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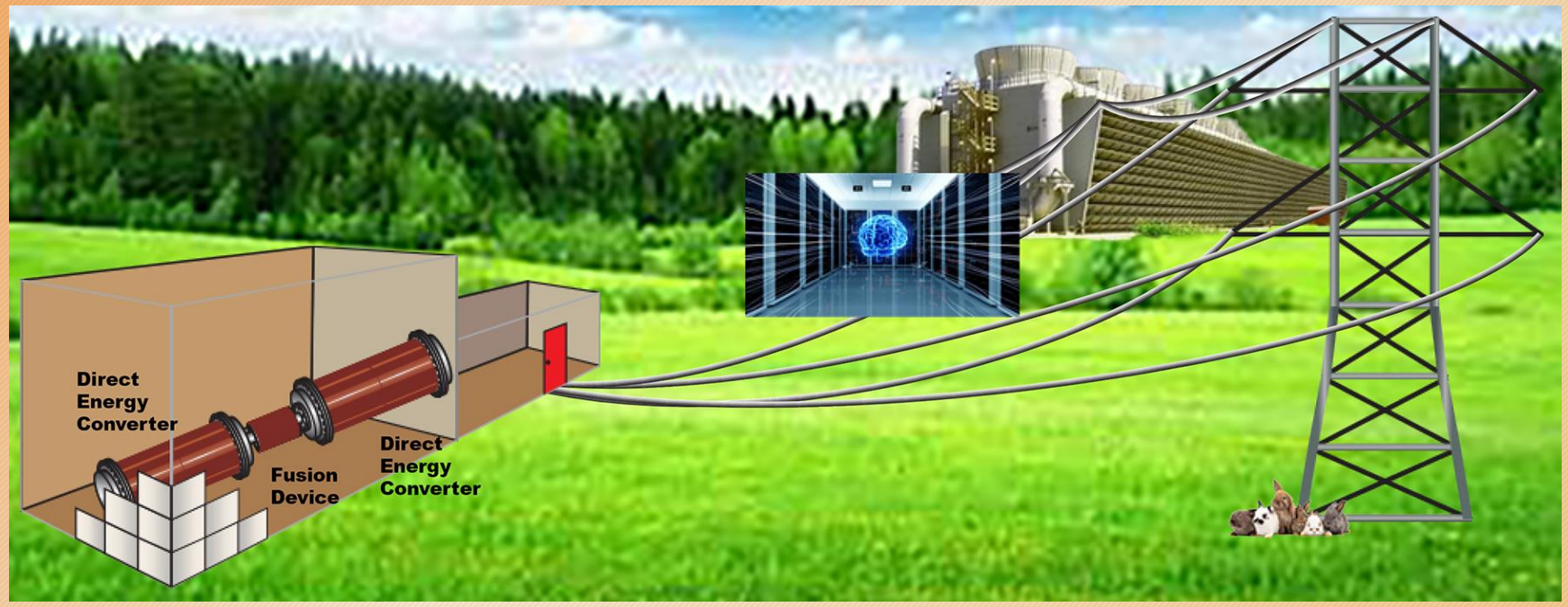
Advanced Fuel Oscillating Fusion Reactor



TIBBAR PLASMA TECHNOLOGIES, INC. (TPTI)
274 Dp Road
LOS ALAMOS, NM 87544,

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Vision

Inexpensive, clean, fusion power for AI data centers

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Introduction

TIBBAR PLASMA technologies

The goal is to develop a fusion power system that produces electrical power in a small system. Unlike other fusion systems, our device doesn't produce any radioactivity. It also utilizes Direct Energy Conversion so it doesn't require turbines or generators to produce power. This results in a clean, compact power system suitable for AI data centers.

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The Problem

With the rapid rise of digitalization and AI, the demand for data centers in the U.S. is expected to triple by 2030. This surge translates to a need for over 50 gigawatts (GW) of added capacity nationally.

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The Target Market and Opportunity

TPTI aims to capture 10-15% of this market by delivering efficient, low-cost, eco-friendly power solutions, positioning us to support the next generation of AI data centers. Providing this new capacity is a $15 billion market opportunity.

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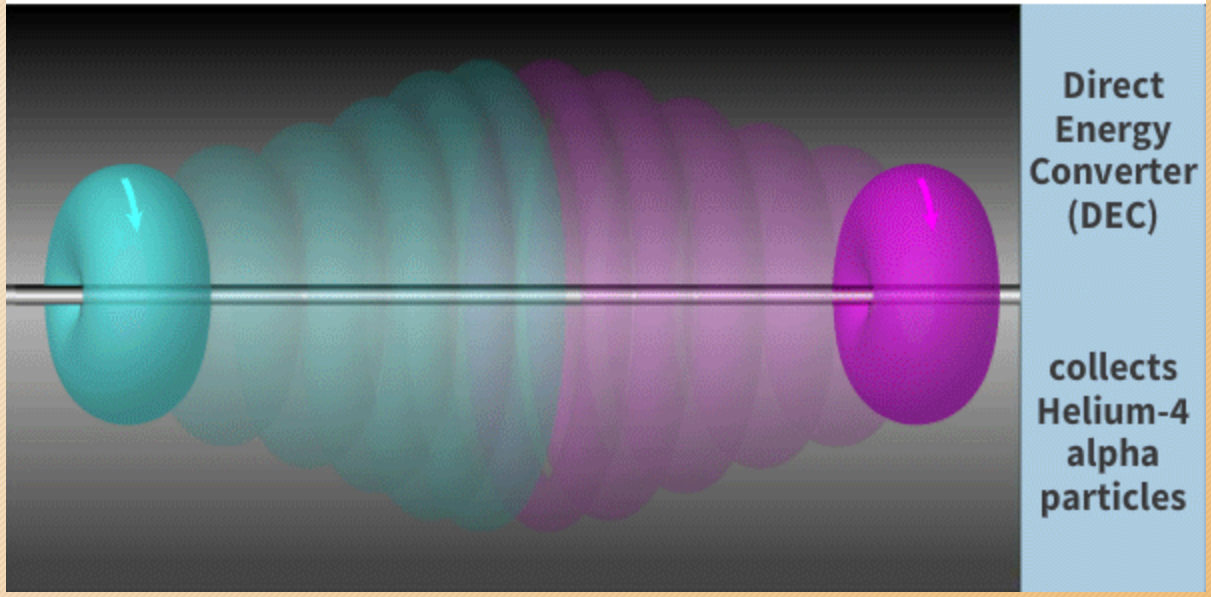
Solution—Axial Harmonic Oscillator

TPTI's advanced fuel oscillating fusion reactor utilizes rotating plasma rings created by magnetic fields to facilitate the fusion of p-^{11}B, generating helium-4 alpha particles.

- This innovative method allows for the direct conversion of fusion energy into alternating electricity through a traveling wave direct energy conversion module, enabling a compact reactor design.
- By using Boron-11 as fuel, our technology eliminates harmful neutron production and removes the need for a secondary steam cycle with traditional turbine generators.

Plasma confinement device with harmonic oscillator
concept being developed by Tibbar Plasma Technologies, Inc.



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Market Size

Barclays Research finds that AI growth could lead data-center usage to triple by 2030.

- **Energy use today:** Data centers currently consume 1.0-1.5% of global electricity, excluding crypto currencies.
- **Future energy demand in the US:** AI could drive US data-center use to triple by 2030 to 560 TWh—equivalent to 13% of current US electricity demand.

The overall electricity generation market value in America is forecast to grow at a compound annual growth rate of 3% percent between 2024 and 2031. This will increase from $316B U.S. dollars in 2023 to $393B U.S. dollars by 2031.

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The Competition

- Electric power for AI data systems is moving toward clean energy baseload solutions, making fission nuclear power a key competitor.
- Fusion research has recently gained $7 billion in funding. However, the large, complex nature of most fusion devices may hinder their ability to achieve economic goals.
- Wind and solar can also contribute to the energy mix, but they require an expensive grid-capable battery storage solutions to meet 24-hour a day demand.
- Fossil fuels are expected to claim some market share in the short term. TPTI's 50MWe reactor is projected to compete effectively with fossil fuel projects in the short term and offers better long-term clean energy prospects.

TPTI’s compact football field footprint reactor offers significant economic advantages compared to traditional large-scale nuclear power stations, making it an attractive option for market adoption. Key benefits include: projected capital costs of under $250 million, fuel costs below $2 per megawatt-hour, and operating costs anticipated to be under $20 per megawatt-hour. This combination of cost-effectiveness, scalability, and clean energy capabilities positions TPTI to provide a robust energy solution for the expanding data center sector.

Team TIBBAR

TIBBAR PLASMA technologies

Team Members

Dr. Richard Nebel
President

Keith Moser
Tech to Market Coordinator

Walt Davis
Investment Facilitator

Pamela Paine
Senior Illustrator

Dr. William Gibson
Senior Experimentalist

Anthony Belletete
Certified Public Accountant

Dr. Daniel Karmgard
Experimentalist

Dr. John Finn
Senior Theorist

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Business Model

TPTI's advanced fuel oscillating fusion reactor boasts a safe, lightweight, and compact design with high-fuel densities, targeting land-based nuclear power for AI, which is projected by the IAEA to grow 2.5 times by 2050 to 514 GW.

TPTI initially plans to market to large tech companies with growing data center power demands, needing continuous, reliable, clean electricity that scales up instantaneously through development licensing agreements.

TPTI's strategic exit options are:

- Develop our 50MWe reactor with funding from Angel/Venture Capital Investors, then IPO the company.
- License the technology by territory and/or application.

TPTI expects our current $10 million valuation to grow exponentially to over $300 million in 6 years.

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Financial

- Current burn rate
  - $16,000 per month
- Who are your current and previous investors?
  - TPTI is an employee-owned company
  - TPTI current $127,000 debt is also owned by Employees
- Total capital raised to date
  - $4,790,862.25

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The Next Steps

TIBBAR PLASMA technologies

I. The next steps for Shiner device. Completed this summer.
   A. Install new driver configuration.
   B. Drive poloidal symmetry.
   C. Form a colliding two-ring system.

2. Demonstrate D-D fusion from neutron detection.
   A. Neutron detection using ^{3}He neutron detectors.
   B. Use existing 5 kV power supply and RF supply.
   C. $1,000,000-2,000,000 cost.
   D. 18-24 months.

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Investment needed

- $1,000,000 to $2,000,000
- 10% to 20% stake in Tibbar Plasma Technologies, Inc.

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Backups

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Staffing

Dr. Nebel is a recognized expert on plasma physics. He spent the first 30 years of his career at Los Alamos National Laboratory as a Director's Post-Doc, staff member, section leader, and group leader. He worked in the Controlled Thermonuclear Research (CTR), Theory (T), and Applied Theoretical Physics (X). He specialized in nonlinear simulations, plasma theory, and electrostatic confinement fusion devices. In 2007 Dr. Nebel joined Energy Matter Conversion Corporation (EMC^2) as president, chief executive officer, and chairman of the board of directors.

He left EMC^2 in 2010 and founded Tibbar Plasma Technologies, Inc. where he is currently the President. While at Tibbar Technologies he discovered previously unknown solutions of the MHD equations which led Tibbar Technologies to invent a simple plasma device with helical electrodes that could be used as an electrical transformer. They have demonstrated this plasma-based transformer device in the laboratory and are currently developing the concept.

Dr. Nebel received his B.S., M.S., and Ph.D. from the University of Illinois in Urbana-Champaign. He graduated his B.S. with highest honors. He also received honors as a James scholar, an ERDA Trainee and a University Fellow.

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Staffing

Dr. Gibson is a 13-year veteran of Los Alamos National Laboratory, working first in the Nuclear Materials Technology Division as a software engineer, and later as lead architect and software engineer for the Integrated Knowledge Engine (IKE), an advanced decision analysis tool which performed Bayesian Analysis, Evidence Marshalling, Optimal Asset Allocation, Assessment, and Accomplishment Trending. Prior to working at Los Alamos National Laboratory, Dr. Gibson worked at various aerospace companies, including Martin Marietta Astronautics Group, McDonnell Douglas, and NASA's Johnson Space Center. At Tibbar Tech, He holds a Ph.D. in Mathematical Analysis from the University of Houston and both B.S. and M.S. from the University of Texas at Austin.

Mr. Moser has over 30 years experience designing, manufacturing, constructing and operating nuclear power plants. Mr. Moser developed and managed the Innovation Process at Exelon Nuclear. Since introducing the Innovation Process in 2006, Exelon Nuclear has developed over 196 innovations that represent 1778 person-rem of radiation exposure savings, over $837 million in cost savings and a record 36 Nuclear Energy Institute Top Industry Practice Awards. As a result of Exelon's Innovation Management results, Mr. Moser was awarded the American Nuclear Society Utility Leadership Award in August 2012.

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Staffing

Dr. Karmgard is an experimentalist with 25 years of experience in particle physics. He served on the research faculty at Norte Dame University for 20 years, and is an Adjunct Professor of Physics at American Public University. He has been associated with Tibbar Plasma Technologies since 2022. He holds a B.S. in Math and a B.S in Physics from UCLA, a M.S. in Physics from California State/Long Beach, and a Ph.D. in Physics from Florida State University. Dr. Karmgard has over 400 refereed publications.

Anthony W. Belletete, CPA MBA is a licensed NM and NC CPA with over 30 years accounting, tax, and auditing experience. Anthony received his Bachelors of Accounting degree and Masters of Business Administration degree from Queens University in Charlotte, NC. Over his career, Anthony has worked with national CPA firms, large commercial banks, nationwide retail companies, as well as hundreds of small to medium sized businesses.

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Staffing

Walt Davis is a consultant in the areas of Technology Strategy, Patent Strategy, and the Productization of New Technologies. Walt retired from Motorola as a Senior Vice President after 39 years of service with the company. At Motorola, he worked in a number of positions Involved with the development of portable radio communications equipment and VLSI Integrated Circuits for Communications applications.

At Motorola, he helped develop the first custom integrated circuits used in commercial radio communications equipment. He later contributed to the technical development of several generations of paging products. He also led the team that developed Motorola's first CMOS Microprocessor.

He subsequently transferred to Motorola's Semiconductor Products Sector as a senior strategist, and then moved to Motorola Labs where he was responsible for technology development in the areas of: Human Factors, Imaging Systems, Security, Systems Architectures, Computing Architectures and Ultra Wide Band RF Systems.

From 2008 to 2010 Walt was a Managing Director of Galvin Energy LLC where he helped develop a preliminary design for a pebble-bed nuclear power plant.

Walt has also served on the Board of Directors of Comnetix, Inc of Canada, and Certicom Corp, a Canadian company focused on cryptographic security.

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Staffing

John Finn spent 20 years as a staff member and acting group leader in the Theoretical Division at Los Alamos National Laboratory. He is a world recognized expert in plasma theory and is a fellow of the American Physical Society. His research is mostly related to magnetic confinement fusion, electrostatic confinement fusion, astrophysical plasma physics, basic plasma physics, and computational methods.

Pamela Paine was an illustrator in at Los Alamos National Laboratory in the Applied Theoretical Division (X Division) for 40 years. X Division is the largest Division in the Nuclear Weapons Program. She won both state and national awards through the Society for Technical Communications for her design of recruiting posters for X Division.