based on sustainable energy that is reliable, clean, cheap and safe. Fusion energy pB11 fuel can solve our global environmental issues and at the same time lift the standard of living for all. Our pB11 fusion fuel produces no radioactive waste and it is millions of times more powerful than any energy source we use today. This is because of the energy density of pB11 fuel - see the cubes image. This fusion fuel is the core of the energy revolution.



Energy Density (Right-click or dbl-click to view a larger image)





direct  
conversion to  
electricity



no dams  
no batteries  
no turbines



no pollution  
no spills  
no fracking  
no green-house gases



no radioactive waste  
no meltdowns  
always ON

compact generators  
highest energy density  
abundant fuel

no  
long dist. power losses  
DECENTRALIZED  
localized

# 3.5 oz pB11 FUEL

(THE SIZE OF A GUMMY BEAR)

PRODUCES THE SAME  
AMOUNT OF ENERGY AS...



126 TONS  
OF COAL



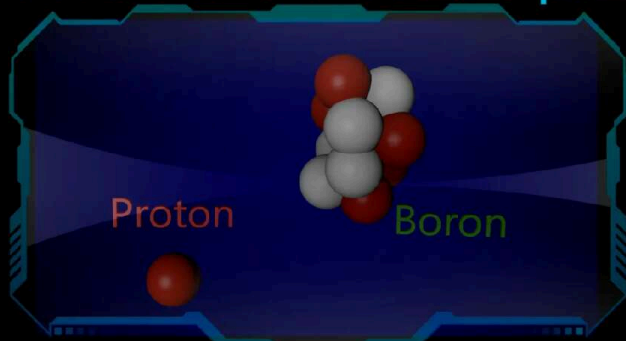
76 TONS  
OF OIL



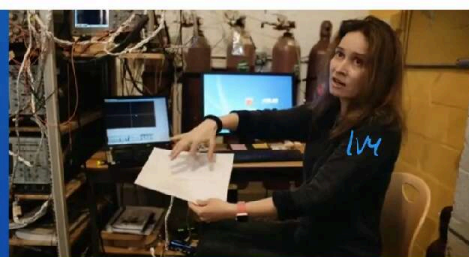
58 TONS  
OF NATURAL GAS

... BUT IT'S EMISSIONS FREE, AND  
NUCLEAR-WASTE FREE!

## FUSION FUEL: pB11



p - proton from hydrogen  
B11 - Boron Isotope

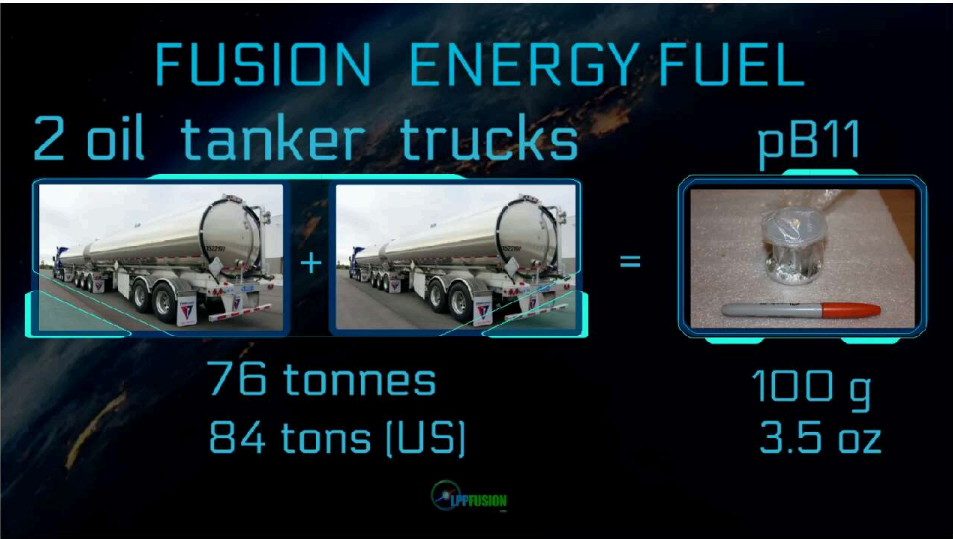






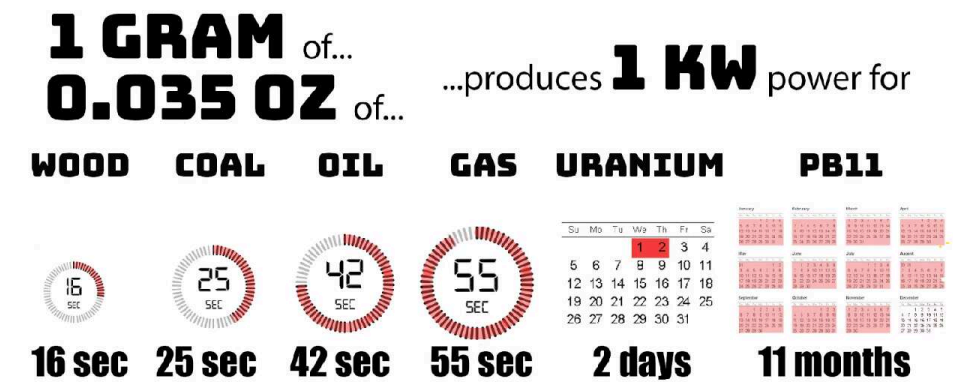
# The Energy Density Of pB11 Leads to a New Renaissance, To Social & Ecological Harmony

A switch to fusion energy can bring peace to humanity because when energy becomes nearly free, resource wars will no longer play a central role in our global economy and finance. Just as fossil fuels lifted the global standard of living because its energy density was far higher than energy from wood, fusion energy, with millions of times higher energy density can revolutionize human society, providing a decent standard of living for every person, while maintaining a sustainable global ecology.



Energy Density: oil vs pB11

## ENERGY DENSITY



## Fusion Energy - Cheap, Clean and Safe Energy

Direct and Indirect Fossil Fuel Costs are over \$10 trillion per year, siphoning money from everyone to a few thousand billionaire shareholders, driving a

downwards economic cycle. Check out this global, annual fossil fuels costs breakdown.



Kleptocracy or Meritocracy

The profits from fossil fuels concentrate resources into the hands of a few thousand "oiligarchs" who control both the global petroleum and the global financial companies.

Fossil fuel expenses and pollution have contributed to the pandemic by weakening the resistance of the population and diverting vital resources away from health services. See full story—30 min video





## Why Solar and Wind Can't Do It Alone

Solar and wind lack the power density and continuous availability to replace fossil fuels by themselves. That would require covering 20% of the world's land and strip-mining the ocean bottoms. The amount of land needed for solar and wind farms would take away from lands we need for reforestation. Because the energy density of wind and solar is very low, the world simply can not fully rely on these energy sources. This is why, without fusion, we can't now move away from fossil fuels. They remain the main reliable energy sources of today, the base-load energy sources. Fusion energy with pB11 can easily take over as a base-load energy source.



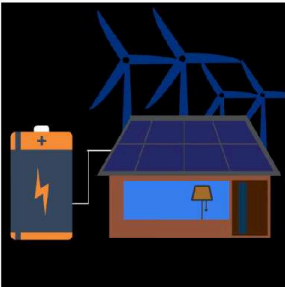
Dirty

Fossil fuels, producers of carbon and smog, still power 81% of the U.S. energy demand.



Expensive

Clean energy options aren't cheap. Wind and solar are still the most expensive ways to produce electricity.

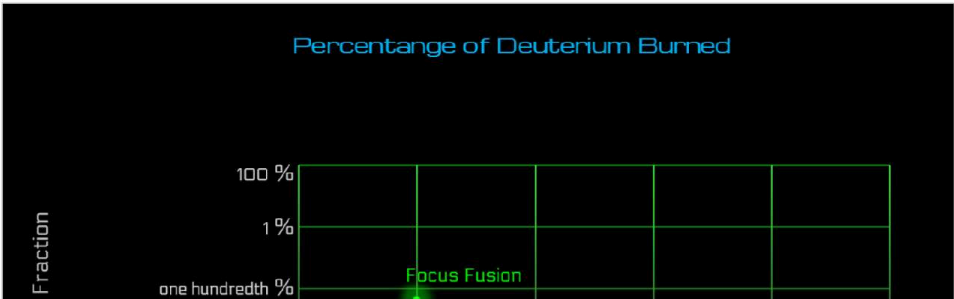


Intermittent

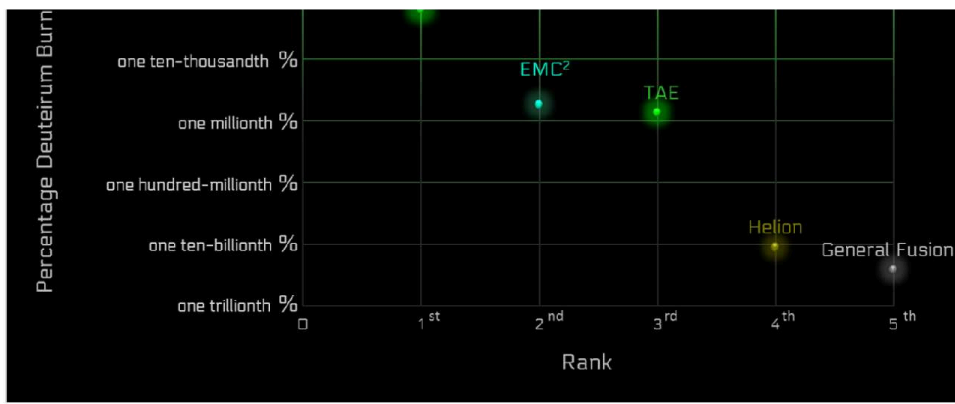
When clean energy solutions fail, like in the absence of sunlight or wind, we're forced to rely on fossil fuels.

## We are on the Fastest Path to Fusion Energy

Humanity needs to switch to a more powerful, denser source of energy that can entirely replace fossil fuels. That source is fusion energy. LPPFusion is developing the densest form of fusion, with the most power in the least space. It is what we call Focus Fusion: safe, clean, unlimited and far cheaper than any present-day energy source. We are also on the fastest path to fusion. Our published experimental results are thousands of times better than that of any other private fusion company, and close to the best results from government fusion projects with far more resources.







How Focus Fusion Works

Watch later
 Share

Proton

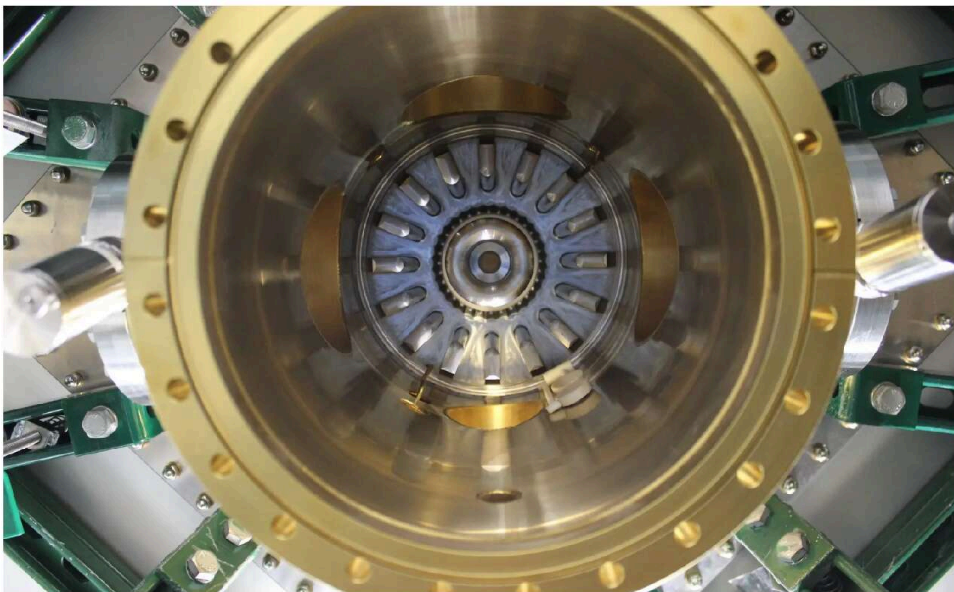
# FOCUS FUSION

Boron

NO NEUTRONS  
NO Radioactive Waste!

Watch on YouTube

- **Helium** is the only by-product of our reaction.
- Our technology produces no radioactive waste.
- Our two fuel sources, **hydrogen** and **boron**, are essentially **unlimited**. They come from regular water, seawater, and boron deposits, enough to last billions of years.
- We can spread out our small generators to decentralize the **power grid** and reduce dependency on the fragile grid system.





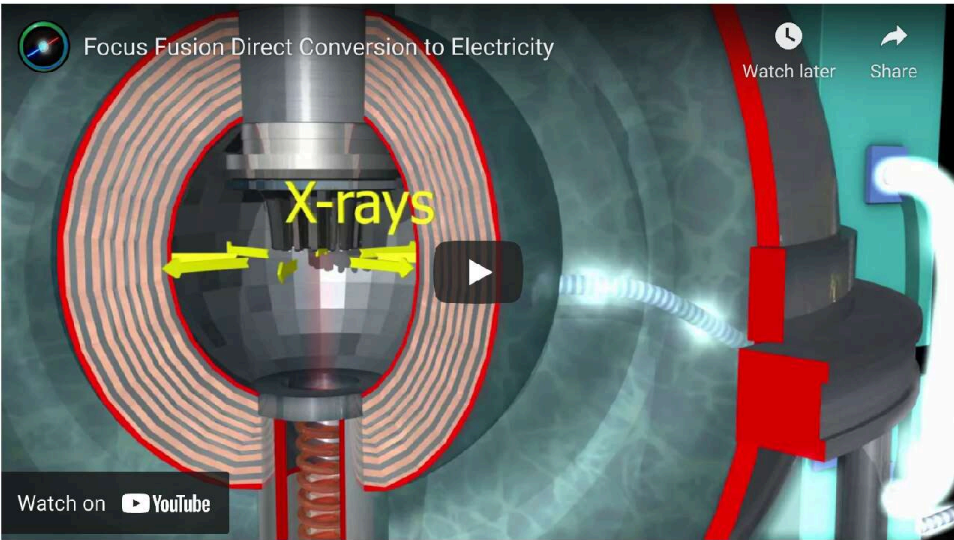


Focus Fusion Electrodes View From The Bottom, Through The Vacuum Chamber (Not Yet Assembled)

## Direct Conversion to Electricity

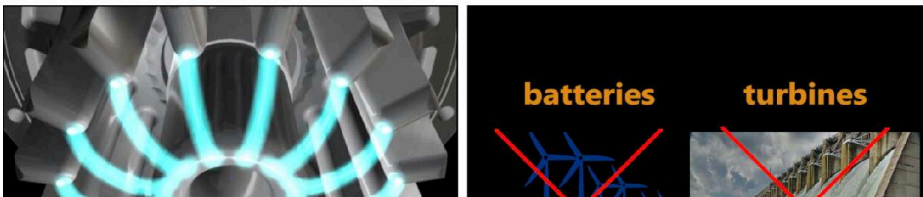
Since Edison’s time, there’s been one main way to produce electricity. A heat source — whether it’s coal, oil, or nuclear fission — boils water to produce steam that spins the turbine of an electric generator.

**Our Focus Fusion generators will be different** · Free of expensive turbines and generators, we will produce electricity in a fundamentally different and much cheaper way than previous energy sources. The energy from fusion comes out of the same process that powers the sun and is released in the form of a high-energy, **electrically-charged beam of helium nuclei**. This electric energy is **captured by an electric circuit** by allowing the pulsed beam to generate electric currents through a series of coils, similar to how a transformer or a particle accelerator in reverse works. The process of induction used here has been employed in electrical technology since the 19th century — we’ve just figured out an efficient way to harness it.



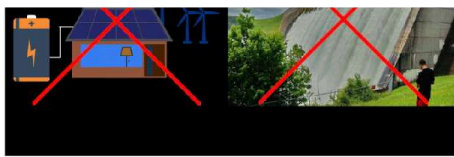
This conversion to electricity can be highly efficient, probably around 70%, and fuel costs will be negligible, as a 5 MW plant will require only 10 pounds of highly-attainable hydrogen-boron (pB11) fuel per year.

A 5 MW Focus Fusion generator, which will not require expensive turbines, will cost around \$300,000 and **produce electricity for less than half a cent per kWh**, ten times less than the cheapest current technology.

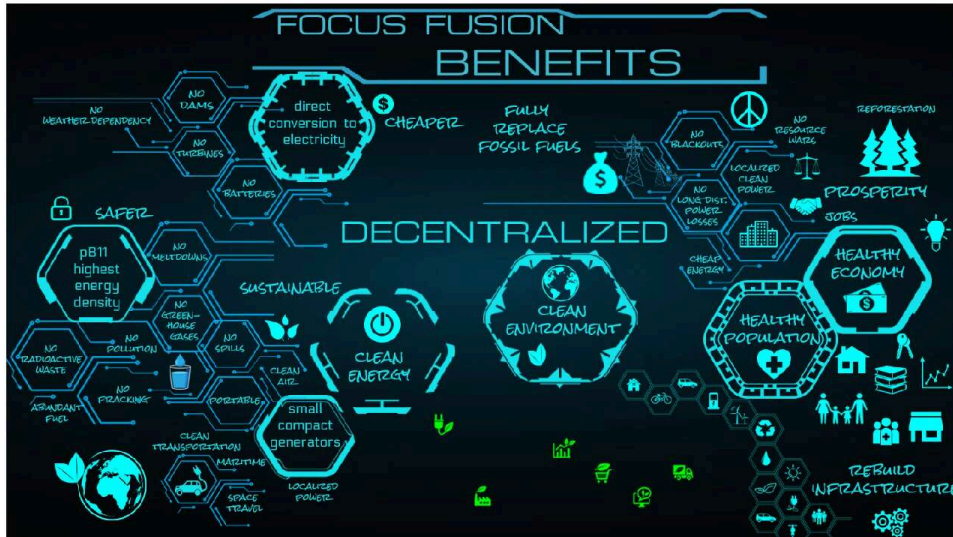




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Focus Fusion Technology Benefits: right-click or double-click to see a larger image.

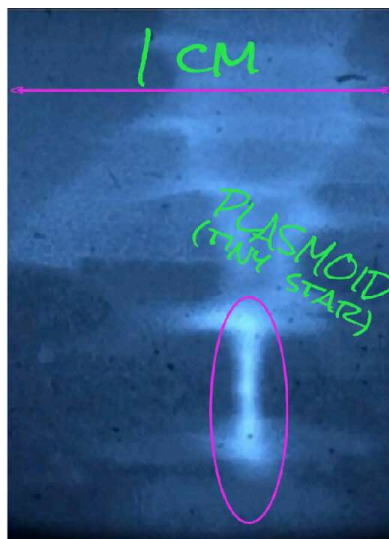
## Why is LPPFusion Different From Other Fusion Companies



We've chosen a far easier path than that pursued by the big government-backed fusion energy research and development efforts. They are trying to stabilize the natural instabilities – wiggleness – of the extremely hot, electrically conducting plasma where the fusion reactions occur. Our strategy is to use these natural instabilities of plasmas to produce energy, instead of fighting them. And we use a different fuel – hydrogen-boron (pB11) fuel— which produces no radioactive waste. This allows us to use the dense plasma focus or DPF device, that is so



small you can hold its heart - the electrodes - in your hands. The DPF device was invented in the 1960's by other fusion researchers but we've improved it.



Left: Syed working under Focus Fusion Experimental Device; FoFu - nick name for Focus Fusion; Right: ICCD image of Plasmoid, colored.

Because we've chosen an easier path, we've already achieved the highest confined temperatures of any fusion device in the world and are second in the race to produce more energy out of our DPF device than goes into it, with only \$9 million invested so far. We believe we are way ahead of many projects with billions behind them and thousands of times ahead of any other privately financed fusion energy R&D projects.

FOCUS FUSION BENEFITS		SUMMARY
1. Cheap, Virtually Unlimited, Hydrogen-Boron (pB11) Fuel	2. pB11 -The Highest Energy Density Fuel	3. Safe Clean
		NO searching, NO drilling, NO fracking, NO bad weather  NO spills  NO pollution, NO radioactive waste NO waste storing NO meltdowns



4. Direct Conversion To Electricity!	NO turbines NO batteries
5. Small Size - Fits In A Garage	NO astronomical costs
6. Decentralized Independent Generators	NO massive blackouts

## Your Investment Will Help Make Universal Clean Energy a Reality

We'll use our investment round to fund the final stage of our research that will lead to the **demonstration of net energy production**. Your money will be used to finance at least a year of research, hiring at least one more researcher.

We've proven that we can achieve the **highest confined temperatures** of any fusion device in the world. Our next research step is to prove that we can produce more energy than we put in. Success in this research will enable us, with \$50-100 million in additional government and grant funding, to carry out a 3-year engineering and development program that will produce a **working prototype generator** that will eventually be suitable for **mass production**.

**Neither governments nor big corporations are funding this research. But you can.**



Usually science research projects of national importance for humanity are funded with tax money. But fusion research does not have 4% of the annual budget of the Apollo program, not a half percent of that of the 2003 Iraq War. Unfortunately our government has not invested in fusion, and certainly not in Focus Fusion. Our budget is \$700,000 a year--too little for optimum speed.

Historically, those who ruled society stood in the way of the development of new sources of energy, because **control over power production** has always been tied up with **political and economic power**. New ways of producing power threaten

the Powers That Be. When feudal lords were the Powers That Be, they fought against the use of coal, which threatened their fuel monopoly based on the woodlands. But those kings and lords were swept aside by revolutions and new types of societies developed fossil fuel power as the basis of the Industrial Revolution. Society went forward and those Powers that Be became the Powers that Were.



Fusion power threatens the multi-trillion-dollar profits of the fossil-fuel industry and of the world financial system, which has been tightly tied to petroleum for decades. Now you have the power to decide if the oil, gas and coal barons--today's Powers That Be--will become the Powers that Were. By funding fusion, you can Flip the Power.

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## Downloads

video transcripts.txt