FUSION
INDUSTRY ASSOCIATION

The global fusion industry in 2025

Fusion Companies Survey by the Fusion Industry Association

Contents

FOREWORD

This year's *Global Fusion Industry Report* marks a significant milestone – our fifth consecutive report tracking developments in the commercial fusion sector. This report began in 2021 as an effort to answer the three questions we were always being asked: "Who?" "How much?" and – especially – "When?" We found that directly asking the companies working to commercialize fusion was the best way to answer these questions, and the resulting reports brought visibility and clarity to a nascent industry. In the years since, we've heard that this report has become an indispensable tool for understanding the growth and evolution of the fusion industry. With 53 companies participating this year, and with a half-decade of data, we can identify clear trends that speak to both the promise and challenges of commercial fusion energy.

Five-Year Trends

The growth in funding is the most striking indicator of the industry's accelerating trajectory. In our first report, we were proud that the industry had attracted $1.9 billion in total investment. Today, that figure has surpassed $9.7 billion, with over $2.6 billion raised in the last year alone. That's not just a five-fold increase – it's a signal of maturing investor confidence, technological progress, and a rapidly coalescing supply chain. This is despite the fact that most of the last half-decade have not been banner years for broader investment in technology fields – affirming fusion's unique appeal as a secure, scalable, and clean energy solution to the world's power needs.

The number of companies and employees continues to grow as well. Just five years ago, we surveyed 23 fusion companies. In 2025, we surveyed 53, representing more than 4,600 employees – a more than four-fold increase from 2021 – and supporting at least 9,300 supply chain jobs. The direct employee number climbs to over 18,000 when companies project the workforce needed to build pilot plants. Fusion is no longer purely a scientific effort; it is a global industrial movement.

That movement is producing results. This year's data includes $2.6 billion in new investment, with major raises by Pacific Fusion, Helion, Proxima Fusion, and TAE Technologies. We've seen the entry of eight new companies, several with major startup backing. That development reflects a healthy, innovation-driven marketplace that is testing multiple technical approaches. While undoubtedly not all concepts will become market leaders, this is precisely how technological revolutions unfold.

Looking over five years of surveys, a few trends stand out:

- **Capital is increasing**, with funding growing even in years where the global economy tightened.
- **Public-private partnerships are expanding**, especially in the U.S., U.K., Germany, Japan, and China, where governments are engaging with industry to share risk and accelerate commercialization.
- **Companies are maturing**, moving from prototypes and small teams to addressing engineering and manufacturing challenges, integrating system development, and starting to site first plants and strike deals with early power customers.
- **Investor diversity is increasing**, with support from deep tech VCs, industrial conglomerates, sovereign funds, and strategic energy companies.
- **Fusion is attracting serious talent**, growing in headcount, experience, field, and global reach – with fusion developers now operating in more than a dozen countries.

Looking to the Future

While the prevailing sense from these results should be optimism, the challenges remain steep and the only response should be that "more" is needed. For the first time this year, we asked how much more investment each company would need to bring their first pilot plants online. The answers varied widely, as would be expected from an industry with diverse technological approaches and progression along pathways. The median respondent reported needing $700 million more to bring their first plants online, but the responses were so varied that it is hard to generalize answers.

When answers were combined, the total capital required to bring every surveyed company to commercialization is above $77 billion – eight times more than has been committed to the industry to date. However, we shouldn't take that as the number needed to create a commercial fusion industry; it is implausible that every company will successfully make it at scale. Furthermore, companies can consolidate efforts; some of the development and deployment costs can be shared through partnerships and joint ventures. Thriving global industries generally see several companies emerge as leaders, with others as fast followers. Like other high-tech industries, fusion will undoubtedly see a reduction in the number of companies even as the value and footprint of the sector grows.

Timing

As with past years, the results of this year's survey confirm that the industry remains focused on the 2030s as the decade for commercialization. Of the 45 companies that responded, the overwhelming majority – 35 – anticipate operating a commercially viable pilot plant, capable of generating net energy, between 2030 and 2035. A small number are pushing for earlier milestones, with five companies targeting commercial readiness before 2030, while another five expect to reach that stage later, between 2036 and 2040. These pilot plant timelines mark a significant step toward commercial plants that will deliver power to customers, with 28 companies expecting to connect to the grid between 2030 and 2035, and only a handful projecting delivery beyond 2040.

Looking beyond individual company goals, the industry's collective forecast reflects a simultaneously realistic and ambitious outlook. Asked when the first fusion plant – anywhere – will deliver electricity to the grid, two-thirds of respondents predict between 2031 and 2040. While just a few see commercialization happening before 2030, these projections reinforce the transition of fusion from a science experiment to an emerging energy technology with near-term potential. The fusion industry is gearing up for a defining decade, and the data shows that confidence is stronger than ever.

Challenges to Overcome

Although timing projections are clear, the survey also highlights that there is a great deal of work to come.

As the fusion industry pushes toward commercialization, companies identify a range of near-term challenges that must be overcome by 2030. While the obvious challenge of achieving sufficient fusion power gain is at the top, other technical concerns include fuel cycle sufficiency and developing neutron-resilient materials, along with resolving engineering questions unique to fusion. The FIA and our members are actively engaged with governments to develop solutions to these very challenges.

Finally, access to funding remains a major issue for fusion companies, underscoring the long development timelines and capital intensity of the industry. Across the board, the responses highlight that while fusion's promise is within reach, sustained progress will require a continuation of technological breakthroughs and financial, regulatory, and policy support.

Public-Private Partnerships Grow

The amount of public funding that companies identified adding into their capital tables this year increased by 84%, growing by almost $360 million to nearly $800 million in total. It is not only private funds that see long-term benefits to fusion; governments also recognize the economic advantages of nurturing a growing industry that will usher in jobs and expand supply chains. In the last year, government policies in countries like Japan, Germany, China, the United Kingdom, the United States, Korea, Canada, and the European Union have worked to boost their fusion programming.

As fusion innovation advances, the industry is generating technological and economic benefits beyond fusion. Fusion companies are spinning out innovations such as magnets and high temperature superconductors, which benefit industries from wind turbines to maglev trains. Just as the space race produced innovations in everything from microchips to wireless communications to cordless drills, fusion research is expanding new possibilities with applications well beyond fusion power.

Investor Diversification

Investor diversity in the fusion sector continues to broaden, reflecting growing confidence across a wide spectrum of capital sources. This year's survey highlights backing from an expansive range of investors, including deep tech venture capital firms like DCVC, Leitmotif, and Breakthrough Energy Ventures; industrial giants such as Chevron, Siemens Energy, and Nucor; sovereign and quasi-public funds including In-Q-Tel, the European Innovation Council Fund, and Plynth Energy; and strategic players from the wider energy sector like Shell Ventures and Energy Impact Partners. The presence of investors from fields as varied as telecommunications, real estate, and defense – alongside participation from family offices and tech pioneers – underscores fusion's appeal beyond traditional high tech or clean energy circles. This increasingly diverse investment base is not only providing vital capital, but also helping fusion companies establish commercial partnerships, navigate regulatory landscapes, and prepare for global deployment.

Moving Forward with First Customers and Sites

Today's commercial momentum did not exist in 2021. In just a few years, the industry has undergone a major shift, with companies forging early customer partnerships and securing sites for their first plants. In 2023, Helion Energy became the first fusion company to sign a power purchase agreement (PPA) to provide Microsoft with electricity from its first fusion power plant, expected to be online by 2028. Helion later announced a collaboration with Nucor, the largest steel producer in the U.S., to explore fusion's role in decarbonizing heavy industry. In June 2025, Commonwealth Fusion Systems (CFS) announced the first direct PPA with Google as part of a partnership that also included an expanded investment into CFS.

Alongside these commercial agreements, fusion companies have been advancing plans for siting their first power plants. In February 2024, Type One Energy signed a Memorandum of Understanding with the Tennessee Valley Authority to explore building a plant at a retired coal power plant in Tennessee. In December 2024, Commonwealth Fusion Systems announced it would develop its first plant outside Richmond, Virginia, via a joint development agreement that is part of a partnership with utility Dominion Energy, targeting operations in the early 2030s. And in early 2025, Focused Energy unveiled a partnership with the German government to develop a site at a former nuclear facility in Biblis, a small town in the Hesse region.

As companies zero in on early deployment sites, regions are starting to race to position themselves as "fusion hubs," aiming to capture the economic and workforce benefits of the emerging industry. In the U.S., clusters are forming in the Pacific Northwest, California, the Great Lakes, and the Northeast. Perhaps the world's leading fusion cluster has been established with British government support around Oxford. Other nations are working to position themselves as sites for early adoption, aligning regulations and putting forward policy to strengthen supply and workforce networks.

The Growing Fusion Workforce

Fusion is attracting top-tier talent from around the world, with workforce growth reflecting the sector's accelerating momentum and global scope. Since 2021, the number of people employed directly by private fusion companies has more than quadrupled, and this expansion is matched by growth in the broader fusion ecosystem, with supply chain jobs tripling in the last two years. Fusion companies are headquartered across more than a dozen countries in North America, Europe, Asia, and Oceania. Fusion science has always been a global effort that spans borders, but only now is it developing into a truly international business, drawing in engineers, scientists, manufacturers, and business leaders to help build the next great energy industry.

Conclusion

After writing five of these reports, the trajectory is clear. Fusion is no longer a dream that is perennially deferred to "20 years from now." It is a technology being built today, with tangible progress year over year. The next few years will determine not just which companies succeed, but how this generation delivers on a promise made decades ago when the potential of fusion was discovered: to power the world with secure, limitless, clean energy.

We at the Fusion Industry Association are proud to serve this remarkable community. We thank the companies that responded to this year's survey for their participation and transparency – and we look forward to continuing to work together to make commercial fusion power a reality.

Andrew Holland
Chief Executive Officer
Fusion Industry Association

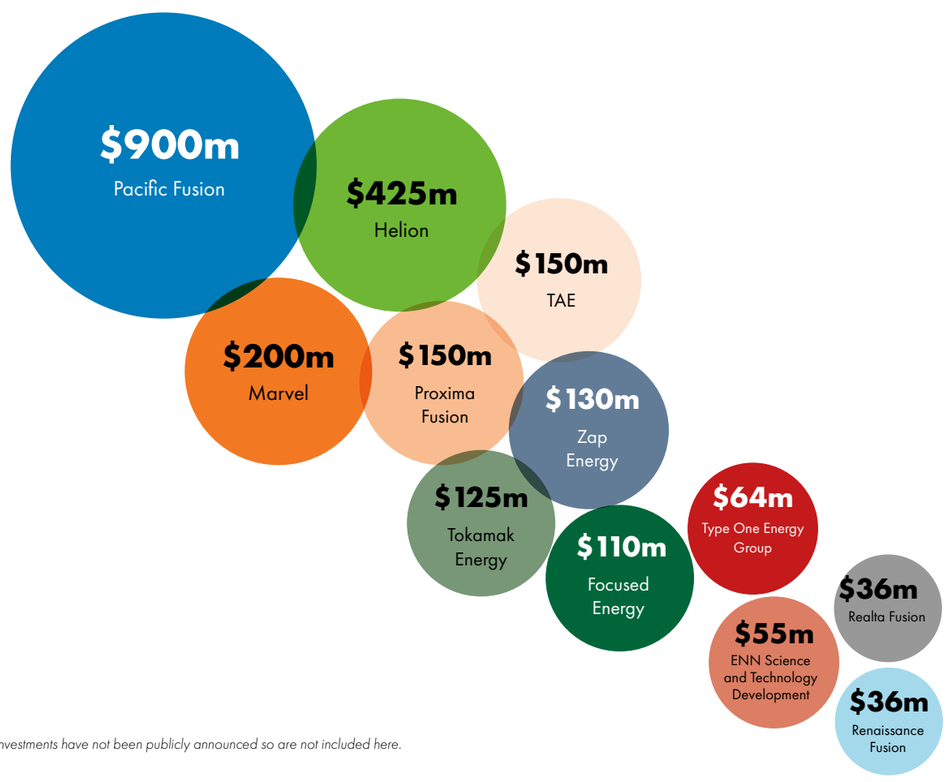
THE HEADLINE FIGURES THIS YEAR

TOTAL FUNDING 2025

Total funding to date:	**$9,766,000,000**
Total this year:	**$2,643,573,000**
Total private funding to date:	**$8,971,150,000**
Total public funding to date:	**$794,850,000**

*Some figures have been converted to dollars/rounded.

NOTABLE INVESTMENTS SINCE THE LAST SURVEY

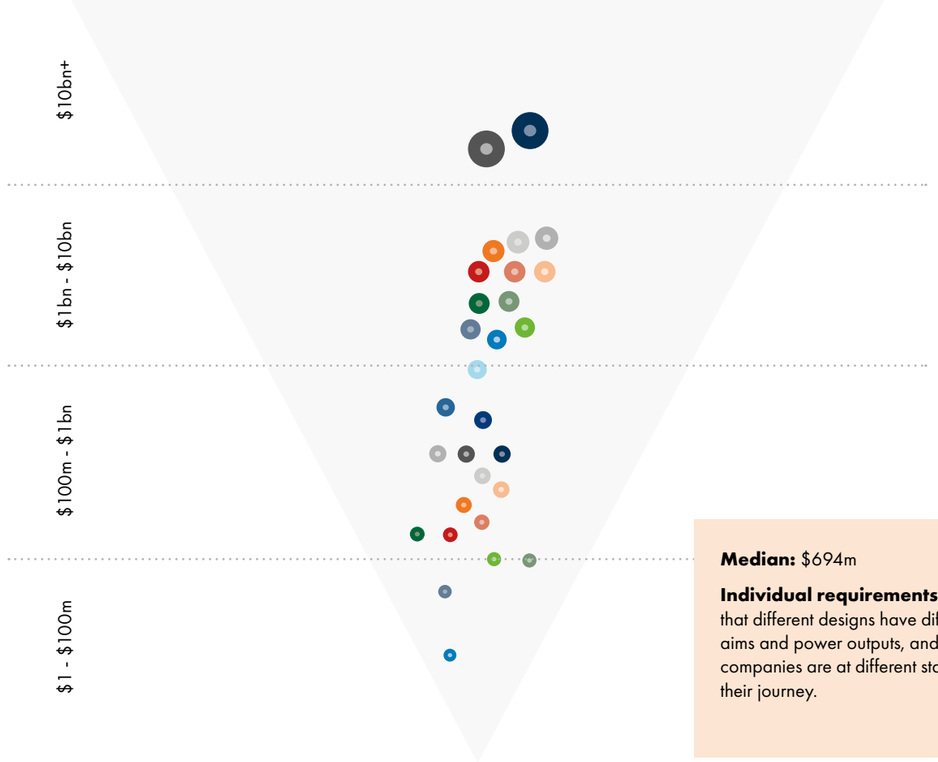


*Some investments have not been publicly announced so are not included here.

COMPANIES WITH OVER $1BN INVESTMENT

HOW MUCH MORE FUNDING DO YOU ESTIMATE NEEDING TO DELIVER A COMMERCIAL PLANT?

29 responses



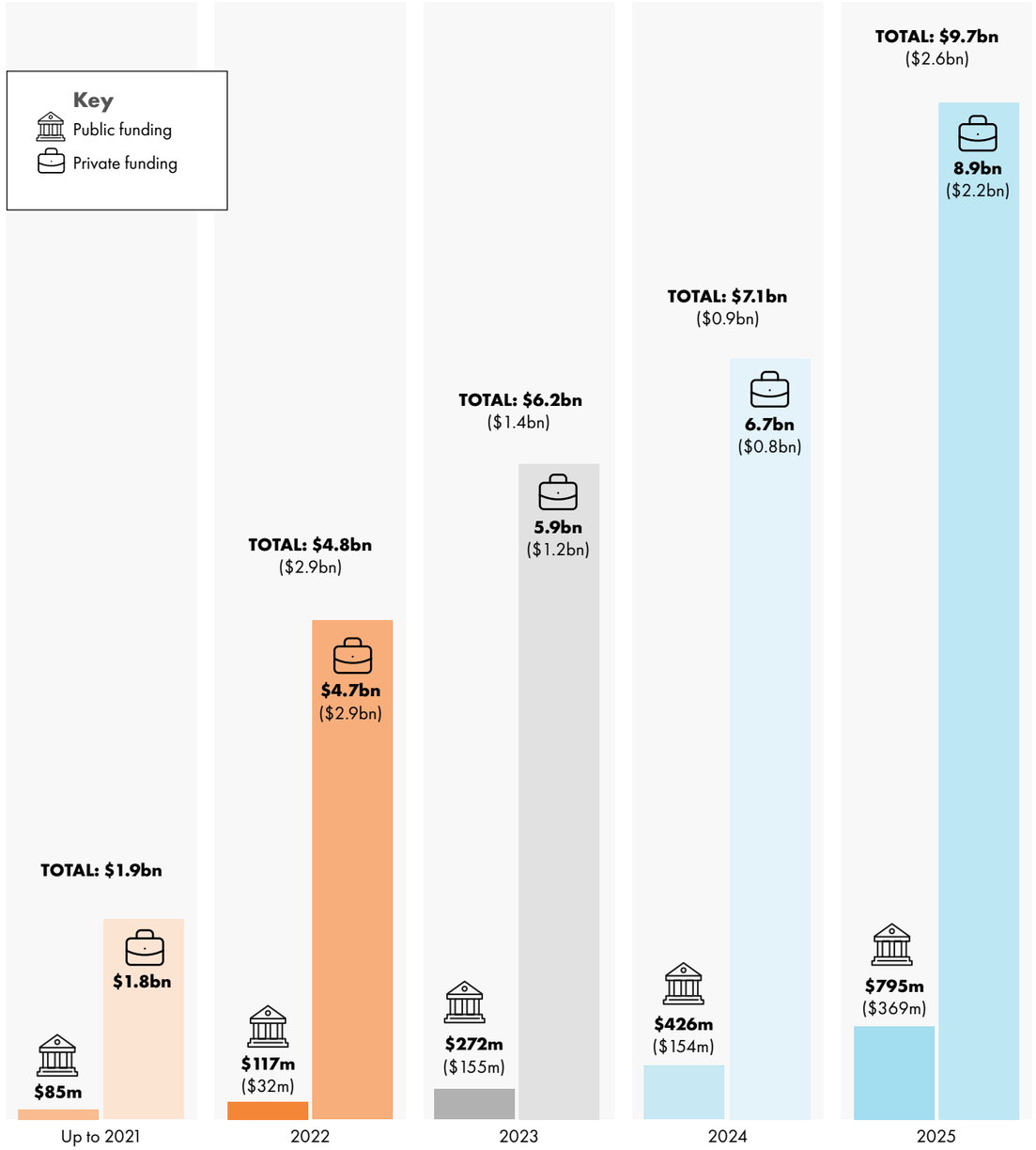
Median: $694m

Individual requirements: Note that different designs have different aims and power outputs, and companies are at different stages on their journey.

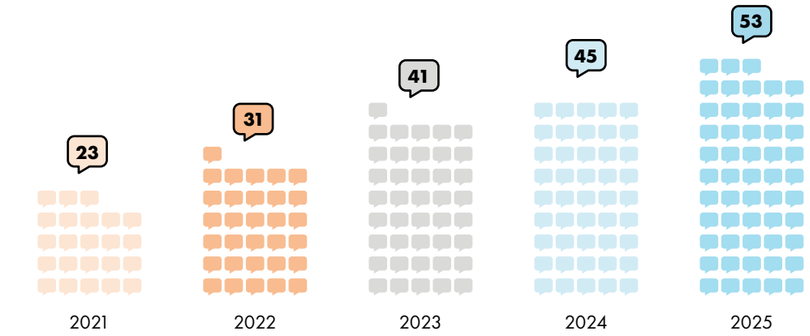
FIVE YEAR TRENDS: 2021-2025

Total funding

(annual increase in brackets)

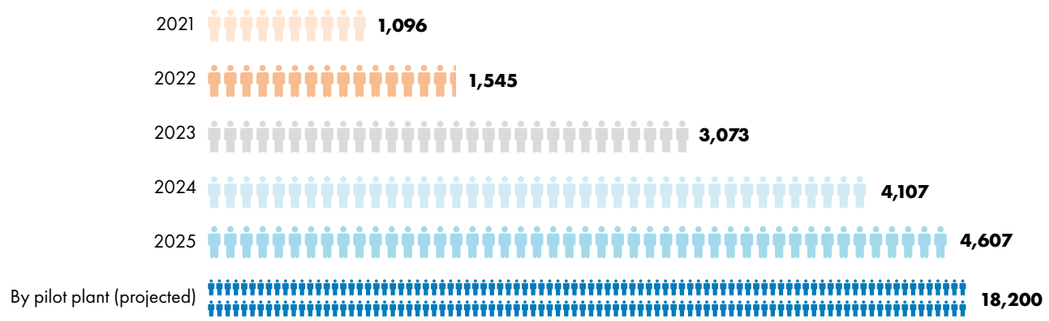


Number of respondents

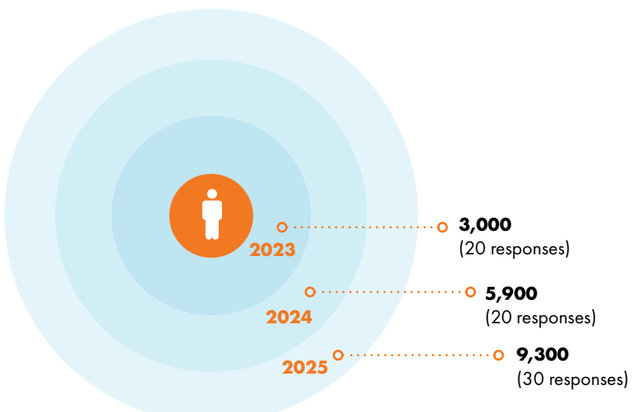


Employed by fusion companies

(30 responses)



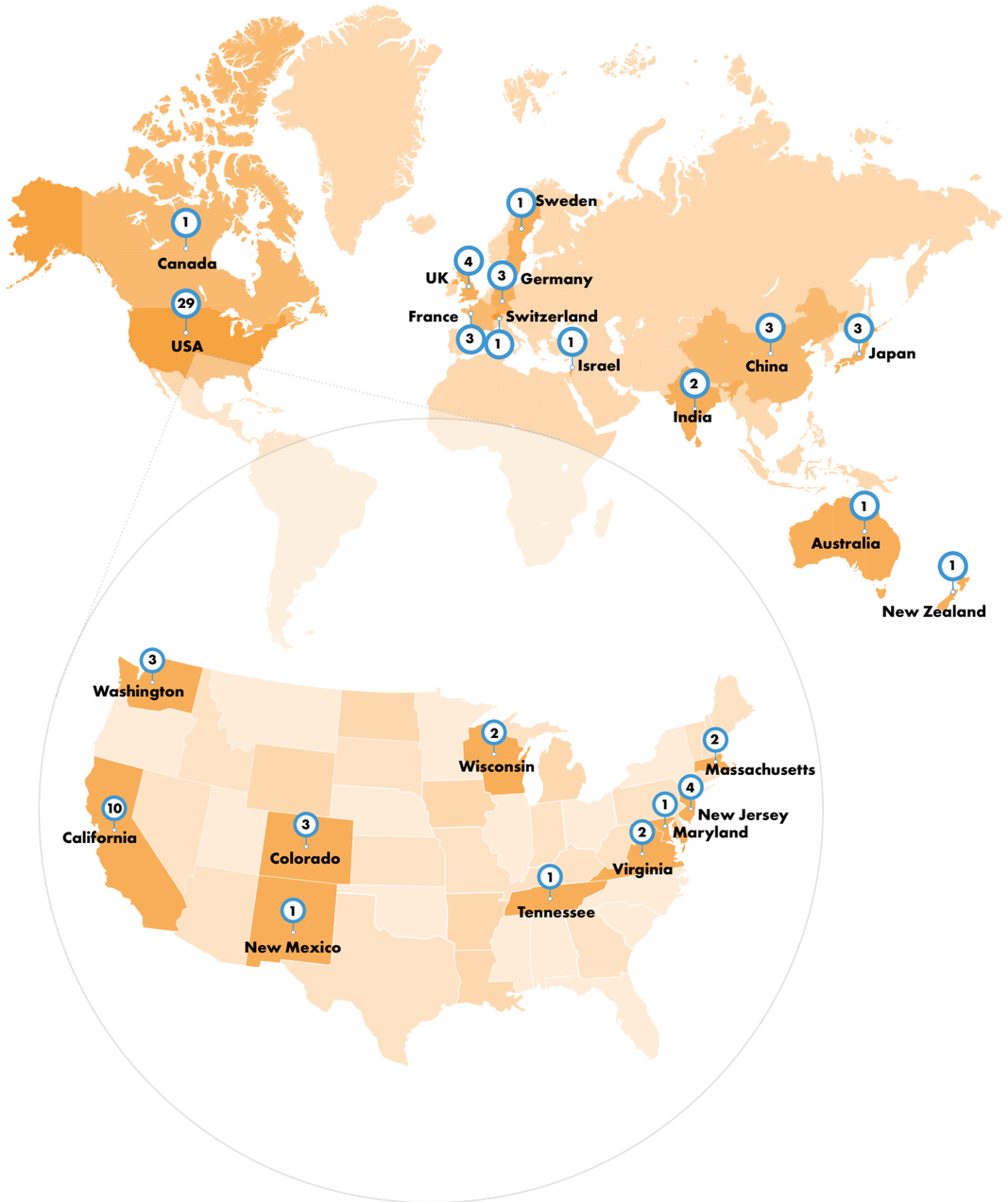
Estimated jobs supported by fusion companies' supply chain



THE FUSION INDUSTRY IN 2025

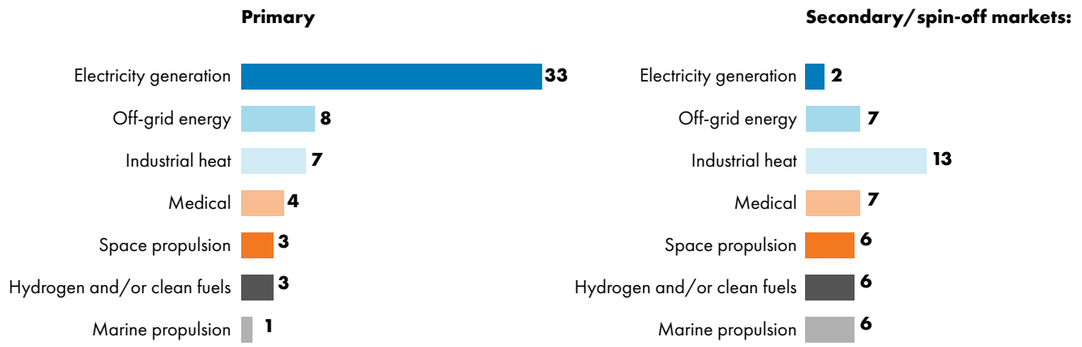
1. Location

By primary HQ



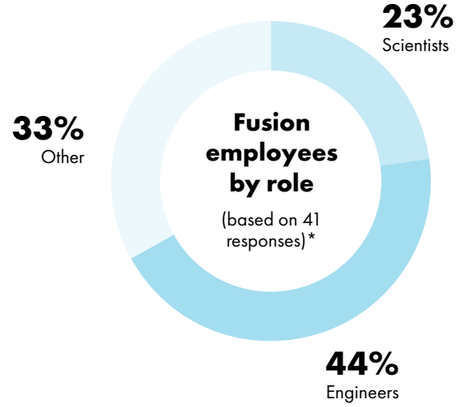
2. Target markets

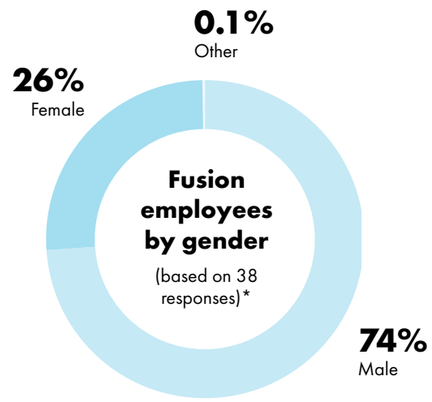
Primary and secondary markets (respondents could select multiple)



Other named markets included: materials research, lithium breeding, nuclear waste transmutation, laser driven imaging, neutron source, Radiation-as-a-Service (RaaS), hard rock tunneling and mining, diagnostic development, neutron imaging and radiation effects testing for advanced industrial inspection, tritium and radioisotope production.

3. Employees





Numbers are approximate and based on companies' estimated figures, rounded to the nearest 10%. Companies that did not provide demographic and role data are not reflected in these figures.

4. Selected* investors who have made investments in fusion in the last 12 months

31 Ventures
Addition
Athos
Avila VC
b2ventures
BAM Elevate
Bayern Kapital
Breakthrough Energy Ventures
BW Group
Capricorn Investment Group
Chevron Technology Ventures
Chishima Real Estate
Climentum
Crédit Mutuel Impact
DCVC
Delight Ventures
Deutsche Telekom
General Catalyst
Good Ventures Foundation
Google
Earlybird VC
Ecosphere Ventures
Virginia Venture Partners
Emerson Collective
Energy Impact Partners
ENN Group
EQT Ventures
European Innovation Council Fund
Fukikara
Furukawa Electric
Future Ventures
Granitor
GSBackers
HV Capital
Industrial47 Venture Studio
Industrifonden
In-Q-Tel
Nichicon
Itochu
K-CAP
Khosla Ventures
Leitmotif
Lightspeed Venture Partners
Lowercarbon Capital
Marubeni
Mithril Capital
Miyako Capital
Mizuho Financial Group
Nucor
NVTRN Supporters
Playfair VC
Plynth Energy
PRIMEPULSE
Sam Altman
Santander
Shell Ventures
Siemens Energy
SiteGround
Softbank Vision Fund 2
Soros Fund Management LLC
Special Invest
Speedinvest
St1
Tengelmann Ventures
Thales
Titletown Tech
Tom Enterprise
Unit-E, Axon Partners
WARF Ventures
Mayfield
Xplor Ventures

A complete list of reported investors over all time is available in previous year's reports: ***www.fusionindustryassociation.org/fusion-industry-report-archive***

** Investor information is self-reported by companies. This list reflects those reported investments made in the past 12 months. The FIA is not responsible for the responses listed in this report from survey participants and does not intend to disclose any proprietary information. For a complete history of reported investors, please refer to our earlier reports.*

5. Public-Private Partnerships

20 companies
report being engaged in a Public-Private Partnership (PPP) that includes cost-sharing with government

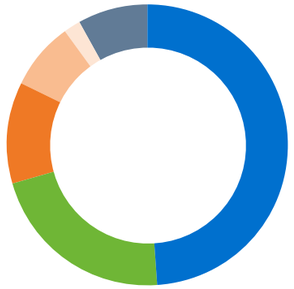
Most grants in the
$5-15m range

with a couple as high as
$100-150m
(milestone dependent)

Noted PPPs include:

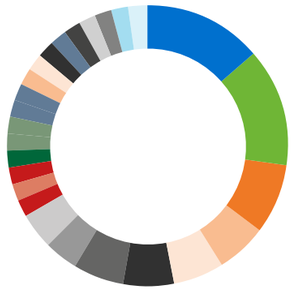
- **Milestone-Based Fusion Development Program:** U.S. Department of Energy (DOE) program to support development of a fusion pilot plant (FPP) and commercialization of fusion power.
- **Innovation Network for Fusion Energy (INFUSE):** DOE initiative funding PPPs to accelerate fusion energy development by providing access to national laboratories.
- **INCITE:** Provides access to DOE's supercomputing facilities to accelerate scientific discoveries and technological innovations.
- **CHADWICK:** Part of DOE's Advanced Research Projects Agency–Energy (ARPA-E) focused on developing advanced materials for the first wall of fusion machines.
- **The UK's Prosperity Partnership programme:** Funds collaborative research between universities and industry to drive innovation in key technologies.

6. Approach



General approach

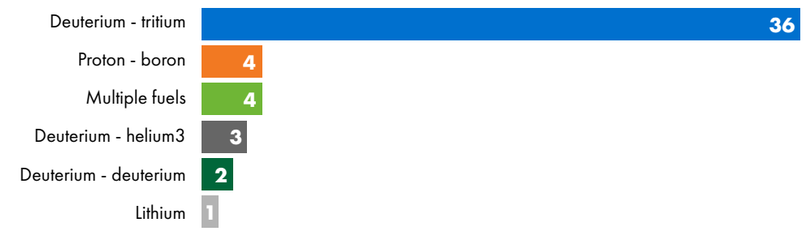
- **25** Magnetic confinement (inc. Tokamak, Stellarator)
- **11** Inertial confinement
- **6** Magneto-inertial
- **4** Hybrid electrostatic confinement
- **1** Muon-catalyzed fusion
- **4** Non-traditional concepts/Not stated



Specific approach

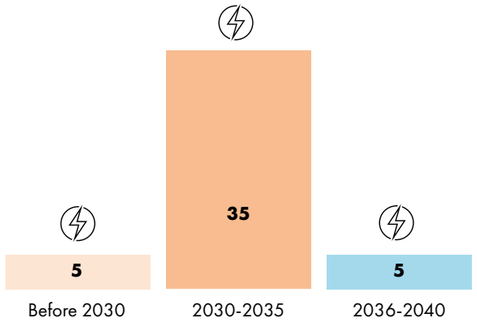
- **7** Stellarator
- **7** Laser-driven inertial confinement
- **4** Spherical tokamak
- **3** Tokamak
- **3** Magnetized target fusion
- **3** Magnetic-electrostatic confinement
- **3** Field Reversed Configuration
- **2** Laser-driven inertial confinement, with pB11 fuel
- **2** Z-pinch
- **1** Active-target muon production and high density fusion cell
- **1** Inertial-electrostatic lattice confinement
- **1** Poloidal magnetic confinement
- **1** Pulsed magneto-plasma pressurized confinement
- **1** Shock-driven inertial confinement
- **1** Plectoneme
- **1** Supporting Multiple Approaches
- **1** Dense Plasma Focus
- **1** Magnetic Mirror
- **1** Dynamic Stellarator
- **1** Levitated Dipole
- **1** Pulser-driven inertial confinement
- **1** Quasi-isodynamic stellarator
- **1** Spindle cusp, superconducting shielded-grid Inertial Electrostatic Confinement
- **1** Magnetic Mirror
- **1** Electrostatic confinement
- **1** Centrifugal Magnetic Mirror

7. Fuel Source



8. When do you anticipate your company will operate a commercially viable pilot plant?

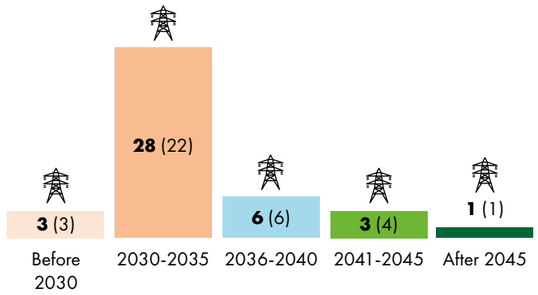
(45 responses)



9. When do you anticipate your company will deliver power to the grid?

(41 responses)

**Last year's response in brackets*

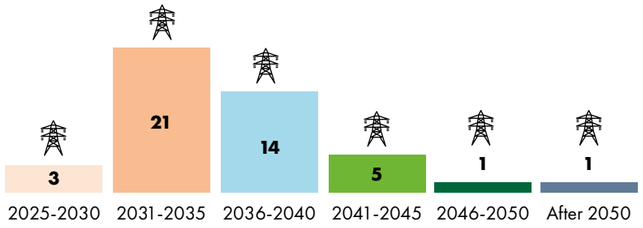


10. Predictions

Any variations between these and previous charts are due to different respondents between questions.

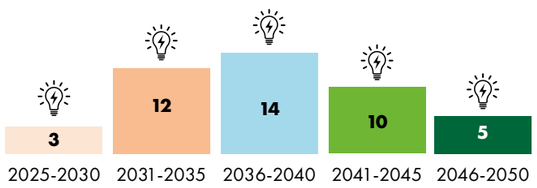
When will the first fusion plant deliver electricity to the grid?

(45 responses)



When will the first fusion plant demonstrate a low enough cost/high enough efficiency (Q) to be considered commercially viable?

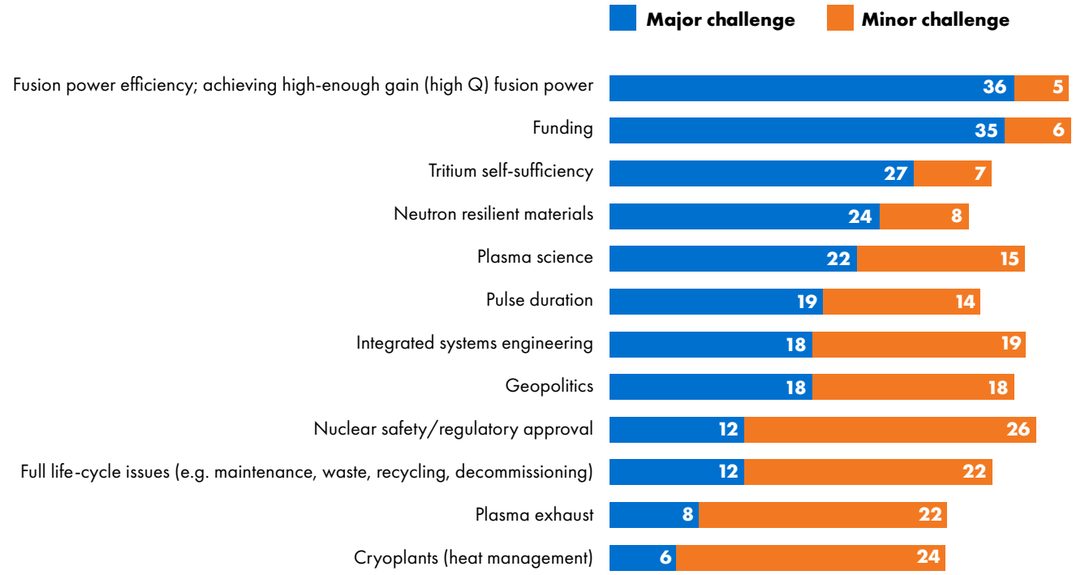
(44 responses)



11. Challenges

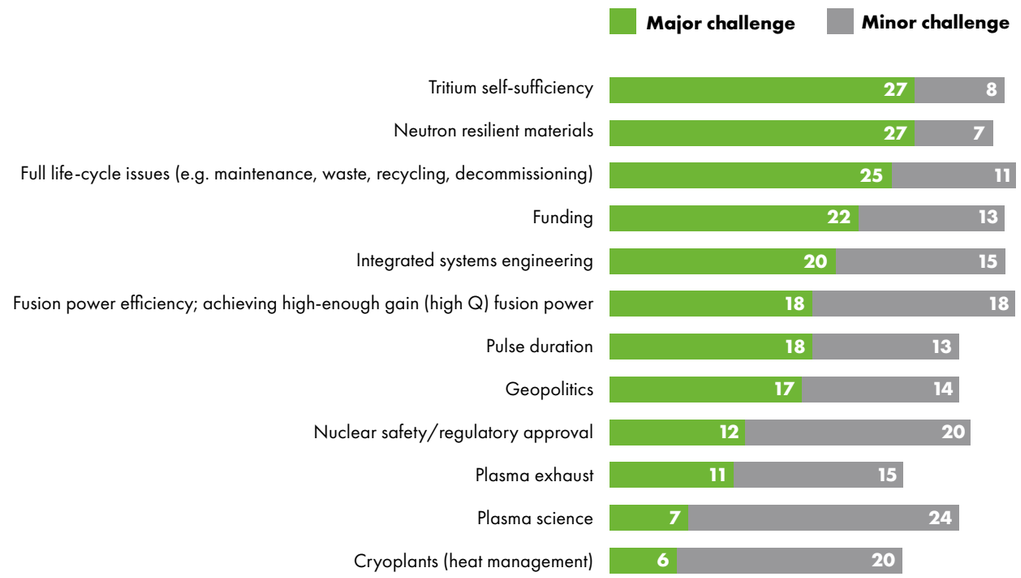
What do you see as the main challenges for fusion energy up to 2030?

(42 responses, non-reported answers indicate not seen as a problem/don't know)



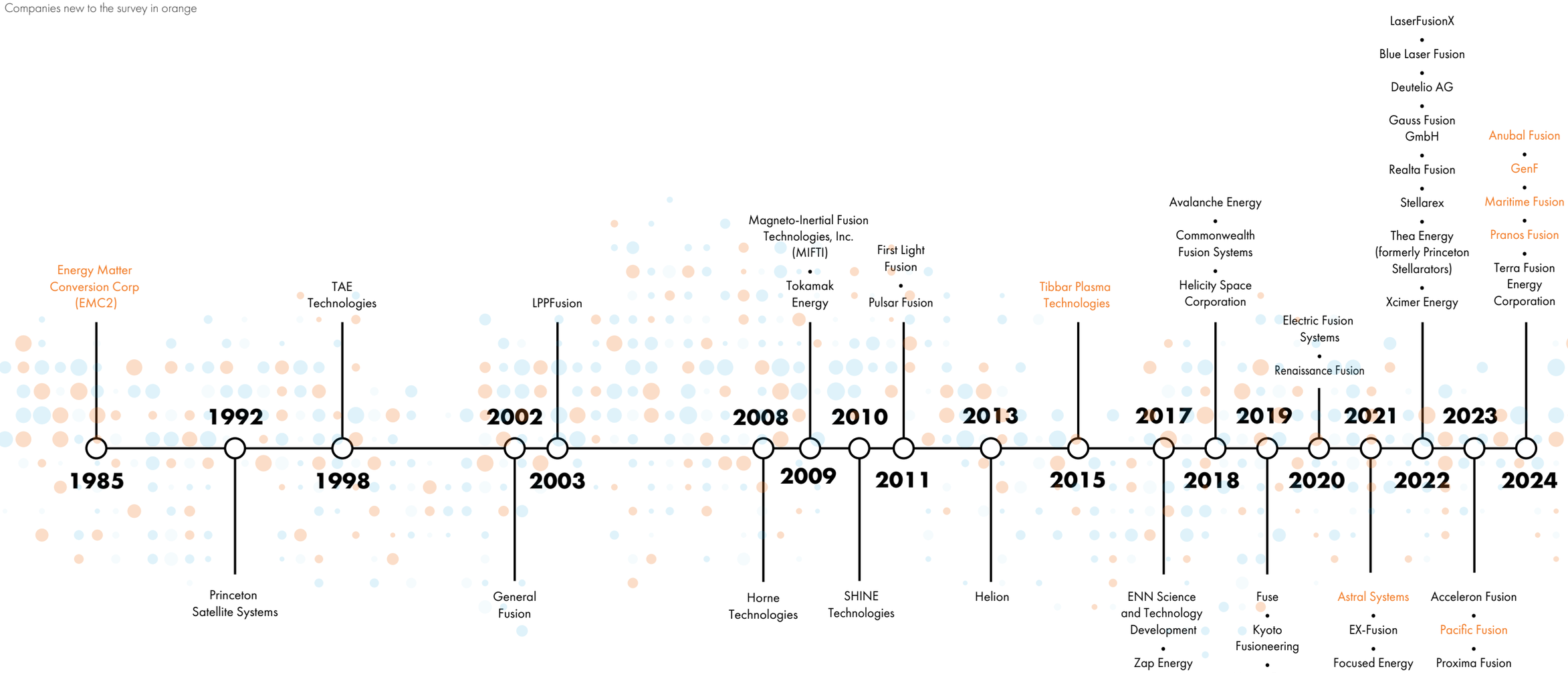
What do you see as the main challenges for fusion energy after 2030?

(38 responses, non-reported answers indicate not seen as a problem/don't know)



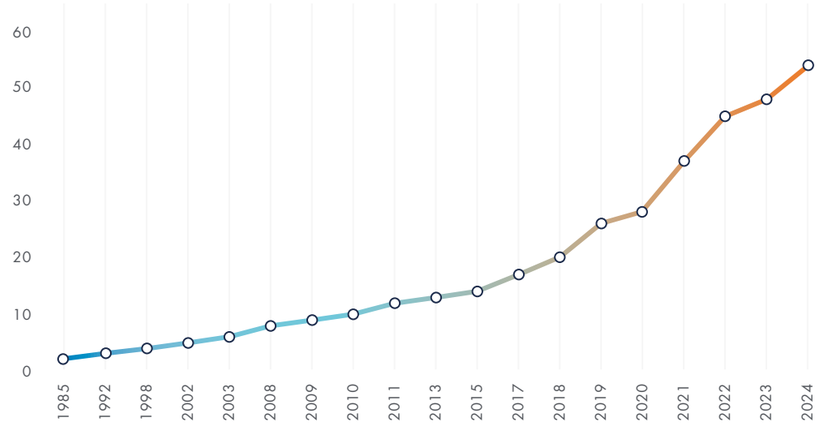
12. Timeline of companies founded

Companies new to the survey in orange



Total number of private fusion companies by year

(Based on 2025 responses, excludes companies that have since folded or consolidated)



PROFILES OF TODAY'S FUSION PLAYERS

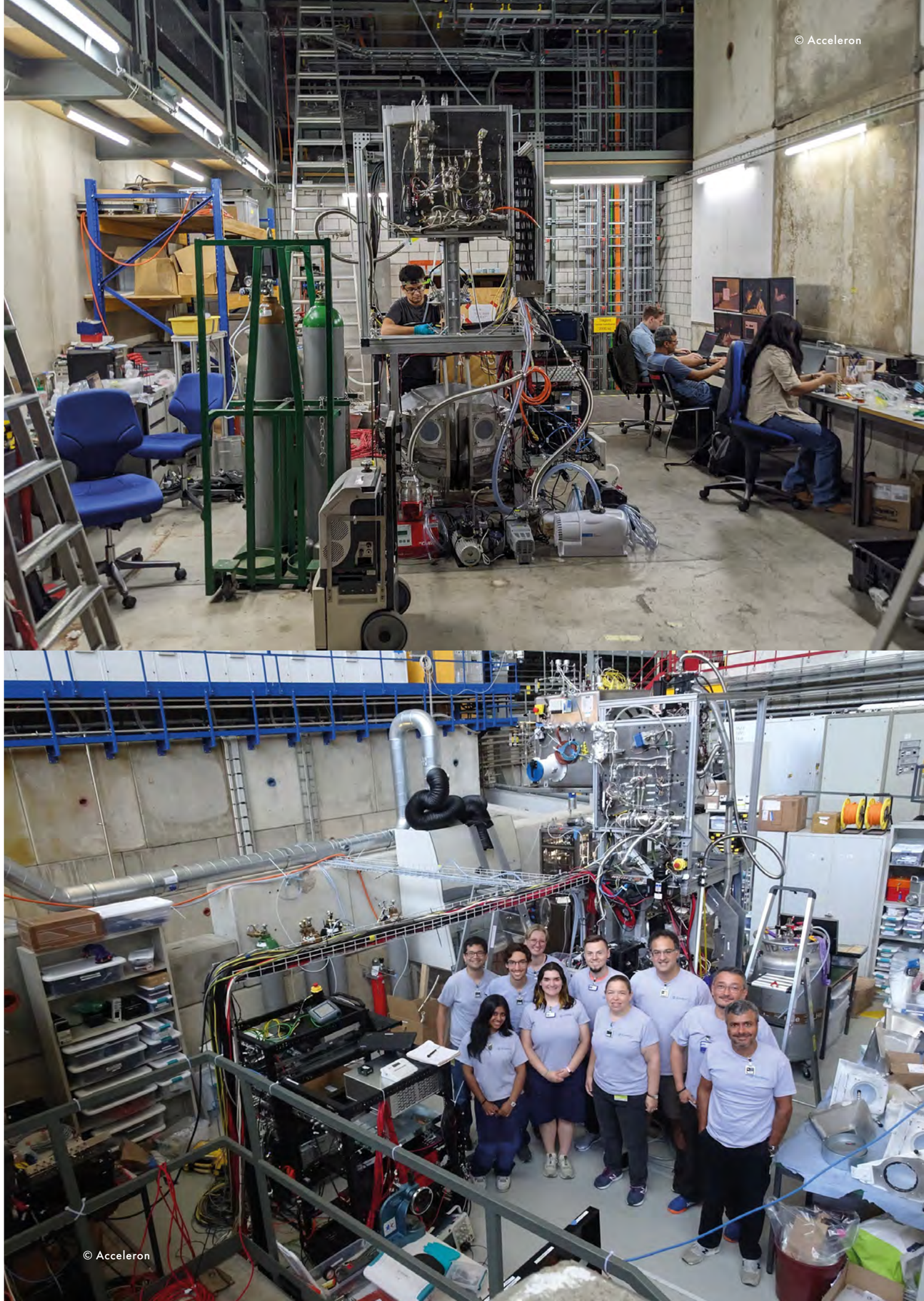
acceleron

FIA MEMBER

ACCELERON FUSION

Acceleron Fusion is developing muon-catalyzed fusion as an abundant new source of clean energy.

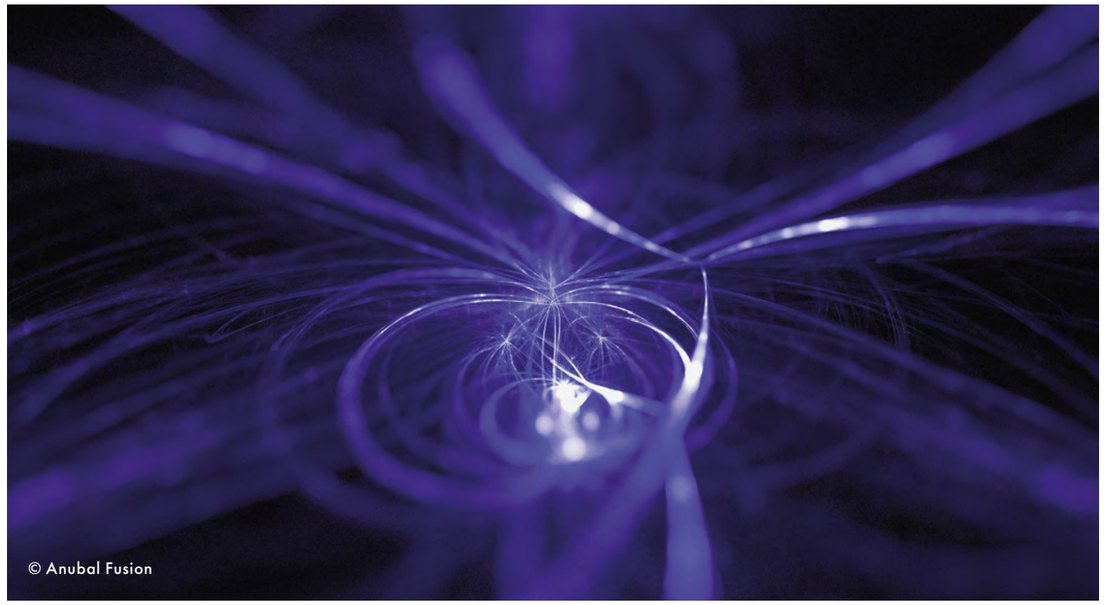
Location	Cambridge, Massachusetts, USA
Contact details	info@acceleron.energy
Year founded	2023
Founder names	Ara Knaian, Seth Newburg
Primary target markets	Electricity generation
Total declared funding to date	$26,500,000
Employees (incl. full time consultants)	20
General approach	Muon-catalyzed fusion
Specific approach	Active-target muon production and high density fusion cell
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Early 2030's
Anticipated MWe of your commercial operating facility?	200 MWe
Interim plants or facilities planned	Working to prove out each modular component of our system through tests using the muon and ion beams at PSI, BNL, and other accelerator facilities.
Milestones in past 12 months	We ran DT in our machine and collected data on muon-catalyzed DT fusion with the fuel compressed to a higher density than in any previous machine.
Key collaborators/partners	Paul Scherrer Institute, Fermilab, Oak Ridge National Lab, Torion Plasma
Recent published papers	• Diamond Anvil Measurement of Muon-Catalyzed Fusion Kinetics, Open CHRISP User Meeting, February 2023, https://indico.psi.ch/event/16879/contributions/55227/attachments/29734/57744/2024%20Progress%20Report%20to%20PSI%20Beam%20Committee%20-%20MuFusE.pdf • Muon-Catalyzed Fusion, International conference on Accelerator Applications, https://doi.org/10.21955/nuclscitechnolopenres.1115135.1 • GEANT4 models for muonic atoms processes, International conference on high energy physics, July 2024 https://indico.cern.ch/event/1291157/contributions/5888470/attachments/2900457/5086523/GEANT4%20models%20for%20muonic%20atom%20processes,%20and%20proposed%20simulation%20package_2.pdf • Efficient modeling of particle transport through aerosols in GEANT4, Computer Physics Communications, Vol 278, September 2022, https://doi.org/10.1016/j.cpc.2022.108383



ANUBAL FUSION

Inertial Confinement Fusion. Fuel: Hydrogen Boron. Driver: Petawatt laser using Plasma optics.

Location	Hyderabad, India
Contact details	pravin.kini@anubalfusion.com
Year founded	2024
Founder names	Pravin Kini, Mukul Jain and Special Invest
Primary target markets	Electricity generation
Total declared funding to date	$500,000
Employees (incl. full time consultants)	10
General approach	Inertial confinement
Specific approach	Direct laser-driven pB11
Fuel source	pB11
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2030
Anticipated MWe of your commercial operating facility?	200 MWe
Interim plants or facilities planned	Interim Plant within 3 years
Milestones in past 12 months	Sub fusion laser derived neutron flux.
Key collaborators/partners	Tata Institute of Fundamental Research (TIFR), Government of India, Indian Institute for Plasma Research (IPR), Government of India



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ASTRAL SYSTEMS

Astral Systems is a manufacturer of commercial compact fusion reactors. Our Multi-State Fusion reactors provide continuously operable, high-flux, fusion neutrons to support R&D, materials research, and component testing in the fusion industry. Beyond that, we aim to decentralise medical radionuclide production and enable fissile waste transmutation.

Location	Bristol, UK
Contact details	info@astralsystems.com
Year founded	2021
Founder names	Talmon Firestone & Dr. Tom Wallace-Smith
Primary target markets	Medical, Fissile waste transmutation, fusion component qualification, tritium breeder blanket research, fusion materials research.
Total declared funding to date	$6,800,000
Employees (incl. full time consultants)	20
General approach	Multi-State Fusion
Specific approach	Inertial-electrostatic lattice confinement
Fuel source	DD and DT
Planned energy capture approach	Fission-fusion hybrid
Pilot plant timescale	2025 Fusion only / 2027 Fusion-fission hybrid proof of concept
Interim plants or facilities planned	Bristol HQ - DD neutron irradiation facility currently open. Berkeley, UK - High-flux DT neutron irradiation facility to be opened in Q4, 2025.
Milestones in past 12 months	• Became the first private fusion company to produce tritium using its own fusion reactor • First sale of a commercial MSF reactor due for delivery in Q4, 2025
Key collaborators/partners	UKAEA, University of Bristol, Bangor University, McMaster University, Technical University Munich, King's College London

AVALANCHE ENERGY

Avalanche Energy is developing a modular 5kWe compact fusion machine, called the Orbitron, for hard-to-decarbonize applications. Its compact size and modularity are game changers for dual-use, mobile and distributed power applications across air, land, sea, and space. Some potential applications include islanded micro-grids in austere/remote environments, electric vehicle battery recharging, and spacecraft power and propulsion.

Location	Tukwila, Washington, USA
Contact details	reachout@avalanche.energy
Year founded	2018
Total declared funding to date	$70,000,000
Employees (incl. full time consultants)	52
General approach	Hybrid electrostatic confinement
Specific approach	Magnetic-electrostatic confinement
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2030
Anticipated MWe of your commercial operating facility?	0.1-1 MWe
Interim plants or facilities planned	FusionWERX commercial test facility for demonstrating and qualifying advanced fusion technologies including: High flux fusion neutron sources, blanket and shielding test beds, hot cells, and integrated tritium management systems.
Milestones in past 12 months	• Achieved 300 kV cathode operation with near zero dark current which is a foundational building block to very efficient compact magneto-electrostatic fusion machines. • Demonstrated Orbitron operation at >1 mA beam current at very deep vacuum 1E-8 Torr conditions. • Developed and patented fusion particle direct energy conversion chip technology. • Published first peer reviewed journal article on Orbitron magneto-electrostatic confinement scheme. • First measurements of plasma confinement times and also density using microwave interferometry techniques.
Recent company investments	Completed site selection for FusionWERX test facility in Richland, WA. Started design and construction with the goal of 2027 completion date and commencement of operations.
Key collaborators/partners	DoD: Defense Innovation Unit (DIU) / NAVY / AFWERX, NSF, WA state Dept. of Commerce, Port of Benton, Tri-Cities Development Corp (TRIDEC), Fusion Fuel Cycles (Kyoto Fusioneering + Canadian Nuclear Labs), Molten Salt Solutions.
Recent spin outs/patents/commercial innovations	300 kV cathode milestone unlocks path to what may be world's lowest cost per neutron steady state fusion machine at $100k/unit generating a continuous 1E13 n/s when operating with tritium. Incubating commercialization opportunities for this technology including neutron doping for power semiconductors, radioisotope production and active neutron interrogation for DoD & space applications.
Recent published papers	• The Orbitron: A crossed-field device for co-confinement of high energy ions and electrons. AIP Advances, 14(8), 2024 • A data-driven model for the field emission from broad-area electrodes. Results in Physics, 66, 107999, 2024 • Characterization of a broad beam ion source converted into a high-intensity deuterium beam. In Journal of Physics: Conference Series (Vol. 2743, No. 1, p. 012075). IOP Publishing, 2024

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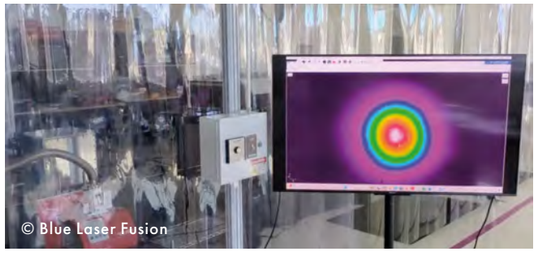
BLUE LASER FUSION

Blue Laser Fusion (BLF) was cofounded in 2022 by Shuji Nakamura, 2014 Nobel prize winner, LED inventor and pioneer of energy-efficient solid state lighting. BLF is commercializing a proprietary and novel laser-based inertial fusion energy (IFE) technology based on its efficient, modular, reliable and cost effective laser optical enhancement cavity (OEC) architecture and the proven ignition and gain demonstrated by LLNL NIF in 2022. The company is developing GW scale, safe, secure, clean, on-demand energy to power economic growth and meet the acute and increasing demand for critical industries such as data centers & AI, hard-tech manufacturing of semiconductors, chemicals & steel, as well as water desalination & agriculture. Blue Laser Fusion is based in Santa Barbara, CA with additional operations in Japan.

Location	HQ & facility in Santa Barbara, CA, USA with R&D facility in Osaka, Japan and offices in Silicon Valley, USA and Tokyo, Japan.
Contact details	contact@bluelaserfusion.com
Year founded	2022
Founder names	Shuji Nakamura, Hiroaki Ohta, and Richard Ogawa
Primary target market(s)	Electricity generation
Total declared funding to date	$37,500,000
Employees (incl. full time consultants)	25
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel source	DT
Planned energy capture approach	Hybrid thermal and direct energy conversion
Pilot plant timescale	2030
Anticipated MWe of your commercial operating facility?	500 - 1000 MWe (modular architecture)
Interim plants or facilities planned	Full scale laser beamline module, prototype reactor, & pilot fusion power plant
Milestones in past 12 months	Successfully built and tested prototype coherent beam combined (CBC) laser and optical enhancement cavity (OEC) energy storage above 60,000x, thereby demonstrating and proving IFE laser architecture. Target reaction simulations updated, and reactor conceptual design developed.
Recent company investments	Laser facilities and hardware including prototype CBC laser, including seed, amplifiers with locking controls to the OEC cavity in CA and Osaka sites. Laser and target modling and simulations software and collaboration support.
Key collaborators/partners	Caltech DOE INFUSE, UCSD, LLNL, General Atomics FIRE collaborative, Idaho National Labs FIRE collaborative, Osaka University, RSE Italy
Recent spin outs/patents/commercial innovations	> 100 patents and applications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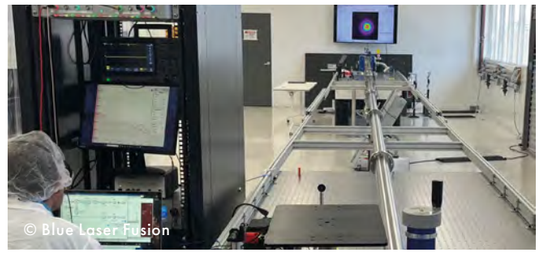
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Commonwealth Fusion Systems

FIA MEMBER

COMMONWEALTH FUSION SYSTEMS

Commonwealth Fusion Systems is the world's largest private fusion company. Its marquee fusion project, SPARC, aims to generate net energy, paving the way for limitless carbon-free energy.

Location	Devens, Massachusetts, USA
Contact details	info@cfs.energy
Year founded	2018
Founder names	Bob Mumgaard, Dan Brunner, Brandon Sorbom, Dennis Whyte, Martin Greenwald, and Zach Hartwig
Primary target market(s)	Electricity generation
Total declared funding to date	$2,060,000,000
Employees (incl. full time consultants)	~1,000
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Tokamak
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2027: SPARC, a commercially relevant demonstration tokamak, to achieve Q>1
Anticipated MWe of your commercial operating facility?	~400 net electric MWe
Interim plants or facilities planned	ARC, the world's first grid-scale power plant located in Chesterfield County, Virginia, to be operational in the early 2030s.
Milestones in past 12 months	• November 2024: Successfully tested our cable-based pulsed-power magnet design through the Central Solenoid Model Coil (CSMC) program. • July 2024: Delivered two HTS magnets and integrated cooling and control systems to the University of Wisconsin's WHAM experiment. • Dec 2024 - Announced partnership and joint development agreement with Dominion Energy. Selected a site in Chesterfield County, Virginia, for the first ARC power plant. • June 2025 - Announced first direct PPA with Google for 200MW from first ARC power plant as part of a partnership that also included additional investment into CFS.
Recent company investments	• Construction ongoing for SPARC facility in Devens, MA • March 2025: Began assembling the SPARC tokamak, starting with the installation of its first component, the cryostat base, in our SPARC facility in Devens, Massachusetts.
Key collaborators/partners	Massachusetts Institute of Technology, Brookhaven National Lab, Columbia University, Dominion Energy, Dutch Institute for Fundamental Energy Research (DIFFER), ENI. Equinor, Google, University of Michigan, Idaho National Lab, Pacific Northwest National Laboratory, Lawrence Berkeley National Lab, Lawrence Livermore National Lab, Max Planck Institute for Plasma Physics, National Renewable Energy Laboratory, Oak Ridge National Lab, Princeton Plasma Physics Lab, Robinson Research Institute, Sandia National Laboratory, Swiss Federal Technology Institute of Lausanne (EPFL), Type One Energy, United Kingdom Atomic Energy Authority, University of California at San Diego, University of Maryland. University of Rochester, University of Texas at Austin, University of Torino, University of Wisconsin. University of York
Recent published papers	• Overview of the early campaign diagnostics for the SPARC tokamak, Review of Scientific Instruments 2024. • Development of a high current density, high temperature superconducting cable for pulsed magnets, Superconductor Science and Technology 2024. • Experimental assessment and model validation of the SPARC Toroidal Field Model Coil, IEEE Transactions on Applied Superconductivity 2024. • Testing of High Field HTS Coils for Magnetic Mirror, ASC 2024 Special Issue of the IEEE Transactions on Applied Superconductivity.

CFS employees work on a toroidal field magnet in the CFS Magnet Factory in Devens, Massachusetts.

DEUTELIO AG

Deutelio aims to achieve nuclear fusion by magnetic confinement with the Polomac configuration, using the Deuterium-Deuterium (DD) reaction. It plans a small prototype to validate and tune the magnetic tunnels within three years, to design the first nuclear reactor in five years and achieve electricity in ten years.

Location	Grono, Switzerland (HQ); Gavirate, Italy
Contact details	info@deutelio.com
Year founded	2022
Founder names	Francesco Elio, Filippo Elio
Primary target market(s)	Electricity generation, Industrial heat
Total declared funding to date	$540,000
Employees (incl. full time consultants)	5
General approach	Plasma Magnetic Confinement (e.g. Tokamak, Stellarator, Dipole)
Specific approach	Poloidal configuration with shielded supports of the coil trapped inside the plasma (e.g. Levitron, Spherator, Intrap, LDX)
Fuel source	Deuterium-Deuterium, catalyzed DD
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	• 2029: Design first pilot nuclear DD thermal power plant 10 MW for heat production. • 2031: Installation of heat generation pilot plants for district heating, food industry, agriculture and green houses. • 2034: Upgrade for electricity generation.
Anticipated MWe of your commercial operating facility?	30 MWe
Milestones in past 12 months	Particle path analysis and preliminary MHD analysis
Key collaborators/partners	University of Tuscia (IT), SUPSI (CH), Cross-ING (CH), OpenIndustria (IT); W2W Solutions (IT), Accelerator Modelling and Advanced Simulations Group of Paul Scherrer Institute (CH)
Recent published papers	• The Polomac approach to fusion energy, Journal of Technological and Space Plasmas, Vol. 5, Issue 1, 2024; • A novel plasma source concept for negative ion generation in neutral beam injectors for fusion applications, Plasma Phys. Control. Fusion 66, 2024, 115018 (9pp); • A necessary condition for breakeven in dipole-confined plasmas, J. Plasma Phys. vol. 90, 2024

ELECTRIC FUSION SYSTEMS

Electric Fusion Systems was formed out of the founders' mutual investigations of proton-lithium fusion and insights on how to virtually eliminate the coulomb barrier with Rydberg matter. We use a supercritical dense liquid metal fuel condensate to create an ultra-low cost (<$5/MWh) direct-to-electricity scalable aneutronic fusion power generator.

Location	Broomfield, Colorado, USA
Contact details	info@electricfusionsystems.com
Year founded	2020
Founder names	Ken E. Kopp, Ryan S. Wood
Total declared funding to date	$400,000
Employees (incl. full time consultants)	4
General approach	Heavy Rydberg matter fuel-based fusion, not traditional hot fusion
Specific approach	Pulsed magneto-plasma pressurized confinement
Fuel source	Lithium
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2026
Anticipated MWe of your commercial operating facility?	5 kWe-100 MWe, depending on number of cartridges and modules
Interim plants or facilities planned	Small scale roller-bag sized 2-5kW pilots for 3rd party testing.
Milestones in past 12 months	• Robust theoretical paper on LEEF fusion technology including electron screening and cross-sections submitted • Four Patents Pending - two published • Further tabletop confirmation of fusion events
Key collaborators/partners	Energy Research Center, Voss Scientific
Recent spin outs/patents/commercial innovations	• Aneutronic Fusion Plasma Reactor and Electric Power Generator PCT/US2022/53859. • Magnetohydrodynamic Cavitation Fusion Energy Generator PCT IS2021/057875.

ENERGY MATTER CONVERSION CORP (EMC2)

EMC2 is pioneering development of the Polywell fusion technology for fusion-related applications in energy production, fusion supply chain and space propulsion. The technology offers a compact approach to fusion with significant advantages of intrinsic plasma stability, small footprint, mature plasma heating technology and engineering simplicity leading to a dramatically lower capital footprint.

Location	San Diego, California, USA
Contact details	info@emc2fusion.com
Year founded	1985
Founder names	Dr Robert Bussard
Primary target market(s)	Electricity generation, Neutron Source use-cases (materials research, lithium breeding, nuclear waste transmutation)
Total declared funding to date	$40,000,000
Employees (incl. full time consultants)	5
General approach	Magnetic Confinement with Electrostatic Heating
Specific approach	Magnetic-electrostatic confinement
Fuel source	DT (D-3He and p-11B in later stages)
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Use-Case Dependent. Neutron Source (5yrs), Power Generation (7-10 yrs)
Anticipated MWe of your commercial operating facility?	Initial Operating Facility 100 MWe
Interim plants or facilities planned	Current plan is to develop high flux neutron sources for commercial use cases in the fusion materials research and tritium breeding field.
Milestones in past 12 months	• Ongoing validation of full life-cycle reactor operation using HPC simulation • Proprietary first-principles Particle-in-Cell code
Key collaborators/partners	US Navy Research Program, DARPA, LANL, KU LEUVEN, SHINE Technologies, KAERI


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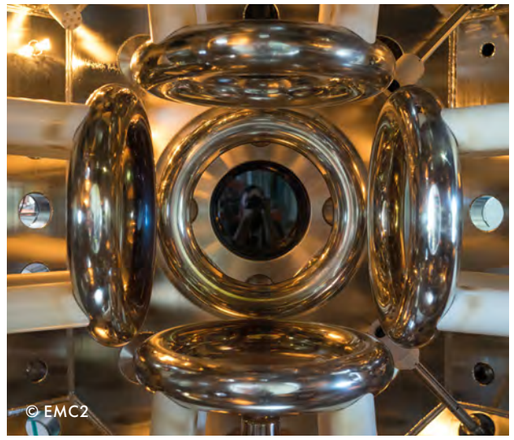
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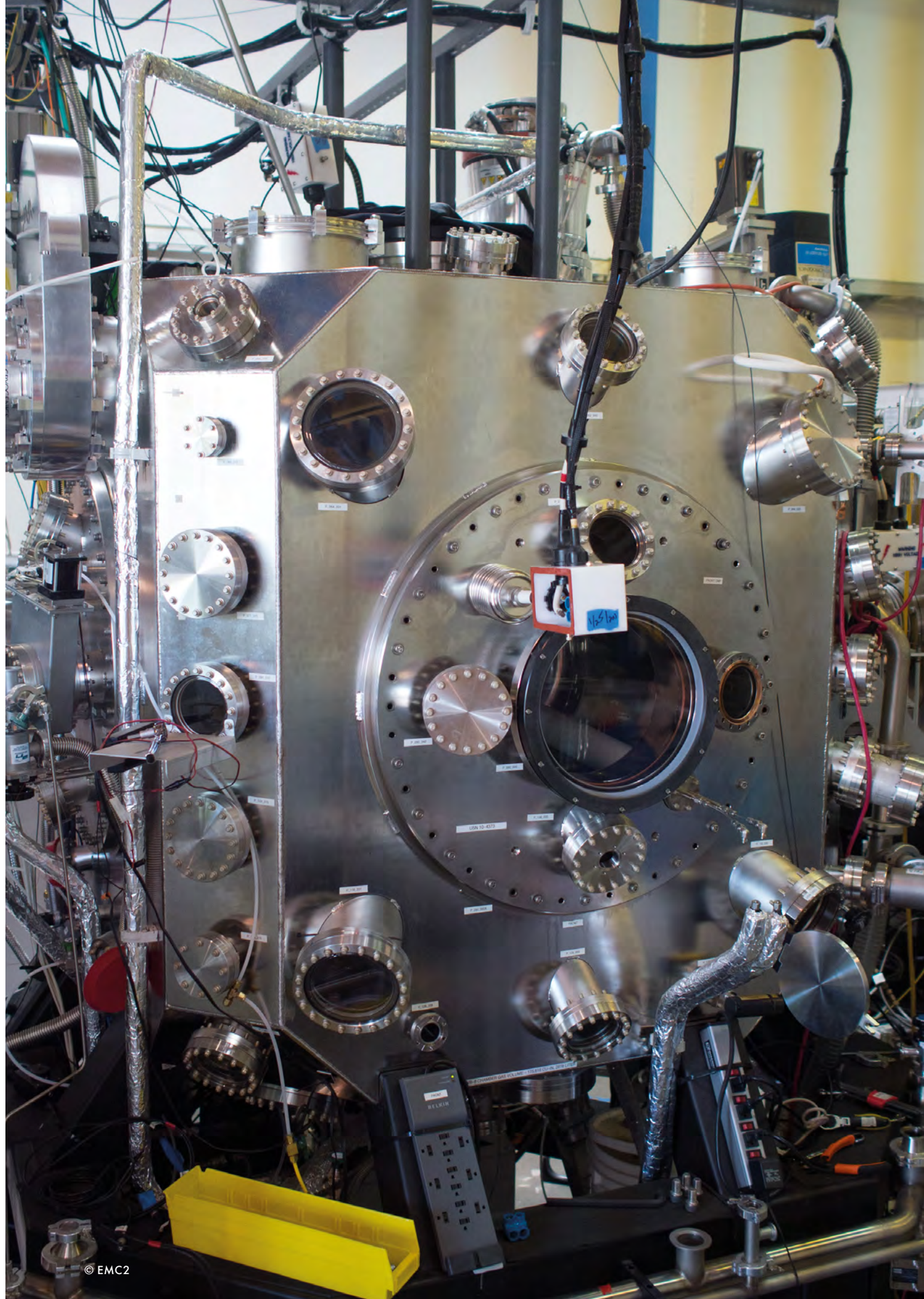
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ENERGY SINGULARITY FUSION POWER TECHNOLOGY

Energy Singularity was founded in 2021 in Shanghai, China. We are focusing on the R&D of high-field, high confinement and compact tokamak with HTS magnets.

Location	Pudong, Shanghai, China
Contact details	bd@energysingularity.cn
Year founded	2021
Founder names	Zhao Yang
Primary target market(s)	Electricity generation
Total declared funding to date	$112,500,000
Employees (incl. full time consultants)	120
General approach	Magnetic confinement
Specific approach	Tokamak
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Anticipated MWe of your commercial operating facility?	500MWe

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ENN SCIENCE AND TECHNOLOGY DEVELOPMENT CO., LTD.

ENN Science and Technology Development Co., Ltd., a wholly owned and funded subsidiary of the ENN Group, is dedicated to realizing commercial fusion power via the proton-boron (p-B11) spherical torus plasma and aims to deliver power demonstration by 2035.

Location	Langfang, Hebei Province, China
Contact details	qixudong@enn.cn
Year founded	ENN Science and Technology Development Co., Ltd., was established by the ENN Group in 2006 to conduct R&D in low-carbon and carbon-free energy technologies. It shifted its strategic direction to commercially viable fusion energy in 2017.
Founder names	Yusuo WANG
Primary target market(s)	Electricity generation
Total declared funding to date	$550,000,000
Employees (incl. full time consultants)	274
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Spherical tokamak
Fuel source	pB11
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2035
Anticipated MWe of your commercial operating facility?	1000 MWe
Interim plants or facilities planned	EXL-50U, China's first large spherical torus (ST), operational since 2024; The EHL-2 to test and verify science and technology solutions to p-B11 fusion plasmas, followed by EHL-3 to test and demonstrate engineering solutions to reactor-scale p-B11 burning plasmas, before commitment to build a commercial demonstrator.
Milestones in past 12 months	• Achieved One-MA plasma discharges on the EXL-50U spherical torus in p-B plasmas with toroidal fields up to 1 T, an electron temperature up to 40 million degrees K, and an ion temperature up to 27 million degrees K. • Operated a toroidal field system at a power source current of 150 kA, generating 1.2 T magnetic fields for 1.6 seconds.1 MA plasma discharges were achieved on the EXL-50U spherical torus (ST) in p-B plasmas with toroidal fields up to 1 T • Completed the physics design and preliminary engineering design for the EHL-2 experimental device
Recent company investments	Installed NBI system
Recent published papers	• ENN's roadmap for proton-boron fusion based on spherical torus[J]. Physics of Plasmas, 2024, 31: 062507 • Overview of the physics design of the EHL-2 spherical torus [J]. Plasma Science and Technology, 2025, 27: 024001 • Strategy and experimental progress of the EXL-50U spherical torus in support of the EHL-2 project[J]. Plasma Science and Technology, 2025, 7: 024003 • Achievement of 1 MA Discharges in Hydrogen-Boron Plasmas on EXL-50U, Plasma Physics, https://doi.org/10.48550/arXiv.2505.08815

EX-Fusion

FIA MEMBER

EX-FUSION

EX-Fusion is the first full-stack laser fusion company from Japan. The company is focused on R&D in three areas: laser drivers capable of high-power, high-repetition operations; beam control for high-power laser systems; and target injection systems. It aims to demonstrate power generation using laser fusion in the 2030s.

Location	Osaka, Japan (HQ); Shizuoka, Japan (R&D)
Contact details	info@ex-fusion.com
Year founded	2021
Founder names	Dr. Kazuki Matsuo, Dr. Yoshitaka Mori, Dr. Shinsuke Fujioka
Primary target market(s)	Electricity generation
Total declared funding to date	$38,000,000
Employees (incl. full time consultants)	35
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	EX-Fusion is targeting a system-level demonstration of core components for a fusion power plant in 2030.
Anticipated MWe of your commercial operating facility?	Fusion power plant with net electricity output is planned in the 2030s, followed by a gigawatt-class reactor by 2045
Recent company investments	• Kyoto R&D Facility for the Application of Laser Fusion Technology (opened in 2025) • Upgrade of the Hamamatsu R&D Facility for the Integrated Testing of the Laser Fusion Components (completed Summer 2024)
Recent spin outs/patents/commercial innovations	Laser Cutting Machine advancements provided from the laser beam control know-how (demonstration capacity available at Kyoto R&D facility

© First Light Fusion

first light

FIA MEMBER

FIRST LIGHT FUSION

First Light is accelerating the pathway to inertial fusion power plants through target-based power amplification. We've developed a unique set of capabilities to rapidly iterate target designs in high-dimensional space. Using data science to enhance the loop between our proprietary simulations, precision manufacturing and suite of four experimental facilities.

Location	Oxford, UK
Contact details	enquiries@firstlightfusion.com
Year founded	2011
Founder names	Dr Nicholas Hawker, Prof Yiannis Ventikos
Primary target market(s)	Electricity generation
Total declared funding to date	$119,400,000
Employees (incl. full time consultants)	80
General approach	Inertial confinement
Specific approach	Shock-driven inertial confinement
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	N/A. First Light is developing a key technology, the fuel-amplifier which reduces inertial fusion driver requirements by amplifying power at the target level. Our plan is to partner with companies up/downstream of the fuel to make commercial fusion a reality.
Milestones in past 12 months	• In February 2025, we completed our second ever shot on the Z-Machine at Sandia National Laboratories, whereby our amplifier has extended its capabilities • First Light's technology has enabled the Z-machine to reach a new pressure of 3.67 TPa, a 200% increase over the all-time record that we set in 2024 • This experiment allows the Sandia team to understand the dynamic material properties of the test material, Quartz, under more extreme conditions
Key collaborators/partners	Sandia National Laboratories, Imperial College London, University of Oxford, University of York, and The Open University.
Recent spin outs/patents/commercial innovations	Our success at Sandia has shown that the amplifier technology works, and that it can be used to enhance existing facilities. It also demonstrates that our codes are predictive outside of our in-house testing regimes. First Light is exploring how our capabilities and amplifier technology can advance adjacent markets. Our first product is for the space industry. Space debris travels at approximately 14 km/s and currently, the standard testing is at 7 km/s. First Light has developed a velocity amplifier (VIPER) which closes this gap and allows for testing at the required velocities.

FUSE

Fuse is accelerating the world's transition to fusion energy while safeguarding humankind. Fuse ensures U.S. and allied competitiveness through "Radiation-as-a-Service" (RaaS) on its pathway to commercial energy generation.

Location	San Leandro, California, USA
Contact details	hello@f.energy
Year founded	2019
Founder names	JC Btaiche
Primary target market(s)	Electricity generation
Total declared funding to date	$65,000,000
Employees (incl. full time consultants)	50
General approach	Magneto-inertial
Specific approach	Magnetized target fusion
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2030s
Anticipated MWe of your commercial operating facility?	100-300 MWe
Interim plants or facilities planned	Fuse's combined radiation effects testing facility, ICECAP, in San Leandro, CA, will be fully operational in the Fall of 2025. Fuse has built and fired hundreds of shots on TITAN, the world's most powerful Impedance-Matched Marx Generator (IMG); TITAN is the energy delivery system for Fuse's future fusion plant. Fuse's next facility is Z-STAR, which will connect 16 TITANs to serve as a user facility for defense, commercial, and academic users. Z-STAR will provide neutrons and a hot x-ray service for defense and commercial customers and provide fusion target design R&D for Fuse and the research community. Beyond Z-STAR, Fuse will build APEIRON I, which will connect up to 100 TITANs and demonstrate fusion break-even.
Milestones in past 12 months	• World's first firing of a 1-Terawatt (TW) scale Impedance-Matched Marx Generator (IMG) pulsed power driver, TITAN • Real-world test results of TITAN peer-reviewed in Nature Scientific Reports • Successful shot campaign with commercial customer on FAETON dense plasma focus (DPF) device
Recent company investments	Launched ICECAP radiation facility in San Leandro, CA in late 2024.
Key collaborators/partners	Sandia National Laboratories, Los Alamos National Laboratory, Fifth Gait Technologies, U.S. Department of Defense.
Recent spin outs/patents/commercial innovations	FAETON dense plasma focus (DPF) device and neutron generator validated and used by commercial customers; open for commercial shot bookings.
Recent published papers	• Nature Scientific Reports: Experimental results of a 330 GW impedance-matched Marx generator: https://www.nature.com/articles/s41598-024-67774-4 • https://www.researchsquare.com/article/rs-6466595/v1

Fuse's, TITAN, the world's most powerful Impedance-matched Marx Generator (IMG)

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FOCUSED

FIA MEMBER

FOCUSED ENERGY

Focused Energy is a laser fusion startup pursuing a first-principles approach to inertial confinement fusion. Uniquely, it combines in-house target development with proprietary high-energy solid-state laser technology. As the only private fusion company owning intellectual property for both targets and lasers, and with a team that achieved ignition at LLNL, it's advancing clean, scalable fusion power.

Location	Darmstadt, Germany
Contact details	guenter.kraft@focused-energy.co
Year founded	2021
Founder names	Thomas Forner, Markus Roth
Primary target market(s)	Electricity generation
Total declared funding to date	$200,000,000
Employees (incl. full time consultants)	90
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2035
Anticipated MWe of your commercial operating facility?	1,5 GWe
Interim plants or facilities planned	Target R&D Facility (existing in Darmstadt, Germany), Laser R&D Facility (2026), Neutron-XRay Imaging Commercial Prototype Facility (2026), Implosion Test Facility (MVP Fusion) (2029)
Milestones in past 12 months	• Opening new Target R&D Facility • Opening new Laser & Plasma R&D Facility • Opening Laserfusion & Industry R&D HUB in Germany • Partnership with RWE and State of Hessen • Contract with German Industry Consortium
Recent company investments	Target R&D Facility, Laser R&D and Manufacturing, Neutron-XRay Source Prototype, Facility Design (Laser Facility, Implosion Test Facility, FPP)
Key collaborators/partners	RWE, Amplitude, Trumpf, Schott, Heraeus, DOE, BMBF, State of Hessen, TU Darmstadt, Lawrence Livermore National Lab, Laboratory for Laser Energetics, GSI Helmholtzzentrum, Fraunhofer, The Extreme Light Infrastructure, KIT
Recent spin outs/patents/commercial innovations	Laser Driven Neutron-X-Ray Source, Laser IP for design for broad bandwidth, IP for target design and shell manufacturing
Recent published papers	• Investigation of laser plasma instabilities driven by 527 nm laser pulses relevant for direct drive inertial confinement fusion Phys. Plasmas doi: 10.1063/5.0188693 • Harnessing Energy from Laser Fusion, Physics Today, (2024) p.45-50 • A prospectus on laser-driven inertial fusion as an energy source, Phys. Plasmas 31, (2024) • Particle swarm optimization of 1D isochoric compression designs for fast ignition, Phys. Plasmas (2025)

Plant Rendering

GAUSS FUSION GMBH

Gauss Fusion is a European green technology company aiming to produce clean fusion energy as the ultimate base-load power renewable in a solar-wind-fusion trio. It was founded in 2022 by medium-sized companies from France, Germany, Italy, and Spain, all of them with industrial expertise in fusion technologies.

Location	Garching/Munich, Germany
Contact details	info@gauss-fusion.com
Year founded	2022
Total declared funding to date	$30,800,000
Employees (incl. full time consultants)	30
General approach	Magnetic confinement
Specific approach	Stellarator
Fuel source	DT
Planned energy capture approach	Lithium neutron ‘blanket’
Pilot plant timescale	Early 2040s
Anticipated MWe of your commercial operating facility?	1000 MWe
Milestones in past 12 months	• Continuation of demountable coil project funded by BmBF • Start of tritium project funded by BmBF • Hiring of key technical staff and initiation of strategic partnerships
Key collaborators/partners	IDOM, Bruker EAS, ASG, Alcen, TUM, RI Research Instruments, IPP, KIT, CERN, ENEA
Recent spin outs/patents/commercial innovations	Several patents relating to demountable coil technology

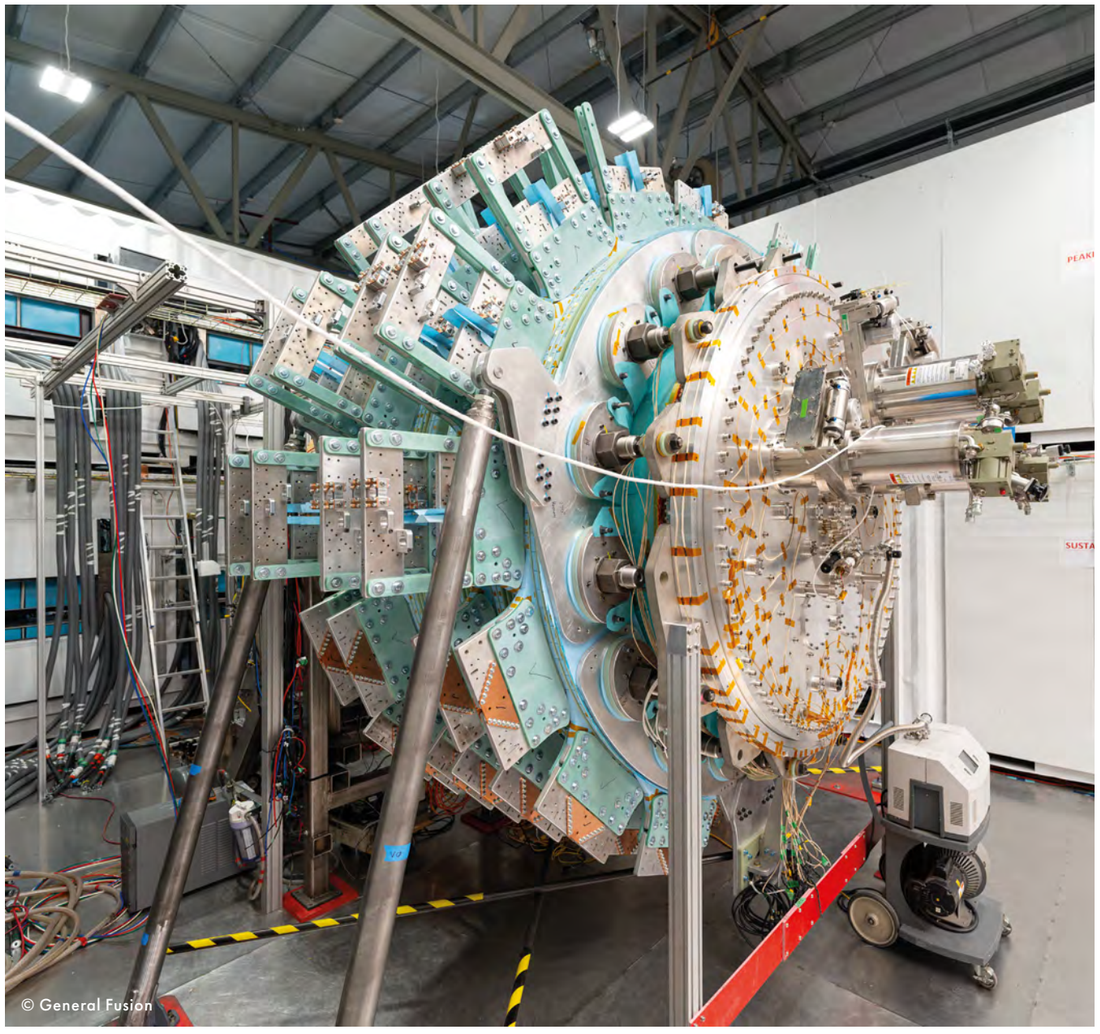
generalfusion

FIA MEMBER

GENERAL FUSION

General Fusion's practical Magnetized Target Fusion (MTF) is designed to provide clean and cost-efficient baseload energy to utility and industrial steam heat users. The company operates LM26 - a world-first fusion demonstration machine at its Canadian facility. LM26 is targeting transformational near-term technical milestones that position the company to provide fusion power to the grid by the early to mid-2030s.

Location	Richmond, Canada
Contact details	info@generalfusion.com
Year founded	2002
Founder names	Dr. Michel Laberge
Primary target market(s)	Electricity generation
Total declared funding to date	$350,000,000
General approach	Magneto-inertial
Specific approach	Magnetized target fusion
Fuel source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	General Fusion is currently operating a large-scale Magnetized Target Fusion (MTF) demonstration machine called LM26. The machine is advancing towards a series of results that will demonstrate the company's MTF approach in a commercially relevant way: 10 million degrees Celsius (1 keV), 100 million degrees Celsius (10 keV), and scientific breakeven equivalent (100% Lawson). LM26 prepares the company to build a full-scale, engineering breakeven plant, then a first-of-a-kind power plant to produce electricity by the early to mid-2030s.
Anticipated MWe of your commercial operating facility?	Approximately 300 MWe from two machines operating in tandem.
Milestones in past 12 months	• LM26 assembly completed on time and on budget • The machine's pulse power, magnet, gas delivery, controls, and diagnostics systems were brought online to begin plasma operations • Achieved first plasma in February 2025 and began daily operations of LM26 • In April 2025, began large-scale plasma compression campaign Successfully compressed a magnetized plasma with lithium using world-first LM26 machine • Published peer-reviewed scientific results that derisk LM26's technical targets in 2024 and 2025 issues of *Nuclear Fusion* • Successfully compressed a magnetized plasma with lithium using world-first LM26 machine
Recent company investments	From late 2024 to early 2025, built, commissioned, and started operations on LM26. The machine is now compressing large-scale magnetized plasmas with positive early results.
Key collaborators/partners	Selected partners and suppliers: Bertin Technologies, Canadian Nuclear Laboratories, General Atomics, Hatch, Kinectrics, Lawrence Livermore National Laboratory, McGill University, Motus Design, Oak Ridge National Laboratory, Princeton Plasma Physics Laboratory, Queen's University, Savannah River National Laboratory, Simon Fraser University, TRIUMF, United Kingdom Atomic Energy Authority, Université de Sherbrooke, University of Illinois, University of Lisbon, University of Waterloo Market Development Advisory Committee: ACEN, BC Hydro, Bruce Power, Duke Energy, Eneco, ENGIE, E.ON, FortisBC, Ontario Power Generation, Renexia, Southern Company, Stegra, Tennessee Valley Authority
Recent spin outs/patents/commercial innovations	190 patents and patents pending.
Recent published papers	• Measurement of spherical tokamak plasma compression in the PCS-16 magnetized target fusion experiment, Nuclear Fusion (Nov 2024) https://iopscience.iop.org/article/10.1088/1741-4326/ad9033 • Thermal energy confinement time of spherical tokamak plasmas in PI3, Nuclear Fusion (Feb 2025) https://iopscience.iop.org/article/10.1088/1741-4326/adb8fb • Full research library at https://generalfusion.com/post/category/research-library



GenF

GenF's mission is to develop the first inertial confinement nuclear fusion reactor triggered by lasers. A winner of the France 2030 program in 2024, GenF is leading the Taranis project in collaboration with CNRS and CEA to harness fusion energy.

Location	Elancourt, France
Contact details	contact@genf-systems.com
Year founded	2024
Founder names	Thales company
Primary target market(s)	Electricity generation
Total funding declared to date	$10,800,000
Employees (incl. full time consultants)	8
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2040
Anticipated MWe of commercial operating facility	1000 MWe
Interim plants or facilities planned	For large scale experimentations, we use CEA & CNRS' existing facilities such as the LMJ or the LULI2000. To improve the industrial maturity level of our technologies, we build a dedicated fusion hub in France
Milestones in past 12 months	• Two peer reviews for fusion reactor operating points • Optimisation of the reaction by artificial intelligence
Key collaborators/partners	French Government, Thales, Assystem
Recent published papers	• Toward inertial fusion energy with laser and reactor design, 30 January 2025 • ICF target optimization using generative AI, Phys. Plasmas 31, 103903 (2024)

HB11 ENERGY

HB11 Energy is developing advanced fuel standards and high energy short pulse lasers for commercially sustainable fusion energy

Location	Manly Beach, Australia
Contact details	info@hb11.energy
Year founded	2020
Founder names	Prof. Heinrich Hora, Dr. Warren McKenzie, Jan Kirchhoff
Primary target market(s)	Electricity generation
Total funding declared to date	$9,700,000
Employees (incl. full time consultants)	12
General approach	Non-thermal laser fusion
Specific approach	Direct laser-driven pB11
Fuel Source	pB11
Planned energy capture approach	Heat exchanger
Pilot plant timescale	2030s
Anticipated MWe of commercial operating facility	1000 MWe
Interim plants or facilities planned	Sub system demonstrators in 2025 showing efficacy of short pulse laser for fast ignition
Recent company investments	Very high efficiency high energy short pulse laser (to be published later in 2025)
Key collaborators/partners	Rochester University, Osaka University, United States DOE (Infuse, TINEX), Australian Government Defence Trailblazer, University of Bordeaux, ProBONO (EU), ELI Beamlines, Adelaide University, University of New South Wales.
Recent spin outs/patents/commercial innovations	Commenced commercial sales of laser targets.
Recent published papers	https://pubs.aip.org/aip/mre/article/10/3/037402/3345317/Laser-initiated-p-11B-fusion-reactions-in-petawatt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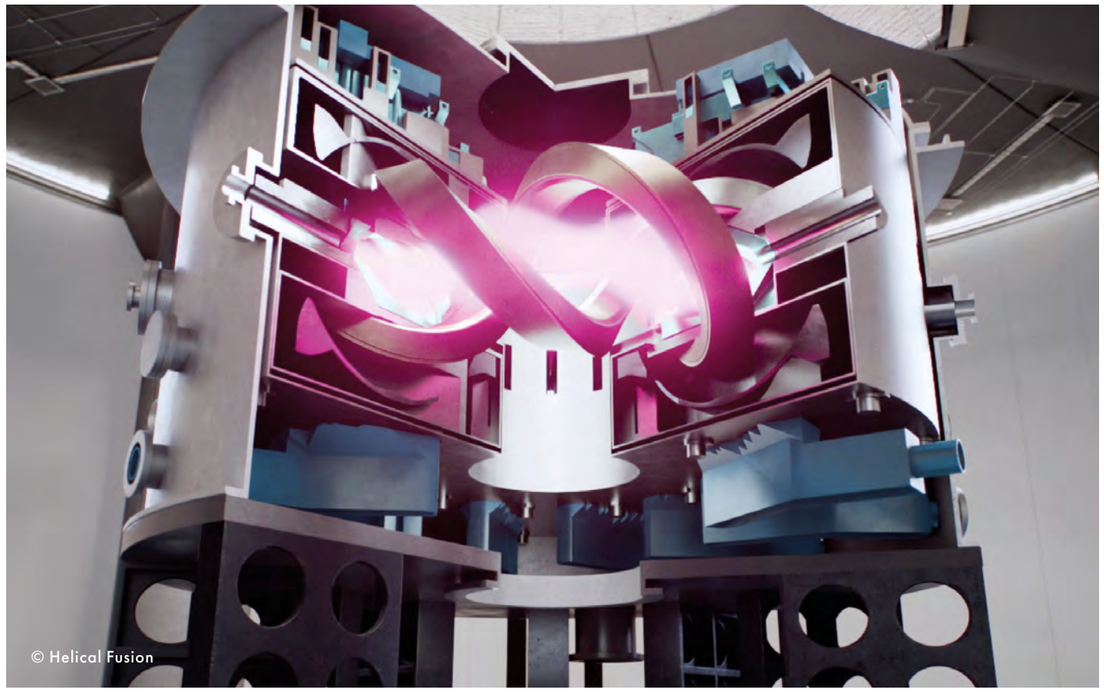
Helical Fusion

FIA MEMBER

HELICAL FUSION

Helical Fusion (HF) is aiming to deploy fusion power plants to meet global clean energy demand. HF leverages decades of helical-stellarator research at National Institutes for Fusion Science in Japan, combined with new groundbreaking technology, such as HTS magnets and liquid metal blankets.

Location	Tokyo, Japan (HQ); Newark, Delaware, USA (US subsidiary)
Contact details	contact@helicalfusion.com
Year founded	2021
Founder names	Takaya Taguchi, Junichi, Miyazawa, Takuya, Goto
Total funding declared to date	$35,000,000
Employees (incl. full time consultants)	30
General approach	Magnetic confinement
Specific approach	Stellarator
Fuel Source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	2030s
Anticipated MWe of commercial operating facility	50-100 MWe
Interim plants or facilities planned	Final Experimental Device: aim to demonstrate steady state operation(>1day) with its proprietary HTS magnet and Liquid Metal blanket integrated into a plant.
Milestones in past 12 months	Success of HTS cable current test in Q2 2024 (40kA, 8T, 10K) with minimum bend radius of 4cm.
Recent company investments	• LM blanket/diverter testing facility "GALOP" being operational Q2 2025. • HTS magnet development(double-pancake coil) suitable for demonstration in Q3 2025 experience.
Key collaborators/partners	Various Japanese manufacturing and supply chain companies, National Institute for Fusion Science (NIFS), Tokyo University, Tohoku University, Aoyama University, Tokushima University.
Recent spin outs/patents/commercial innovations	• HTS cable development • 3D neutronics simulation
Recent published papers	• Power Plant Design: Development of steady-state fusion reactor by Helical Fusion, Phys. Plasmas 30, 050601 (2023) • Material Development: Effects of Cr and Si addition on the high-temperature oxidation resistance in high-Mn alumina-forming oxide dispersion strengthened austenitic steels, Nuclear Materials and Energy Volume 38, March 2024, 101572



Helix KANATA: Steady-State Net Power Fusion Pilot Plant with HTS Magnet and Liquid Metal Blanket under development by Helical Fusion

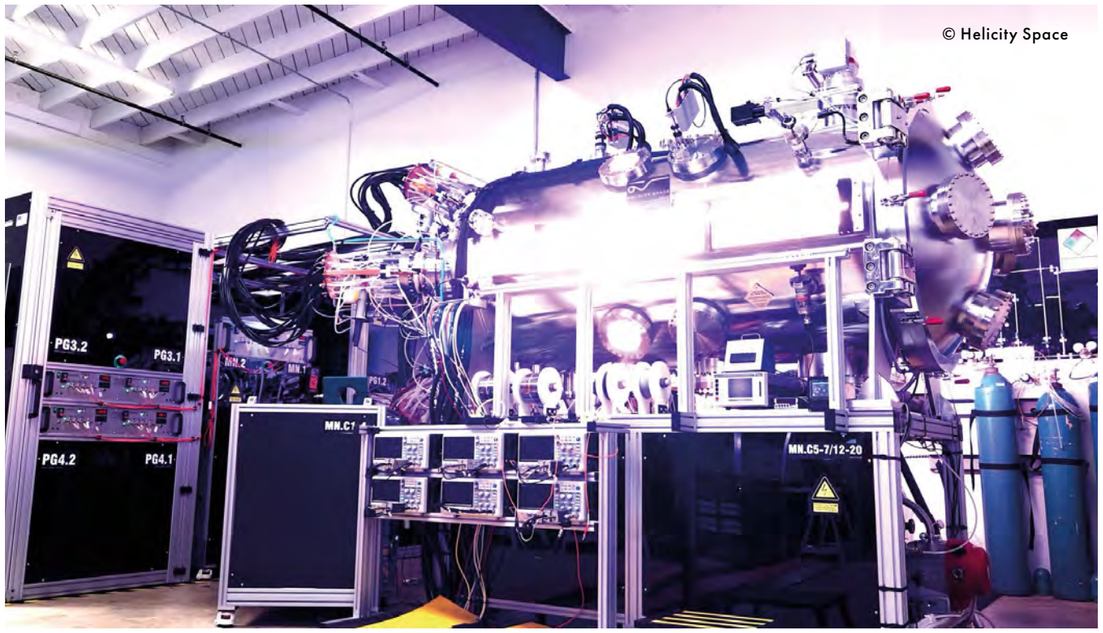
HELICITY SPACE

FIA MEMBER

HELICITY SPACE

Helicity Space Corporation is a privately funded company dedicated to developing compact fusion space propulsion and the power systems of a spacefaring civilization. The vision is to enable space colonization and a clean Earth with fusion power and propulsion technology.

Location	Pasadena, California, USA
Contact details	marta.calvo@helicityspace.com
Year founded	2018
Founder names	Stephane Lintner, Marta Calvo, Setthivoine You
Total funding declared to date	$7,600,000
Employees (incl. full time consultants)	7
General approach	Magneto-intertial
Specific approach	Plectoneme
Fuel Source	DD
Planned energy capture approach	Lithium neutron 'blanket'
Anticipated MWe of commercial operating facility	300 MWe
Key collaborators/partners	Caltech, UMBC, LANL, Swarthmore College



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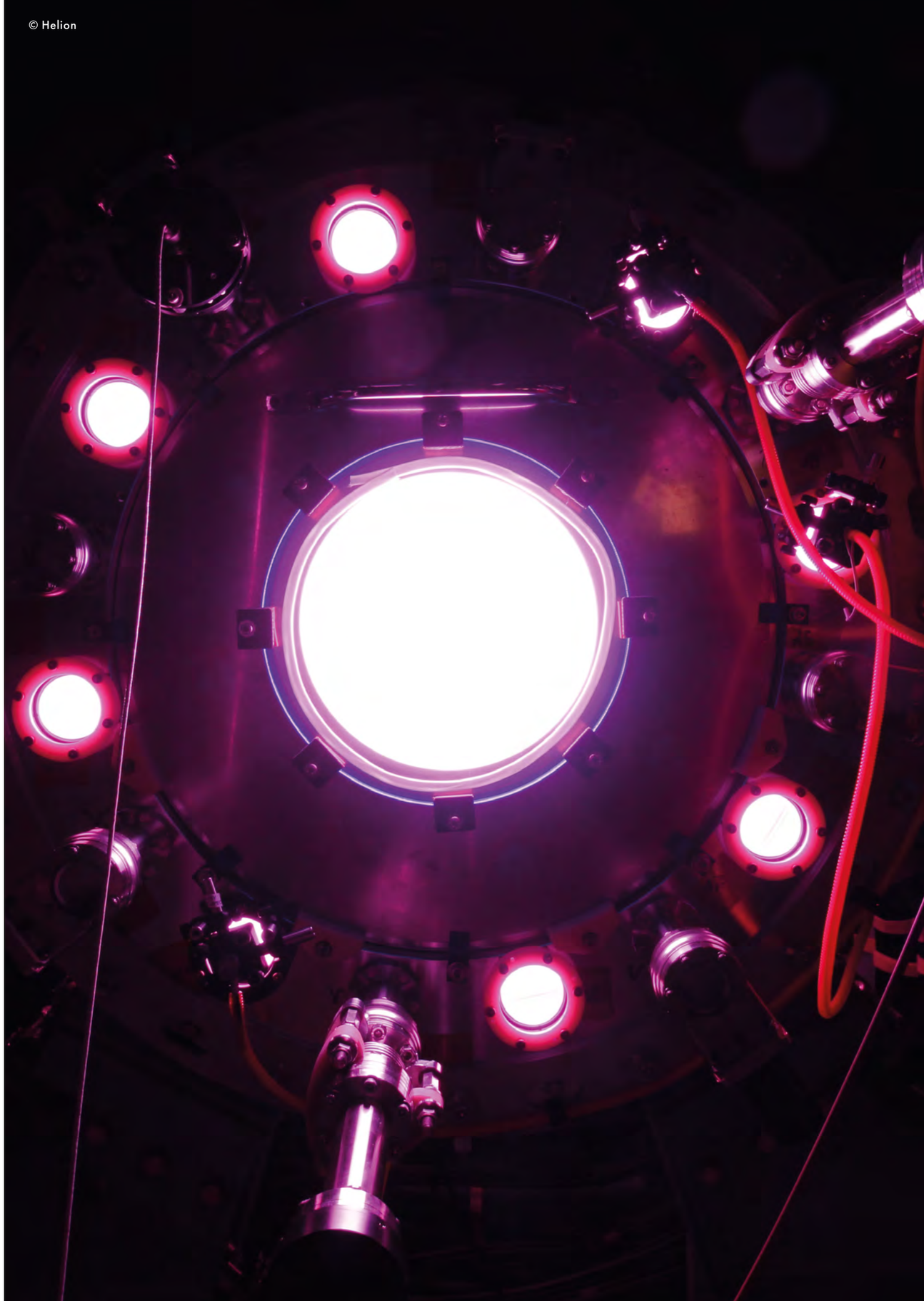
HELION

Building the world's first fusion power plant to enable a future with unlimited clean electricity.

Location	Everett, Washington, USA
Contact details	inquiries@helionenergy.com
Year founded	2013
Founder names	David Kirtley, Chris Pihl, George Votroubek, John Slough
Total funding declared to date	$1,000,000,000
Employees (incl. full time consultants)	550
General approach	Magneto-intertial
Specific approach	Field Reversed Configuration
Fuel Source	DHe3
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2028
Anticipated MWe of commercial operating facility	Signed PPA with Microsoft for at least 50 MWe from first power plant
Interim plants or facilities planned	We have begun initial operations in Polaris, our seventh fusion prototype. We expect Polaris to be the first fusion machine to demonstrate the ability to produce electricity from fusion.
Milestones in past 12 months	Completed initial construction of 7th fusion prototype, Polaris.
Recent company investments	Our $425 M Series F investment round is being used to scale commercialization efforts. This is helping us scale up our manufacturing in the U.S. enabling us to build capacitors, magnets, and semiconductors much faster than we have been able to before.
Key collaborators/partners	Microsoft, Nucor, Princeton Plasma Physics Laboratory, University of Washington, Lawrence Livermore National Laboratory, University of Southern California, Nevada National Security Site, Los Alamos National Laboratory, Savannah River National Laboratory, Massachusetts Institute of Technology, University of Rochester, University of Michigan, Pacific Northwest National Laboratory.
Recent published papers	• Preparing for At-Scale Deployment of Fusion Energy Via a Design-Specific License - https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4700944 • Building a path toward global deployment of fusion: Nonproliferation and export considerations, https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/building-a-path-toward-global-deployment-of-fusion-nonproliferation-and-export-considerations/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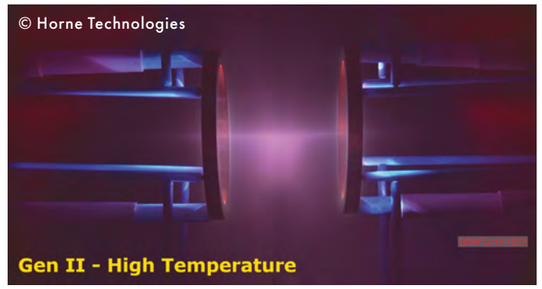
HORNE TECHNOLOGIES

Horne Technologies is pursuing a scalable, near-future path to fusion energy. Gen II first plasma was achieved in 2024 with our high-power device. Our dual confinement, hybrid approach enables low-cost iteration with fusion-capable, continuously operating devices. With strong positive progress, we continue to advance in technology and capability. Completion of this high-power device with coil voltages surpassing 50kV, we achieve high temperatures and stable plasma. This device represents a first in hybrid magnetic/electric confinement fusion. Additional cryogenic system capacity increased, with successful operation of new high-density magnets, software upgrades, and expanded diagnostics.

Location	Longmont, Colorado, USA
Contact details	info@hornetech.com
Year founded	2008
Founder names	Tanner Horne
Primary target market(s)	Electricity generation
Total funding declared to date	$3,750,000
Employees (incl. full time consultants)	4
General approach	Hybrid magnetic/electrostatic confinement
Specific approach	Spindle cusp, superconducting shielded-grid IEC
Fuel Source	DD, DT, pB11
Pilot plant timescale	3-5 years
Anticipated MWe of commercial operating facility	0.1-10 MWe
Interim plants or facilities planned	Pending facilities upgrade in 2025.
Milestones in past 12 months	• Completion of high-power device with coil voltages surpassing 50kV • First plasma in a hybrid magnetic/electric confinement fusion system in December 2024 • Cryogenic system capacity increased • Successful operation of new high-density magnets • Software upgrades, detector systems expansion
Recent company investments	• Major investments in cryogenics, software, facilities, and vacuum systems. • Major advancements in designs for manufacturing and scaling.



KYOTO FUSIONEERING

FIA MEMBER

KYOTO FUSIONEERING

Kyoto Fusioneering (KF) is a privately funded start-up headquartered in Japan and with subsidiaries in the US, UK, and EU, and via a joint venture in Canada. Our mission is to develop critical-path confinement-concept-agnostic technologies critical for commercial fusion, including systems for plasma heating, closing the deuterium-tritium (D-T) fuel cycle, and energy capture and utilization. We enable global fusion development programs to realize their concepts en route to commercial fusion energy.

Location	Tokyo, Japan; Kyoto, Japan; Seattle, US; Culham, UK; Karlsruhe, Germany; Chalk River, Canada
Contact details	info@kyotofusioneering.com
Year founded	2019
Founder names	Satoshi Konishi, Taka Nagao, Richard Pearson, Shutaro Takeda
Primary target market(s)	Electricity generation, Industrial heat
Total funding declared to date	$100,000,000
Employees (incl. full time consultants)	160
General approach	Agnostic
Specific approach	Agnostic
Fuel Source	Agnostic, but heavy development in D-T
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Developing and demonstrating integrated power plant systems to enable fusion pilot plants in the 2030s.
Interim plants or facilities planned	Kyoto Fusioneering's (KF's) UNITY Program integrates a suite of facilities to advance cross-cutting, critical path blanket and fuel cycle technologies under prototypic conditions. UNITY-1 in Japan focuses on blanket components, hydrogen isotope extraction, magnetohydrodynamics, power generation, and material compatibility with novel alloys under prototypic conditions, while UNITY-2 in Canada is dedicated to D-T fuel cycle technology development in an integrated FPP-representative architecture. The Kyoto FLiBe and Liquid Lithium loops will test molten salt and lithium systems for safety, corrosion, and isotope extraction, with experiments beginning between 2025 and 2026.
Milestones in past 12 months	• Progress includes 80% completion of UNITY-1, UNITY-2 license basis approved by Canadian Nuclear Safety Commission and conceptual design complete, a 2.5 million Euro research grant for tritium-compatible systems, and a joint publication on tritium breeding in spherical tokamaks. • Commercially, KF delivered a 1-MW gyrotron to Tokamak Energy, enhancing ST40's performance for key research goals. KF is also involved in UKAEA's LIBRTI program, developing a real-time sensor for tritium permeation through the TRI-PRISM project.
Recent company investments	• Established and injected capital into Fusion Fuel Cycles (FFC), a public-private joint venture between KF and Canadian Nuclear Laboratories (CNL) to deliver UNITY-2 and bring fusion fuel cycle technology and engineering to market. • Constructed forced convection liquid-lithium and FLiBe loops for materials and technology development under representative conditions.
Key collaborators/partners	INL, ORNL, PPPL, SRNL, UKAEA, CNL (to co-found Fusion Fuel Cycles), Karlsruhe Institute of Technology, University of Tokyo, Kyoto University, Tsukuba University, Tohoku University, Kyushu University Fujikura, Mikuni Jukogyo
Recent spin outs/patents/commercial innovations	• Fusion by Advanced Superconducting Tokamak (FAST) project: Kyoto Fusioneering is involved in FAST, the world's first project to extract fusion energy from combustion plasma, and demonstrate burning plasma while solving key integration challenges. FAST aims to demonstrate fusion power generation by the 2030s (source: https://www.fast-pj.com/) • Starlight Engine Ltd: A new entity established in collaboration with Kyushu University to carry out the FAST project. It will serve as the operational and strategic engine driving forward Japan's goal of demonstrating energy power generation by the 2030s (source: https://sle.energy/).
Recent published papers	• Conceptual Design of UNITY-2, the Fuel Cycle Test Facility for Fusion Pilot Plants https://doi.org/10.1080/15361055.2025.2481362 • The Fusion Fuel Cycle Simulator — towards integrated dynamic process simulation of fusion fuel cycles https://doi.org/10.1016/j.fusengdes.2025.115145 • Novel high temperature tritium blanket designs for confined spaces in spherical tokamak fusion reactors https://doi.org/10.1016/j.fusengdes.2024.114732 • Fins: Improving tritium extraction systems and permeation sensors with the adoption of extended surfaces https://doi.org/10.1016/j.fusengdes.2025.115065 • Development of bounce-time-based orbit-following Monte Carlo code https://doi.org/10.1585/pfr.20.1403017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LASERFUSIONX

LaserFusionX is advancing the S&T of laser fusion energy employing the argon fluoride (ArF) laser's deep UV light. ArF light would reduce the size and cost of laser-fusion power plants.

Location	Springfield, Virginia, USA
Contact details	LaserFusionX@outlook.com
Year founded	2022
Founder names	Stephen P. Obenschain
Primary target market(s)	Electricity generation
Total funding declared to date	$350,000
Employees (incl. full time consultants)	2
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2040
Anticipated MWe of commercial operating facility	400 MWe
Interim plants or facilities planned	ArF direct drive implosion facility to test the interaction physics with ArF's 193 nm broad bandwidth light
Milestones in past 12 months	Laser fusion reactor design with magnetic intervention to protect the first wall and Be-free blanket.
Recent spin outs/patents/commercial innovations	Two patent applications on ArF laser technology and reactor design
Recent published papers	S.P. Direct Drive Laser Fusion Facility and Pilot Plant. J Fusion Energ 43, 23 (2024) https://doi.org/10.1007/s10894-024-00416-9

LONGVIEW FUSION ENERGY SYSTEMS

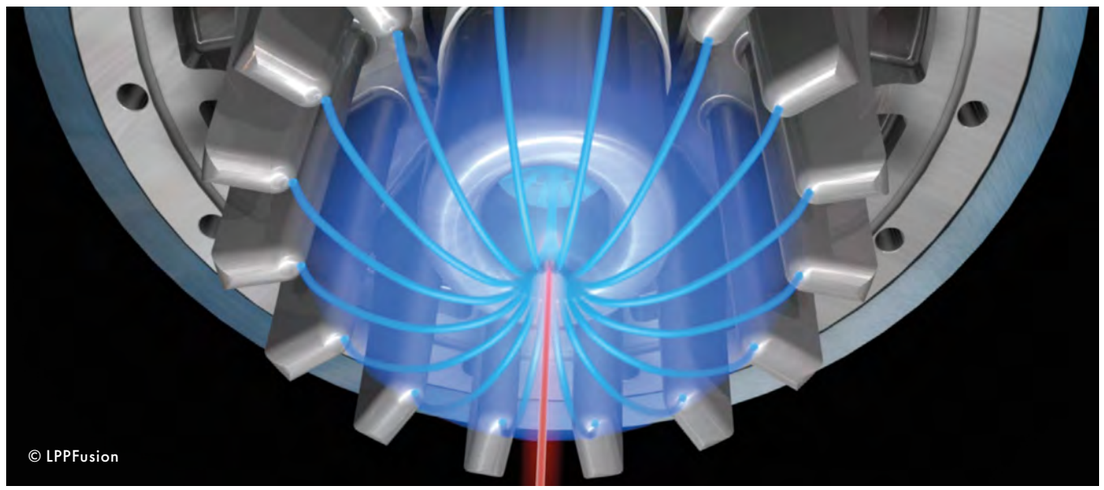
Longview Fusion Energy Systems aims to construct the world's first laser fusion power plant. Building upon the groundbreaking fusion energy with gain demonstrations at Lawrence Livermore National Laboratory's National Ignition Facility, Longview is the only fusion energy company employing this proven fusion energy approach. Our plant will provide carbon-free, safe, and cost-effective laser fusion energy, serving as a model for future plants that can be deployed nationwide and internationally.

Location	Livermore, California, USA
Contact details	info@longviewfusion.com
Year founded	2021
Founder names	Edward Moses, Aaron Khandros, Igor Khandros
Primary target market(s)	Electricity generation, Off-grid energy, Industrial heat
Employees (incl. full time consultants)	15
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel Source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	Our commercialization goal is to design and build a Fusion Pilot Plant (FPP) to be operational in the mid-2030s, based on fusion physics demonstrated on the National Ignition Facility (NIF).
Anticipated MWe of commercial operating facility	Designs developed with a range of 440 MWe to 1600 MWe to the grid. 3000 MWe thermal for material processing.
Interim plants or facilities planned	• Physics: Longview is uniquely based on the indirect drive gain capability demonstrated on the National Ignition Facility. NIF has demonstrated fusion energy with net scientific gain, Qsci=4 with continued progress. • Rep-rated operation: An integrated laser-target engagement demonstration facility using a full-scale laser beamline and target injector, operating at the plant repetition rate.
Milestones in past 12 months	• Following the seminal achievement of net fusion gain • (Qsci>1) and ignition in December 2022, the National Ignition Facility (NIF) has reproduced and increased the fusion energy gain multiple times. A gain of 4 was demonstrated in February 2024, representing a factor of three increase in performance • Working with LLNL, the Integrated Process Model has been modified for AI/ML system optimization • New strategy in fuel capsule engagement demonstrated
Key collaborators/partners	• DOE: Lawrence Livermore National Laboratory, Savannah River National Laboratory, Oak Ridge National Laboratory • Industrial: Fluor Corporation, several laser system technology partners, General Atomics • Legal and Regulatory: Pillsbury Winthrop Shaw Pittman LLC • Economic analysis: Bates White

LPPFUSION

Fusion R&D with a view to developing the fastest route to fusion, using techniques based on the Dense Plasma Focus device and hydrogen-boron fuel.

Location	Middlesex, New Jersey, USA
Contact details	fusionfan@lppfusion.com
Year founded	2003
Founder names	Eric J. Lerner
Total funding declared to date	$11,000,000
Employees (incl. full time consultants)	3
General approach	Magnetic confinement
Specific approach	Dense Plasma Focus
Fuel Source	pB11
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2029
Anticipated MWe of commercial operating facility	5 MWe
Interim plants or facilities planned	We anticipate making several experimental devices in the engineering phase
Milestones in past 12 months	• Started experiments with decaborane fuel (pB11) • New record fusion yields with deuterium • Larger currents in filaments • Measurement of higher electron temperature
Recent company investments	New and modified beryllium electrodes.
Recent published papers	Preparations for pB11 tests in the FF-2B dense plasma focus. Front. Phys. doi: 10.3389/fphy.2024.143



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MARITIME FUSION

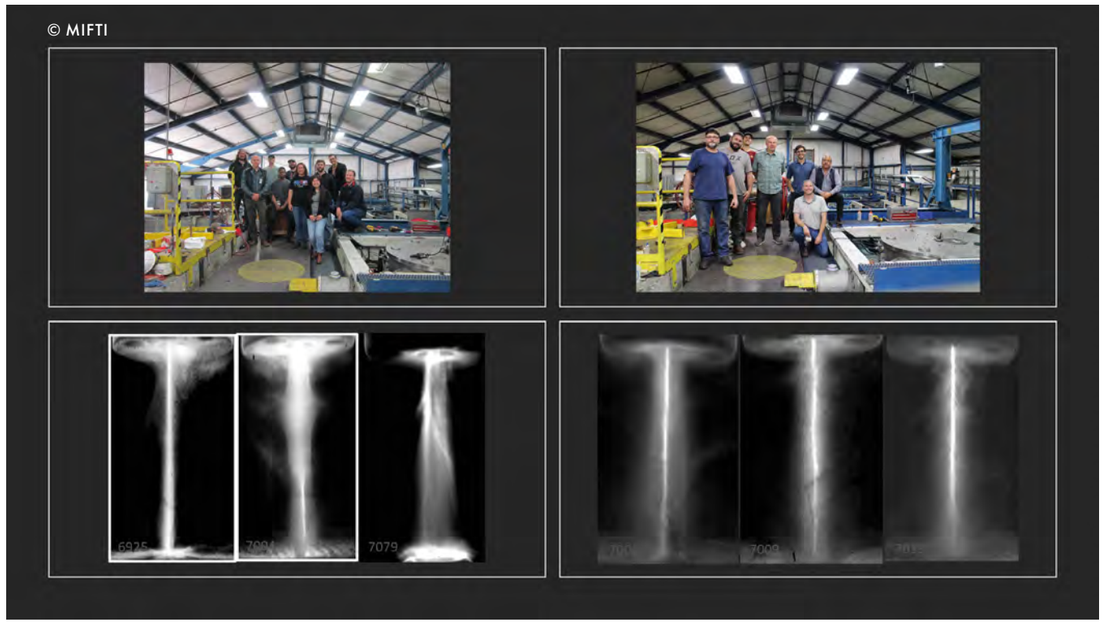
Maritime Fusion is building HTS tokamaks to power marine vessels. We combine cutting edge magnet technology that enables steady state operation of low power density reactors with a market uniquely suited to benefit from the first generation of fusion technology.

Location	San Francisco, California, USA
Contact details	inquiry@maritimefusion.com
Year founded	2024
Founder names	Justin Cohen, Jason Kaufmann
Primary target market(s)	Marine propulsion and off grid applications
Total funding declared to date	$4,300,000
Employees (incl. full time consultants)	4
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Tokamak
Fuel Source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	2032
Anticipated MWe of commercial operating facility	25-70 MWe
Milestones in past 12 months	Designed low power density tokamak that greatly alleviates first wall and divertor power handling challenges, prototyped high current density HTS magnets

MAGNETO-INERTIAL FUSION TECHNOLOGIES, INC. (MIFTI)

MIFTI is trying to achieve fusion energy, based on the idea of stabilized Staged Z-pinch, where a high Z-liner implodes on a fusible target by multi-MA current machines. This approach will produce a compact, low cost and scalable reactor, which MIFTI hopes will provide the fastest path to achieve fusion power.

Location	Tustin, California, USA
Contact details	contact@miftec.com
Year founded	2009
Founder names	Hafiz Ur Rahman, Norman Rostoker, Jerry Simmons, Mohammad Arshad
Total funding declared to date	$15,000,000
Employees (incl. full time consultants)	5
General approach	Magneto-Inertial
Specific approach	Z-pinch
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2030
Anticipated MWe of commercial operating facility	50 MWe

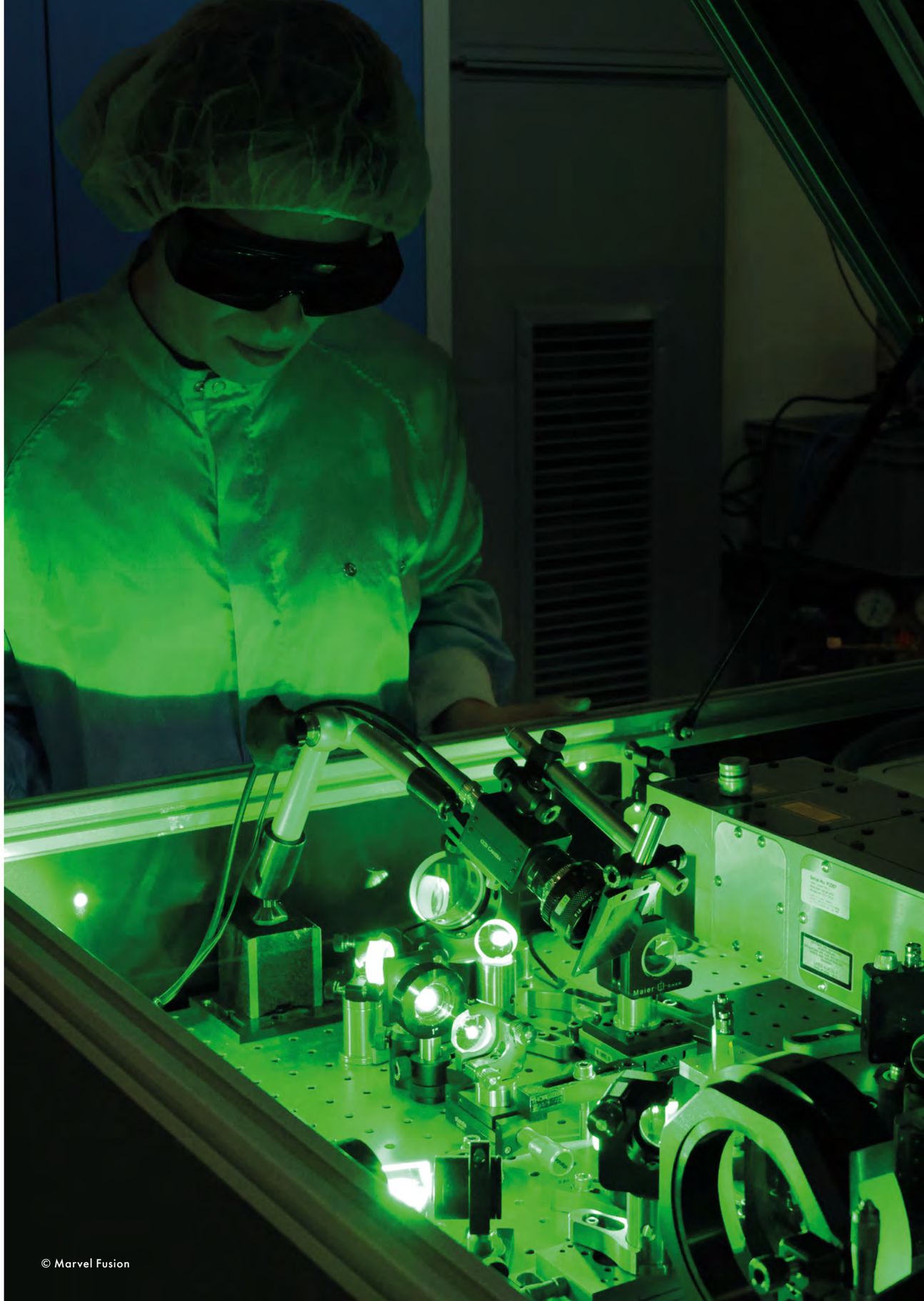


MarvelFusion

MARVEL FUSION

Marvel Fusion pursues a direct drive inertial fusion energy approach with the goal of commercialising fusion energy. Highly intense short-pulsed lasers and proprietary nanostructured fuel targets enable a highly efficient fusion process with a clear path to commercialization.

Location	Munich, Germany
Contact details	info@marvelfusion.com
Year founded	2019
Founder names	Moritz von der Linden, Dr. Georg Korn, Dr. Karl-Georg Schlesinger, Dr. Pasha Shabalin
Primary target market(s)	Electricity generation, Hydrogen and/or clean fuels, Industrial heat
Total funding declared to date	$440,000,000
Employees (incl. full time consultants)	75
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel Source	Mixed Fuels
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	2032
Anticipated MWe of commercial operating facility	300-800 MWe
Interim plants or facilities planned	2027: Proof-of-Technology Demonstration facility constructed
Milestones in past 12 months	• Laser design finalized and started assembly • Began construction of demonstration facility
Key collaborators/partners	Siemens Energy, Thales, BASF, Colorado State University, Pulsed Light Technologies, Ludwig Maximilians University of Munich, Extreme Light Infrastructure for Nuclear Physics



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NEARSTAR FUSION

NearStar Fusion combines inertial fusion with simple methods to accelerate, magnetize, and implode deuterium/deuterium fuel. Magnetized Target Impact Fusion (MTIF) will avoid the challenges of tritium fuel. MTIF's pulsed operation coupled with a liquid first wall simplifies plasma formation, control, and thermal extraction, and avoids costly first wall materials.

Location	Chantilly, Virginia, USA
Contact details	howdy@nearstarfusion.com
Year founded	2021
Founder names	Doug Witherspoon Ph.D and Chris J. Faranetta
Primary target market(s)	Electricity generation, Off-grid energy, Hydrogen and/or clean fuels, Industrial heat
Total funding declared to date	$1,600,000
Employees (incl. full time consultants)	5
General approach	Magneto-inertial
Specific approach	Magnetized target fusion
Fuel Source	DD
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	2033
Anticipated MWe of commercial operating facility	50 MWe-1GWe
Interim plants or facilities planned	Production of neutron source machines to produce a range of medical isotopes.
Milestones in past 12 months	• Produced a rising magnetic fields in targets upon hypervelocity projectile impact using a two stage light gas gun • Demonstrated hypervelocity impacts for solid rock tunneling and mining • Began construction of prototype plasma gun fusion driver in our lab • Plasma gun neutron source for medical isotope production under development • Approach to induce a magnetic field in each fuel target has been simplified • Detailed computer performance modeling of MTIF approach and impact neutron source has been refined to reflect MTIF operational refinements
Recent company investments	NearStar Fusion is now leasing a ~9,000 square foot laboratory space with plans to expand the facility.
Key collaborators/partners	• University of Alabama at Huntsville: for computer performance modeling of MTIF • Texas A&M Hypervelocity Impact Laboratory: for impact fusion fuel target research and development
Recent spin outs/patents/commercial innovations	We are actively developing a small simple plasma gun driver to be used as a pulsed neutron source for the production of medical isotopes. The development of this driver is completely synergistic with the development of a larger plasma gun to produce fusion energy.

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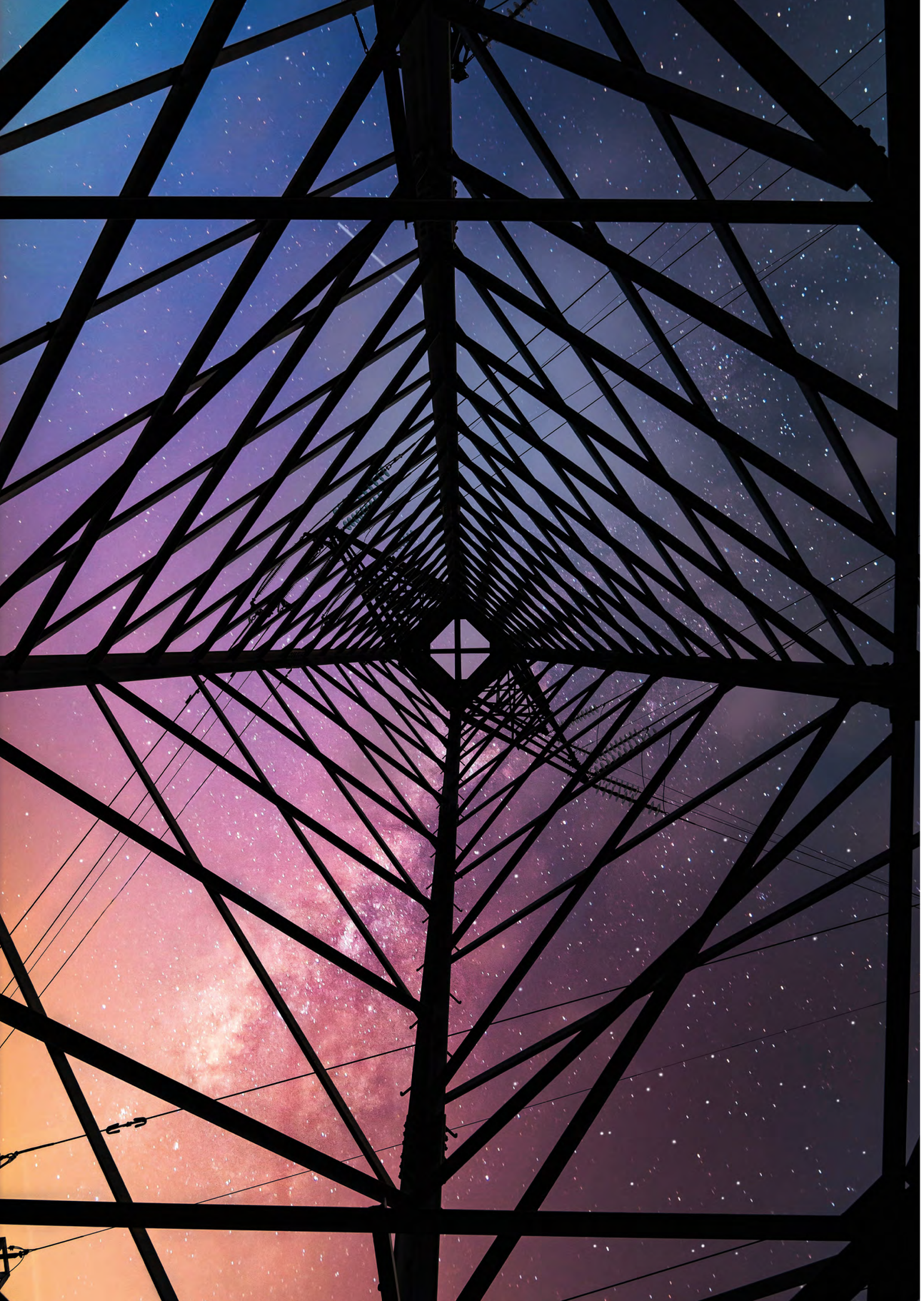


NOVATRON

FIA MEMBER

NOVATRON FUSION GROUP

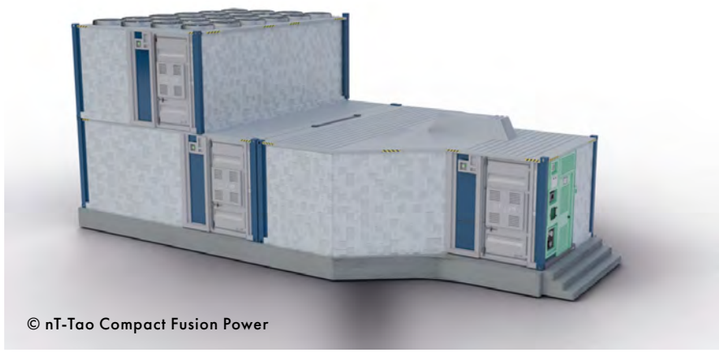
Fusion power to the grid through industrialization of a novel fusion reactor concept.

Location	Stockholm, Sweden (HQ)
Contact details	info@novatronfusion.com
Year founded	2019
Founder names	Jan Jäderberg
Total funding declared to date	$27,400,000
General approach	Magnetic confinement
Specific approach	Open magnetic confinement (Mirror machine)
Fuel Source	DT
Planned energy capture approach	Lithium neutron ‘blanket’
Pilot plant timescale	2034
Anticipated MWe of commercial operating facility	1,5 GW
Interim plants or facilities planned	Novatron 2: fully validates the Novatron technology, Novatron 3: pilot power plant demonstrating scale up capacity, Novatron 4: commercial power plant
Milestones in past 12 months	• Site Acceptance Test for vacuum, magnet and other subsystems completed • Commissioning of and first plasma in Novatron 1 • Plasma diagnostics implemented
Key collaborators/partners	KTH Royal Institute of Technology, UKAEA, Oxford Sigma, VTT, St1, InnoEnergy
Recent published papers	Axial Confinement in the Novatron Mirror Machine

nT-Tao COMPACT FUSION POWER

nT-Tao is developing a compact fusion technology, that will be scalable, modular, and affordable with the goal of democratizing clean energy on and off-grid.

Location	Hod Hasharon, Israel
Contact details	contact@nt-tao.com
Year founded	2019
Founder names	Oded Gour-Lavie, Doron Weinfeld, Boaz Weinfeld
Total funding declared to date	$35,000,000
Employees (incl. full time consultants)	30
General approach	Magnetic confinement
Specific approach	Dynamic Stellarator
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2032
Anticipated MWe of commercial operating facility	20 MWe
Milestones in past 12 months	• Validated our C2-A stellarator design in Poincare experiments. • Built and operated our unique pulsed operated modular energy generator architecture. • Built and started work on our Theta Pinch Linear machine for development and calibration of diagnostic systems • Designed and Built our compact HTS magnet specifically for high-pulsed field environment. • Achieved over 1500 Plasma shots in our current prototype.
Recent company investments	• Upgraded our current facilities and expanded our labs and team. • Started planning our next grounds, campus and laboratories.
Recent spin outs/patents/commercial innovations	Our power electronics MEGA line is fully operational.



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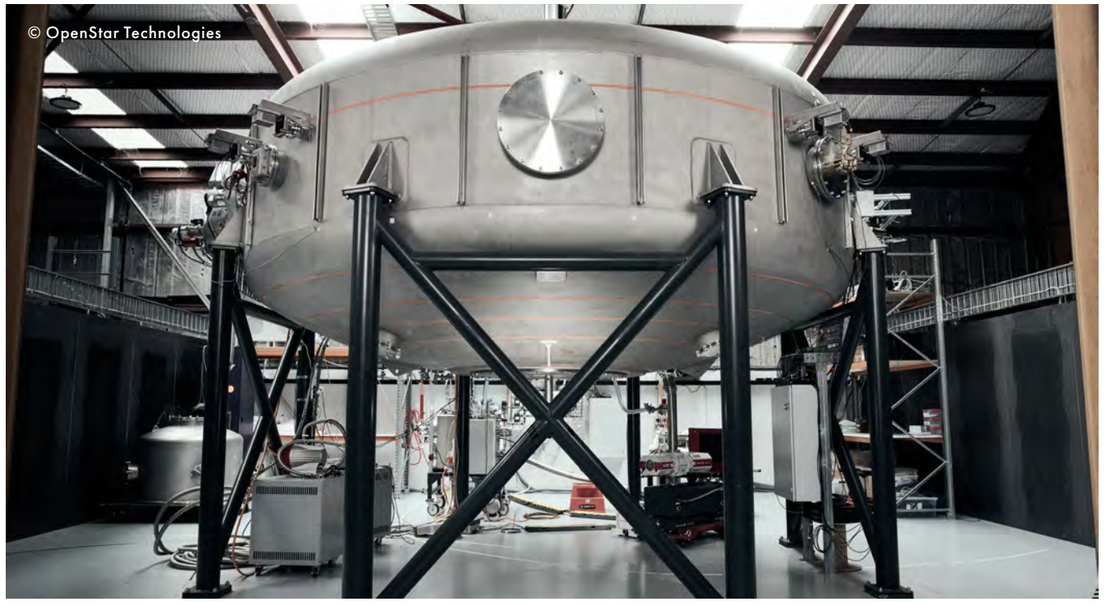
OPENSTAR TECHNOLOGIES

OpenStar is an energy startup pursuing the development of fusion reactors for baseload power to the grid. Building upon the groundbreaking experiments of the levitated dipole pioneered by LDX at MIT and RT-1 at the University of Tokyo, OpenStar embraces the natural stability inherent to the dipole field - creating fusion reactors to power the future.

Location	Wellington, New Zealand (HQ/facility); USA (other operations)
Contact details	info@openstar.nz
Year founded	2021
Founder names	Ratu Mataira-Cole
Primary target market(s)	Electricity generation
Total funding declared to date	$18,000,000
Employees (incl. full time consultants)	61
General approach	Magnetic Confinement
Specific approach	Levitated Dipole Reactor
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Early 2030's
Anticipated MWe of commercial operating facility	~100 MWe
Milestones in past 12 months	First plasma in prototype experiment.
Key collaborators/partners	MIT Plasma Science and Fusion Center, Robinson Research Institute, Columbia University



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Junior, Wellington

PACIFIC FUSION

Pacific Fusion aims to power the world with abundant clean energy. We are rapidly building a pulser-driven inertial fusion system to achieve net facility gain, and in parallel are developing the components required for affordable fusion power systems.

Location	Fremont, California, USA (HQ)
Contact details	contact@pacificfusion.com
Year founded	2023
Founder names	Will Regan, Eric Lander, Keith LeChien, Carrie von Muench, Leland Ellison
Primary target market(s)	Electricity generation
Total funding declared to date	$900,000,000
Employees (incl. full time consultants)	87
General approach	Inertial confinement
Specific approach	Pulser-driven inertial confinement
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Milestones in past 12 months	• Achieving performance/reliability requirements for our pulsed power building blocks • Showing that our plasma simulation capabilities agree with U.S. national laboratory simulations and experiments
Key collaborators/partners	Lawrence Livermore National Laboratory, Sandia National Laboratories, General Atomics, University of Rochester
Recent published papers	A preprint of our technical roadmap is available here: https://www.arxiv.org/abs/2504.10680

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PRANOS FUSION

Pranos Fusion is India's first nuclear fusion startup, working on magnetic confinement fusion, as the most promising path to commercial fusion energy. The startup is working towards the construction and deployment of modular fusion reactors, each capable of generating 50 MW.

Location	Bangalore, India
Contact details	info@pranosfusion.energy
Year founded	2024
Founder names	Dr. Shaurya Kaushal, Roshan George
Primary target market(s)	Electricity generation, Off-grid energy, Industrial heat
Total funding declared to date	$430,000
Employees (incl. full time consultants)	16
General approach	Magnetic confinement
Specific approach	Spherical Tokamak
Fuel Source	DT
Planned energy capture approach	Both the 'Fission-Fusion Hybrid' & 'Lithium Blanket' concepts remain viable options at this stage.
Pilot plant timescale	2030
Anticipated MWe of commercial operating facility	50 MWe
Interim plants or facilities planned	Pranos Fusion is executing a clearly defined three-stage roadmap : **Stage 1:** Simulation and Design: Developing high-fidelity computational models and optimizing reactor configurations. **Stage 2:** Prototype Development: Building and testing its first spherical tokamak prototype, RAGYA - a lab-scale device with focused physics objectives and subsystem validation. RAGYA will be upgraded to PRAGYA, incorporating advanced shaping and control capabilities. Together, they form a critical testbed for developing and de-risking key technologies essential for future reactor-scale fusion. **Stage 3:** Scaled Fusion Device: Full-scale fusion system, PRANI**Q**, engineered to achieve net energy gain and demonstrate breakeven conditions. This milestone marks the transition from experimental validation to energy relevance. • 2026: First plasma from RAGYA • 2027: Upgrade to PRAGYA for plasma shaping • 2028: Improve non-inductive current drive • 2030: Deployment of scaled reactor, PRANI**Q**
Milestones in past 12 months	• Secured government funding through the Startup India Seed Fund (SISF) initiative, a key milestone that strengthens the foundation for deep-tech innovation in India. • Secured private venture capital funding for fusion in India • Defined key device parameters and optimized spherical tokamak scaling relations • Initiated a digital twin framework for scaled reactor design, integrating core physics and system architecture • Completed engineering designs for TF coils and support structures, including stress analysis and CAD modeling
Recent company investments	• A dedicated R&D facility in Bangalore, including electrical upgrades and vacuum infrastructure. • Procurement of experimental systems, including vacuum vessels, vacuum pumps, RF power sources and diagnostics. • Computational resources for tokamak systems modeling and digital twin design for future scale-up.
Key collaborators/partners	• Jawaharlal Nehru Centre For Advanced Scientific Research (JNCASR), Bengaluru • Department of Science and Technology (DST), New Delhi • Indian Institute of Science (IISc), Bengaluru • Birla Institute of Technology and Science (BITS) - Pilani, Rajasthan • Industrial47 Venture Studio, India
Recent published papers	Two abstracts have been accepted for Poster Presentation at the IAEA Fusion Energy Conference 2025 under the topics: PWF - Pathways to Fusion and TH-H - Heating & Current Drive respectively.

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PRINCETON SATELLITE SYSTEMS

We develop advanced aerospace, energy and biomedical technology.

Location	Plainsboro, New Jersey, USA
Contact details	info@psatellite.com
Year founded	1992
Founder names	Michael Paluszek, Marilyn Ham
Primary target market(s)	Space propulsion, Medical, Off-grid energy
Total funding declared to date	$100,000
Employees (incl. full time consultants)	6
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Field Reversed Configuration
Fuel Source	DHe3
Planned energy capture approach	Combined cycle heat engine
Pilot plant timescale	2030
Anticipated MWe of commercial operating facility	1 MWe
Interim plants or facilities planned	A version with 1 T fields (5 keV heating) to validate the plasma physics.
Milestones in past 12 months	• Developed RF boards for plasma heating • Commercialized low power boards • Developed a He3 separation technique for getting He3 from natural gas • Received a DARPA ERISA recommendation for FRC reactors
Key collaborators/partners	Princeton Plasma Physics Laboratory

PROXIMA FUSION

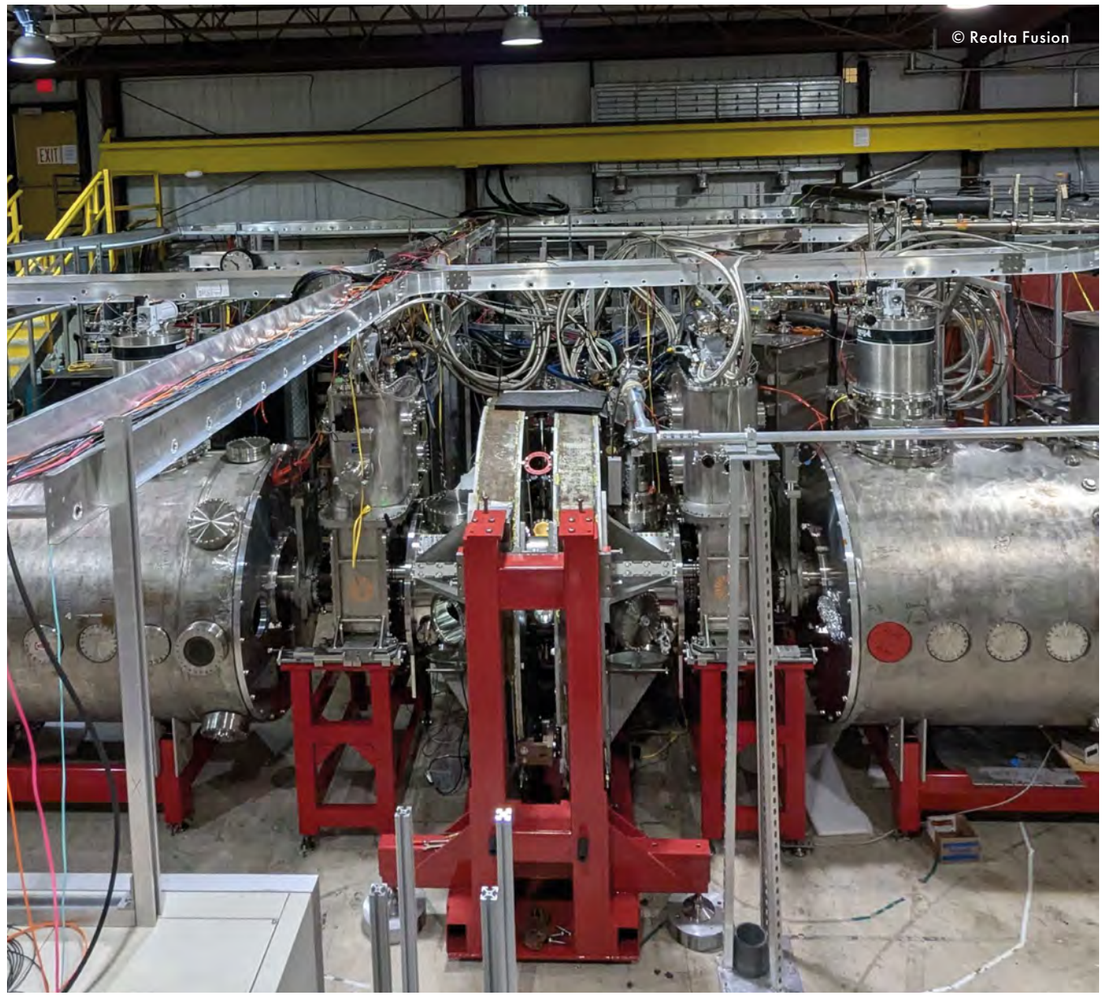
Proxima Fusion is building QI stellarators, leveraging experience from W7-X at the Max Planck Institute for Plasma Physics, together with advances in high-temperature superconducting (HTS) technology and computational optimization.

Location	Munich, Germany
Contact details	info@proximafusion.com
Year founded	2023
Founder names	Francesco Sciortino, Lucio Milanese, Jorrit Lion, Jonathan Schilling, Martin Kubie
Total funding declared to date	$200,000,000
Employees (incl. full time consultants)	100
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Quasi-isodynamic stellarator
Fuel Source	DT
Planned energy capture approach	Lithium neutron ‘blanket’
Pilot plant timescale	2030s
Anticipated MWe of commercial operating facility	750 MWe
Interim plants or facilities planned	Construction of "Alpha", a net-energy stellarator in the early 2030s.
Milestones in past 12 months	• Publication of the integrated physics-engineering design of "Stellaris", Proxima's power plant concept • Manufacturing of HTS non-planar magnet prototypes
Key collaborators/partners	Max Planck Institute for Plasma Physics, Paul Scherrer Institute, Karlsruhe Institute of Technology, Forschungszentrum Jülich, Bilfinger Nuclear & Energy Transition, University of Wisconsin, Commissariat à l'Énergie Atomique, University of Bonn, Technical University of Munich
Recent published papers	https://www.sciencedirect.com/science/article/pii/S0920379625000705

PULSAR FUSION

Nuclear Fusion for In-Space Propulsion

Location	Bletchley, UK
Year founded	2011
Founder names	Richard Dinan
Primary target market(s)	Space propulsion



REALTA FUSION

Realta Fusion is developing compact, scalable, modular - CoSMo fusion™ - energy systems based on the magnetic mirror concept as the lowest CapEx and least complex path to commercially competitive fusion energy. Realta's CoSMo fusion™ energy systems target industrial heat and power applications including data centers, chemical plants, metal recycling, remote mining, and other heavy industry. The company spun out of an ARPA-E funded project at the University of Wisconsin.

Location	Madison, Wisconsin, USA
Contact details	info@realtafusion.com
Year founded	2022
Founder names	Kieran Furlong, Cary Forest, Jay Anderson, Ben Lindley, Oliver Schmitz
Total funding declared to date	$50,000,000
Employees (incl. full time consultants)	18
General approach	Magnetic confinement
Specific approach	Magnetic Mirror
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Mid 2030's
Anticipated MWe of commercial operating facility	50-500 MWe
Interim plants or facilities planned	• Realta Forge: Purpose-built R&D facility • Anvil: Commercial scale simple mirror • Anvil VNS: Upgraded Anvil operating with tritium as a Volumetric Neutron Source • Hammir: Commercial fusion generating plant (tandem mirror)
Milestones in past 12 months	• Start-up of and first plasma in experimental compact magnetic mirror device, WHAM, in partnership with UW-Madison • HTS Magnets installed & operating at 17 T (world-record for a MCF experiment) • Completion of fully integrated plasma simulator • First company to operate massive plasma simulations (Particle-in-Cell) in private cloud environment in partnership with AWS (Amazon Web Services)
Key collaborators/partners	US Dept of Energy/Advanced Research Projects Agency - Energy (ARPA-E), University of Wisconsin-Madison
Recent published papers	• Confinement performance predictions for a high field axisymmetric tandem mirror" in review with Journal of Plasma Physics • Drift-cyclotron loss-cone instability in 3D simulations of a sloshing-ion simple mirror" Journal of Plasma Physics

RENAISSANCE FUSION

Renaissance Fusion's goal is to produce the first viable Stellarator reactor thanks to three technologies: wide High-Temperature Superconductor (HTS) tapes; simplified magnet manufacturing by laser engraving; Liquid Metal (LM) first wall. These technologies have considerable potential in other sectors, including nuclear fission, medical imaging, energy storage, magnetic levitation trains.

Location	Grenoble, France
Contact details	contact@renfusion.eu
Year founded	2020
Founder names	Francesco Volpe
Primary target market(s)	Electricity generation
Total funding declared to date	$68,500,000
Employees (incl. full time consultants)	66
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Stellarator
Fuel Source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	2032
Anticipated MWe of commercial operating facility	1000 MWe
Interim plants or facilities planned	Experimental reactor proving Q greater than 2 and continuous operations
Milestones in past 12 months	• Received PVD and MOCVD machines for HTS film deposition • Received laser-engraving machine • Designed and purchased equipment for hot liquid metal loop
Recent company investments	Expanded to a 3,500 m^2 facility
Key collaborators/partners	BPI France, CEA, CNRS, INRIA, Université de Lorraine, Universita della Tuscia, Università La Sapienza, Eindhoven University of Technology, FuseNet
Recent published papers	F.R. Famà, V. Prost, G. Calabrò, F.A. Volpe, S. Ubertini, A.L. Facci, Thermodynamic and economic analyses of the retrofit of existing electric power plants with fusion reactors, Energy Conversion and Management: X (2024): 100668

SHINE TECHNOLOGIES

As today's fusion company, we're commercializing and industrializing near-term applications of fusion – such as neutron testing and producing medical isotopes. These applications create social and economic value today while allowing us to build and practice essential capabilities for deploying fusion energy to billions of people over the long term.

Location	Janesville, Wisconsin, USA
Contact details	info@shinefusion.com
Year founded	2010
Founder names	Greg Piefer
Primary target market(s)	Electricity generation, Medical, Neutron imaging and radiation effects testing for advanced industrial inspection, Transmutation of nuclear waste
Total funding declared to date	$800,000,000
Employees (incl. full time consultants)	271
General approach	Phase 1: beam-solid target, Phase 2: beam-gas target, Phase 3: beam-plasma target, Phase 4: high temperature plasma. Hybrid electrostatic confinement is closest to what we're currently planning in the future
Specific approach	See above
Fuel Source	DT
Planned energy capture approach	Fission-fusion hybrid
Pilot plant timescale	Phase 2 - 2026, Phase 3 – 2032, Phase 4 - 2040
Anticipated MWe of commercial operating facility	Phase 1: 10-1000 We, Phase 2: 1 MWe, Phase 3: 10 MWe, Phase 4: 100+ MWe
Interim plants or facilities planned	• Our launched FLARE (Fusion Linear Accelerator for Radiation Effects) testing service will use high-energy fusion neutrons (14 MeV) for radiation effects testing for defense and aerospace, beating the next best alternative by a factor of ~20. • Cassiopeia, launched in 2024, is the largest production facility for non-carrier-added lutetium-177 in North America, with a capacity of up to 100,000 patient doses per year. • Chrysalis is nearing completion of construction and will be the home of our fusion-driven medical isotope production and flexible irradiation facility. • Our Phoenix Imaging Center, in Fitchburg, is commercial and uses fusion-based technology to inspect industrial components through neutron imaging, radiation effect.

Milestones in past 12 months	• Next-generation testing of advanced plasma window technology was funded, allowing for high-power-density (>100 kW /cm2) particle beams to interact with a dense target while minimizing pumping requirements • Extensive operational testing of full-scale tritium-deuterium separation and purification system • Grew profitability with Phase 1 neutron radiography business, with image quality equal to or better than reactors • Safety Evaluation Report issued by Nuclear Regulatory Commission for the Chrysalis—will replace nuclear reactors as largest production facility for medical isotopes in the world • Began operation of an isotope production line capable of producing a few hundred million dollars per year of Lu-177 • Continuing high-volume commercial production of Lu-177 with consistent customer delivery and exceptional product purity • Full-scale commercial production of Yb-176 for medical purposes by performing mass separation on high current particle beams
Recent company investments	• Continued upgrades to radioisotope production facilities and Systems manufacturing operation. • Upgraded demo system in Building One facility to a commercial system with the launch of our FLARE (Fusion Linear Accelerator for Radiation Effects) testing service which uses high-energy fusion neutrons (14 MeV) to offer state-of-the-art radiation effects testing for defense, aerospace and fusion research customers. • Total investment in CapEx of about $20M

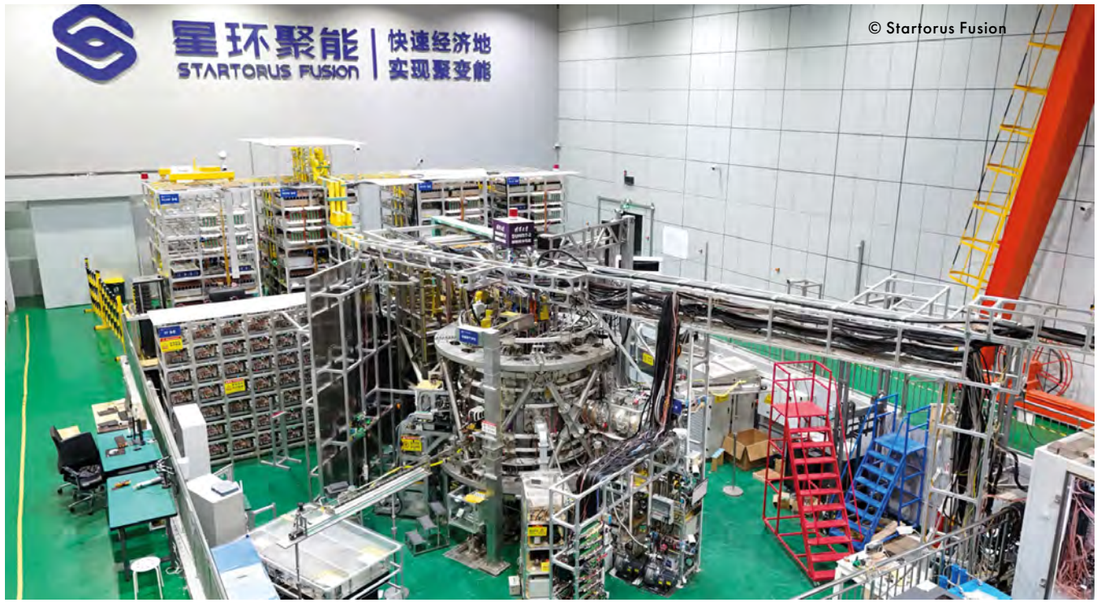
Chryslis, SHINE's flexible irradiation facility, which will house six fusion systems to make medical isotopes.

Key collaborators/partners	UKAEA, Department of Energy National Nuclear Security Administrations, Department of Energy (Office of Science, Fusion Energy Science program), Argonne National Lab, Oak Ridge National Lab, Savannah River National Lab, Lawrence Livermore National Lab, National Ignition Facility, Sandia National Labs, Y-12 National Security Complex, Orano USA, Department of Energy, ARPA-E, GE-Hitachi, Department of Defense (all services, joint agencies, and key contractors)
Recent spin outs/patents/commercial innovations	• Commercial innovations: 14 MeV Neutron Radiation Effects Testing Service (FLARE™) to Support the Strategic Defense and Space Community • 2024 EOY Patent Portfolio: 149 issued patents; 196 pending patent applications • 2024 Patent Highlights: US patents issued covering SHINE's Yb-176 enrichment process & SHINE's Lu/Yb bulk separation process
Recent published papers	• Tritium Breeding Testing with an Intense DT Neutron Source, Proceedings of the 2024 Technology of Fusion Energy Conference. • Ion Beam-Driven Polywell Fusion Prototypic Neutron Source, Proceedings of the 2024 Technology of Fusion Energy Conference. • Isotope Recovery from UNF Recycling and Transmutation, Transactions of the 2024 American Nuclear Society Annual Meeting

STARTORUS FUSION

Startorus Fusion is a Chinese fusion innovator developing compact reactors featuring repetitive pulse operation and magnetic reconnection heating in HTS spherical tokamaks. We adopt a novel fusion technical route to 'Make Tokamaks Simple Again', and thus achieve fusion energy rapidly and cost-effectively.

Location	Xi'an, Shaanxi Province, China
Contact details	business@startorus.cn
Year founded	2021
Founder names	Yi TAN, Rui CHEN
Primary target market(s)	Electricity generation, Off-grid energy
Total funding declared to date	$138,900,000
Employees (incl. full time consultants)	154
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Spherical tokamak
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2028
Anticipated MWe of commercial operating facility	100 MWe
Interim plants or facilities planned	There will be a 3 T, HTS spherical tokamak with a major radius of 1 m prior to the pilot plant.
Milestones in past 12 months	**Tokamak Operations & Plasma Control:** • Achieved 500 kA plasma current and plasma temperature of 17 million degrees Celsius by magnetic reconnection heating • Achieved both positive and negative triangularity plasmas • Developed and deployed a plasma control system **Innovative Work:** • Completed physical, engineering design and partial manufacture of the world's first Negative Triangularity Spherical Tokamak (NTST) **HTS Magnets Preparation:** • Initiated R&D of the full-size HTS magnets of a reactor-level spherical tokamak • Developed HTS magnet manufacture and test facilities
Recent company investments	Manufacture and test of the world's first full-size high-temperature superconducting Toroidal Field Model Coil (TFMC) and Central Solenoid Model Coil (CSMC) for a reactor-level spherical tokamak, and HTS magnets full-stack facilities.
Key collaborators/partners	Tsinghua University
Recent spin outs/patents/commercial innovations	**Patents** • Nuclear Fusion Reaction System and Method • Optical Path Adjustment Device, Laser Optical Path Adjustment System and Method • Charging Control Method for High-Temperature Superconducting No-Insulation Coils and Computer Device • Induced Eddy Current Prediction Model Construction Method, Induced Eddy Current Prediction Method, and Electronic Device **Commercial innovations** • High performance Isolation Amplifiers for fusion environment (0–50 MHz bandwidth; exceeding 3 kV isolation voltage) • High-precision, low-drift and auto-corrected Integrators (suitable for integration of various magnetic diagnostics) • Pulsed Power Supply (suitable for various currents needed by TF/PF/CS magnets) • H850 Magnets • Plasma Accelerator for Micro Dust • EPIC: Extreme Physics Instrument for Comprehensive measurement
Recent published papers	• The preliminary design of SUNIST-2: A Spherical Tokamak. Fusion Engineering and Design. https://doi.org/10.1016/j.fusengdes.2025.114865 • Development of plasma burn-through simulation code and validation in SUNIST-2 and EAST. Nuclear Fusion (2025). DOI: 10.1088/1741-4326/add1f0 • A 100 kA-Class Modular Power Supply for Tokamak Magnets. IEEE Transactions on Plasma Science (2024). DOI: 10.1109/TPS.2024.3387976 • A hybrid cascaded H-bridge converter for poloidal magnets of tokamaks. IEEE Transactions on Plasma Science (2024). DOI: 10.1109/TPS.2024.3443257



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STELLAREX

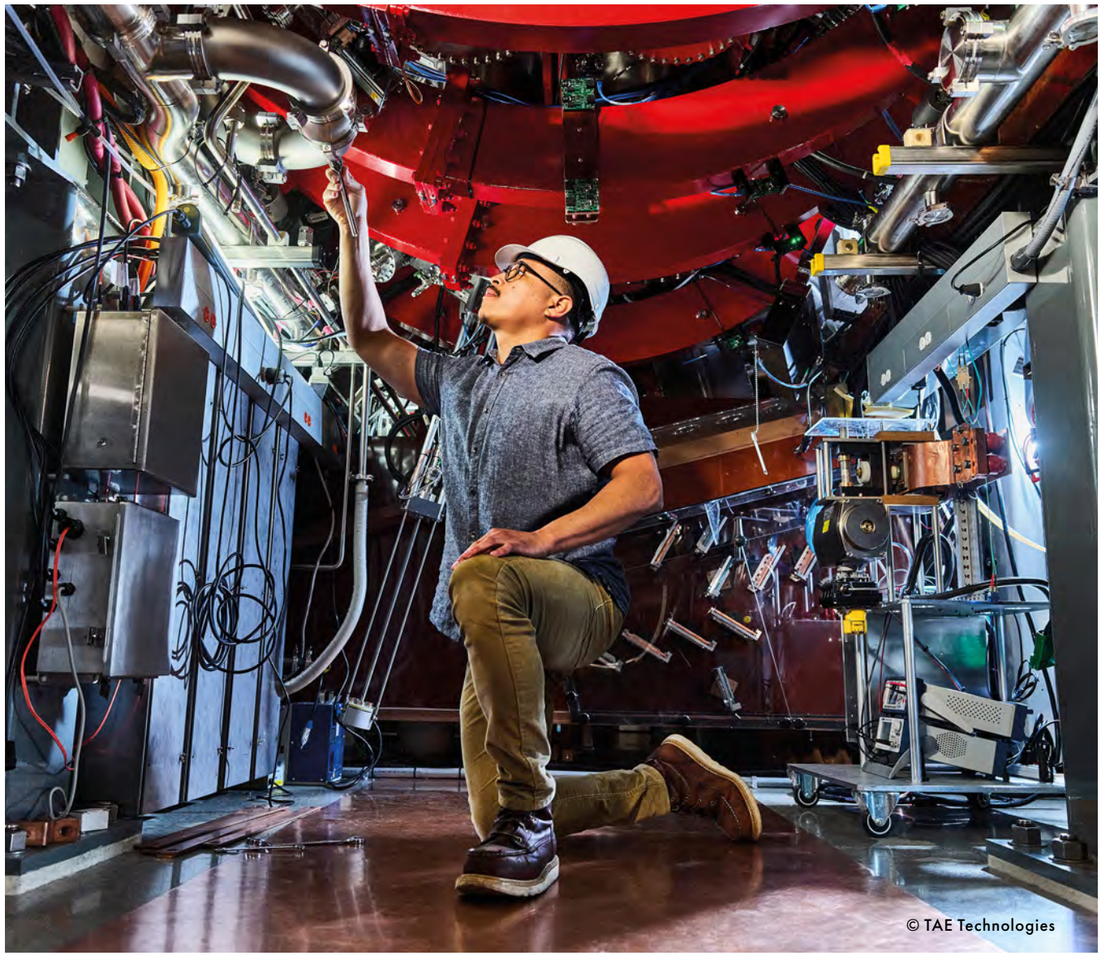
Stellarex is a fusion energy technology development company and spinout of Princeton University, dedicated to the rapid commercialization of fusion energy production by applying the significant advantages of the stellarator approach, numerical optimization, and simplified construction.

Location	Princeton, New Jersey, USA
Contact details	info@stellerex.energy
Year founded	2022
Founder names	Richard Carty, Prof. Amitava Bhattacharjee, Dr. Mike Zarnstorff
Primary target market(s)	Electricity generation
Total funding declared to date	Not reported
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Stellarator
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Anticipated MWe of commercial operating facility	250 MWe
Interim plants or facilities planned	Stellarex is focused on the design and construction of an intermediate deuterium-tritium device that will demonstrate net energy gain.
Key collaborators/partners	Princeton University, Savannah River National Lab, Max-Planck Institute for Plasma Physics, Canadian Nuclear Labs, Kinectrics, Hatch Engineering, The Hidden Symmetries in Fusion Energy Collaboration @ the Simons Foundation, NY, Princeton Plasma Physics Lab.

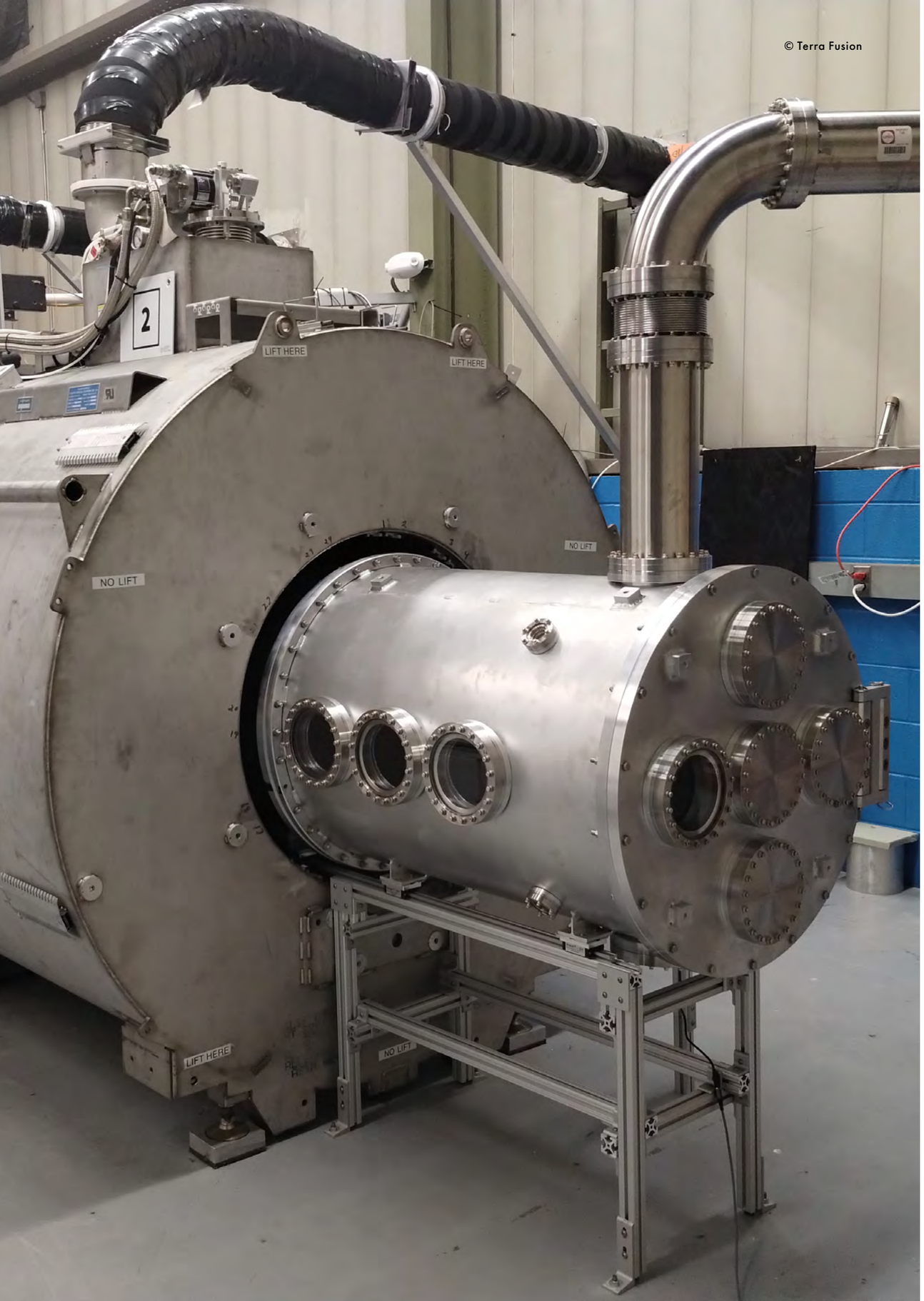
TAE TECHNOLOGIES

TAE Technologies is developing commercial fusion power that is safe, cost-effective, fuel-agnostic and capable of sustaining the planet for centuries. Through its unique advanced beam-driven FRC approach, TAE has developed spinoff applications in life sciences, energy storage, electric mobility and fast charging to create a complete clean energy ecosystem. Multidisciplinary and mission-driven by nature, TAE is leveraging proprietary science and engineering to create a bright future.

Location	Foothill Ranch / Irvine, California, USA;
Contact details	press@tae.com; pga@tae.com
Year founded	1998
Founder names	Numerous founders
Primary target market(s)	Electricity generation
Total funding declared to date	$1,300,000,000
Employees (incl. full time consultants)	300
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Field Reversed Configuration
Fuel Source	Pursuing p-B11; TAE configuration can also accommodate other fusion fuel cycles such as D-T, D-He3 and D-D
Planned energy capture approach	Heat capture and conventional thermal cycle and/or future direct energy conversion
Pilot plant timescale	2030s: Da Vinci device, prototype p-B11 / hydrogen-boron fusion power plant
Anticipated MWe of commercial operating facility	350-500 MWe
Interim plants or facilities planned	Copernicus device will demonstrate the viability of TAE's concept at fusion-relevant conditions by operating with hydrogen fuel at the D-T breakeven operating point. See timeline: https://tae.com/innovation
Milestones in past 12 months	• Announced first-ever generation of Field Reversed Configuration (FRC) plasmas using only neutral beam injection (NBI) • Further advancement of Copernicus design; component fabrication underway
Recent company investments	• Copernicus infrastructure and fabrication • Clinical trial capability for TAE Life Sciences Boron Neutron Capture Therapy (BNCT) cancer treatment • TAE Power Solutions test beds for e-mobility, energy storage and advanced power management
Key collaborators/partners	Collaborators include: Argonne National Laboratory, General Atomics, Google, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Massachusetts Institute of Technology, National Institute for Fusion Science – Japan, Nihon University, Oxy Low Carbon Ventures. See complete list: https://tae.com collaborators
Recent spin outs/patents/commercial innovations	• TAE Life Sciences: Targeted cancer treatment leveraging accelerator beams developed for TAE fusion made significant progress in human trials; announced partnership with Ohio State University Comprehensive Cancer Center (OSUCCC), known as The James, for first US-based cancer center alliance accelerating boron drug innovation for BNCT • TAE Power Solutions: Commercializing technologies for battery energy storage systems, e-mobility powertrains, fast charging and more; announced collaboration with MARA to develop high-frequency, real-time responsive load management for hyperscale data centers and other power intensive industrial operations • 1,500 granted patents to date
Recent published papers	• Nature Communications, April 2025 - Generation of field-reversed configurations via neutral beam injection • Fusion Science and Technology, October 2024 - How the Exascale Computing Project and Private Magnetic Fusion Research Stimulated Each Other • Nuclear Fusion, October 2024 - Enhanced plasma performance in C-2W advanced beam-driven field-reversed configuration experiments • Nuclear Fusion, August 2024 - Demonstration of aneutronic p-11B reaction in a magnetic confinement device. See complete list: https://tae.com/research-library/



TAE Technologies 'Norm' Alternate View



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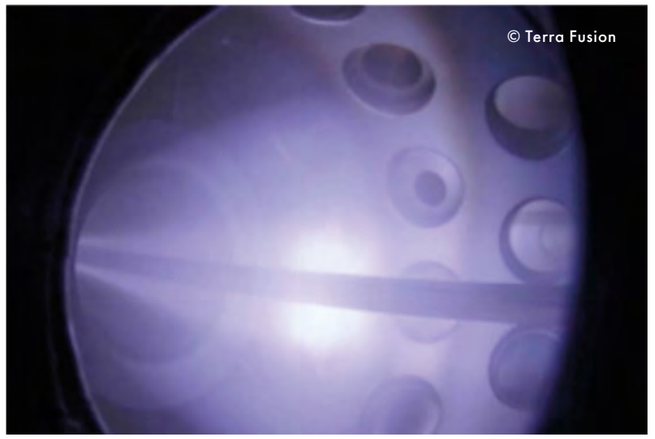
FIA MEMBER

TERRA FUSION ENERGY CORPORATION

Terra Fusion Energy Corporation is developing fusion energy systems to provide carbon free, sustainable electrical and thermal energy with engineering simplicity and high reliability. The company builds on the Centrifugal Mirror Fusion Experiment (CMFX), a superconducting magnetic mirror experiment funded by ARPA-E and led by the University of Maryland, Baltimore County (UMBC).

Location	Maryland, USA
Contact details	info@tf.energy
Year founded	2024
Founder names	Carlos A. Romero Talamás, Oliver M. Barham
Total funding declared to date	$400,000
Employees (incl. full time consultants)	2
General approach	Magnetic confinement
Specific approach	Centrifugal Magnetic Mirror
Fuel Source	DT
Planned energy capture approach	Lead-lithium neutron blanket
Pilot plant timescale	2032
Anticipated MWe of commercial operating facility	Range of units from 5 MWe to 100 MWe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Plasma inside of CMFX

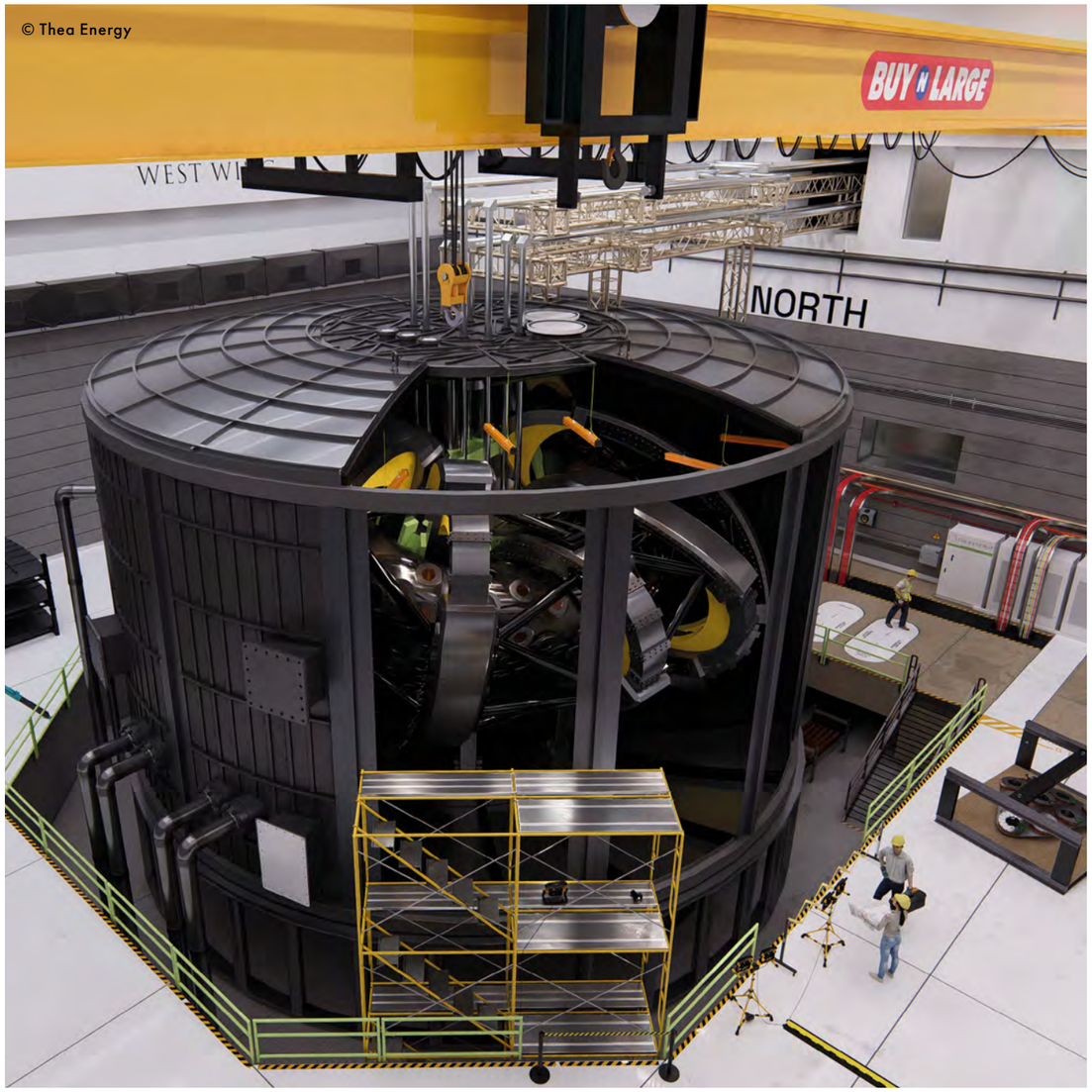
THEA ENERGY

FIA MEMBER

THEA ENERGY

Thea Energy's stellarator architecture utilizes arrays of mass-manufacturable magnet hardware and scalable, software-based control systems. The planar coil stellarator breakthrough allows systems to be more practical than previously thought possible and enables the deployment of economical, efficient, and high-capacity-factor fusion power plants.

Location	Kearny, New Jersey, USA
Contact details	info@thea.energy
Year founded	2022
Founder names	Brian Berzin, David Gates, Matt Miller
Primary target market(s)	Electricity generation
Total funding declared to date	$30,000,000
Employees (incl. full time consultants)	70
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Stellarator
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	Pilot plant in the 2030s.
Anticipated MWe of commercial operating facility	400 MWe
Interim plants or facilities planned	Steady-state neutron source stellarator system operation by 2030.
Milestones in past 12 months	• Operated the world's first array of HTS planar coils, which created and controlled stellarator-relevant magnetic fields • Built and operated closed-loop software control systems capable of tuning out significant fusion system hardware defects, mis-mounts, and wear-and-tear • Down-selected 'Eos' integrated fusion system plasma equilibrium and device specifications • Developed and confirmed physics performance of Thea Energy's 'Helios' commercial fusion power plant architecture
Recent company investments	• Scaled and automated HTS magnet production infrastructure for the mass-manufacture of fusion hardware • Designed, integrated, and operated fusion support systems and infrastructure in-house including cryogenics, vacuum, and electrical & controls for high-field testing of superconducting magnet arrays • Continued expansion of the Company's headquarters and labs in Kearny, NJ
Key collaborators/partners	Collaborators include: Kyoto Fusioneering, Max Planck Institute for Plasma Physics, MagCorp, Oak Ridge National Laboratory, Princeton Plasma Physics Laboratory, Stony Brook University, University of California San Diego, University of Madison-Wisconsin.
Recent published papers	• 2025 Nucl. Fusion 65 026052 - Stellarator fusion systems enabled by arrays of planar coils (https://iopscience.iop.org/article/10.1088/1741-4326/ada56c) • 2025 Nucl. Fusion 65 026051 – Coil optimization methods for a planar coil stellarator (https://iopscience.iop.org/article/10.1088/1741-4326/ada56b) • 2025 Nucl. Fusion 65 026053 - The scoping, design, and plasma physics optimization of the Eos neutron source stellarator (https://iopscience.iop.org/article/10.1088/1741-4326/ada56a) • 2025 Nucl. Fusion 65 026050 - Fast ion confinement in quasi-axisymmetric stellarator equilibria (https://iopscience.iop.org/article/10.1088/1741-4326/ada56d)



Thea Energy's upcoming Eos large-scale stellarator facility. Eos will achieve steady-state fusion utilizing the Company's simplified planar coil system architecture, an array of programmable magnets and dynamic software controls.

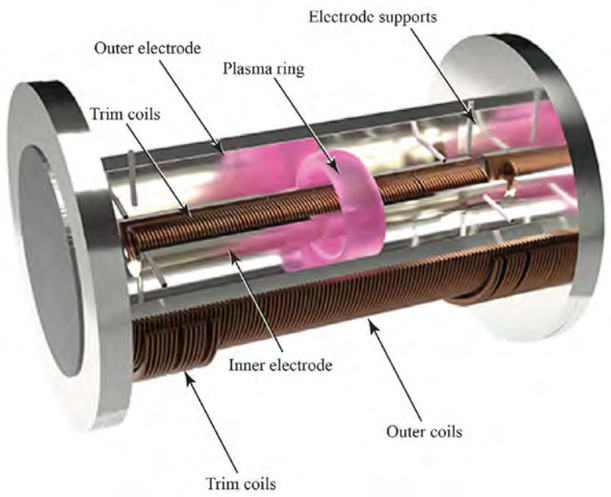
TIBBAR PLASMA technologies

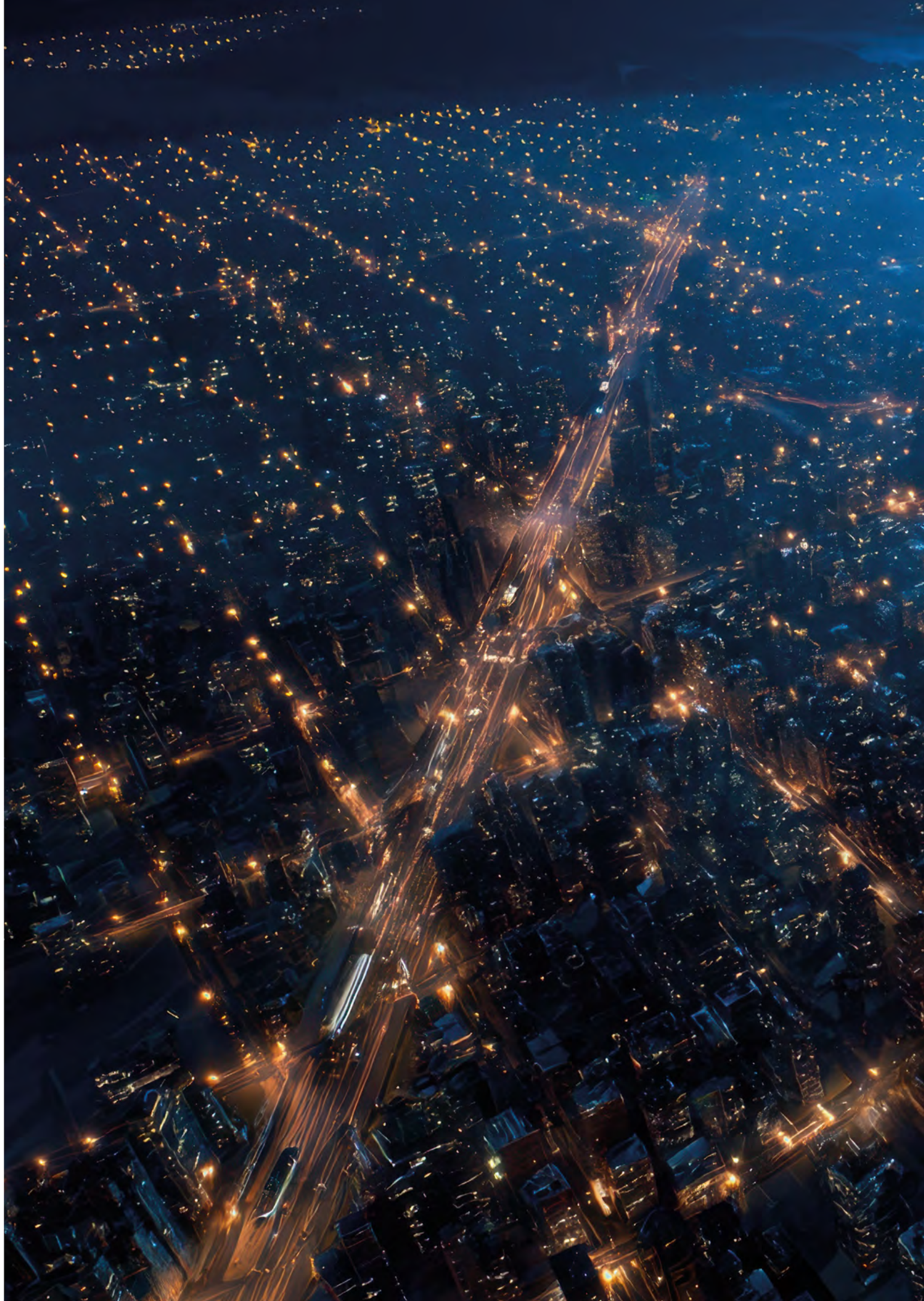
FIA MEMBER

TIBBAR PLASMA TECHNOLOGIES

We do applied plasma physics for fusion and other applications.

Location	Los Alamos, New Mexico, USA
Contact details	r_nebel@hotmail.com
Year founded	2015
Founder names	Richard Nebel
Primary target market(s)	Electricity generation, Space propulsion, Off-grid energy
Total funding declared to date	$1,350,000
Employees (incl. full time consultants)	8
General approach	Electrostatic/Magnetic confinement
Specific approach	Magnetic-electrostatic confinement
Fuel Source	pB11
Planned energy capture approach	Direct energy conversion
Pilot plant timescale	2030
Anticipated MWe of commercial operating facility	50-100 MWe
Interim plants or facilities planned	Break even demonstration plant
Milestones in past 12 months	Demonstrated creation and driving of rings.
Recent company investments	New experimental setup
Recent spin outs/patents/commercial innovations	Provisional Patent filed





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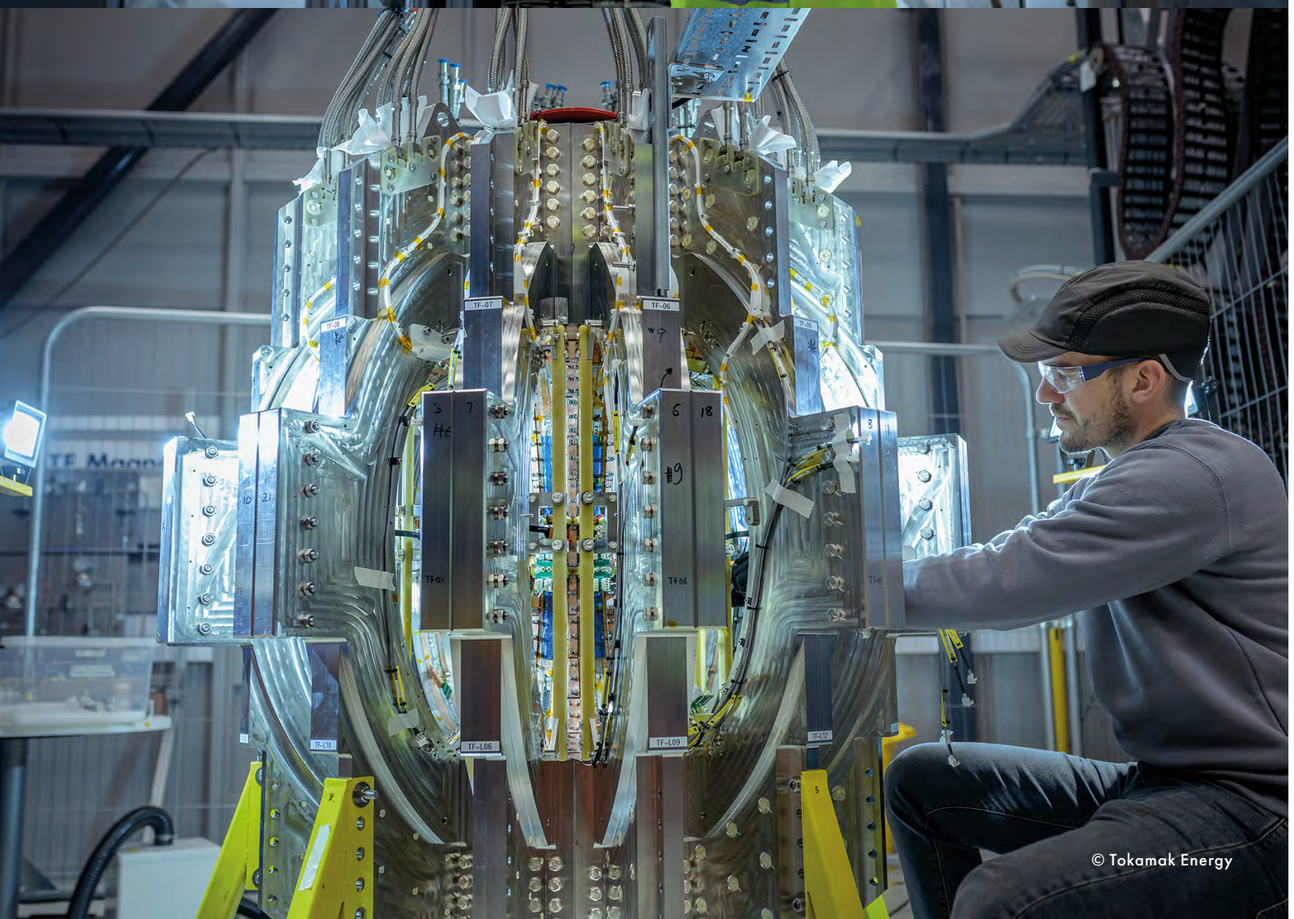

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TOKAMAK ENERGY

Tokamak Energy is a global fusion energy company pioneering two transformative technologies: the spherical tokamak and high temperature superconducting (HTS) magnets. Our operational ST40 spherical tokamak has achieved 100 million degrees Celsius plasma ion temperature (peer reviewed). We launched TE Magnetics in 2024 to develop HTS magnets for fusion and many other applications.

Location	Oxford, UK
Contact details	media@tokamakenergy.com
Year founded	2009
Founder names	David Kingham, Mikhail Gryaznevich, Alan Sykes
Primary target market(s)	Electricity generation, Off-grid energy, Hydrogen and/or clean fuels, Industrial heat, HTS magnet markets
Total funding declared to date	$335,000,000
Employees (incl. full time consultants)	280
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Spherical tokamak
Fuel Source	DT
Planned energy capture approach	Lithium neutron ‘blanket’
Pilot plant timescale	2033
Anticipated MWe of commercial operating facility	500 MWe
Interim plants or facilities planned	ST40 LEAPS program (Lithium in ST40)
Milestones in past 12 months	Robust, scalable, quench protection of HTS magnet.
Recent company investments	Manufacturing facilities for HTS magnets; Gyrotron for plasma heating on ST40.
Key collaborators/partners	DOE; DESNZ (UK); UKAEA; US National Labs (ORNL, PPPL, Sandia, Los Alamos, SRNL, INL); Universities of Tokyo, Illinois, Oxford, Cambridge, Imperial, Birmingham. Furukawa Electric.
Recent spin outs/patents/commercial innovations	We now have 80 families of patent applications, with over 400 granted patents. We have strong patent coverage for robust, compact, quench resilient, high field, HTS magnets.
Recent published papers	• This publication records our unique achievement of 100 million degree plasma ion temperature in a compact spherical tokamak: https://www.energy.gov/science/fes/articles/small-fusion-experiment-hits-temperatures-hotter-suns-core. • The spherical tokamak path to fusion power: Opportunities and challenges for development via public–private partnerships: https://pubs.aip.org/aip/pop/article/31/4/042507/3283004/The-spherical-tokamak-path-to-fusion-power

TYPE ONE ENERGY

FIA MEMBER

TYPE ONE ENERGY GROUP

Type One Energy Group uses stellarator physics and engineering to bring its stellarator fusion power system to international energy markets. The globally recognized team has a strong track record of building stellarators and applies proven innovations in advanced manufacturing, modern computational physics, and high-field superconducting magnets to optimize its stellarator for power production.

Location	Knoxville, Tennessee, USA
Contact details	info@typeoneenergy.com
Year founded	2019
Founder names	Leave blank
Primary target market(s)	Electricity generation
Total funding declared to date	$84,000,000
Employees (incl. full time consultants)	160
General approach	Magnetic confinement (Tokamak, Stellarator)
Specific approach	Stellarator
Fuel Source	DT
Planned energy capture approach	Helium cooled pebble bed
Pilot plant timescale	2033
Anticipated MWe of commercial operating facility	350 MWe
Interim plants or facilities planned	Infinity One - advanced stellarator incorporating HTS magnets, advanced optimization, and advanced manufacturing. Power plant design verification test and workforce development platform to be built at the retired Bull Run coal power plant owned by TVA in Tennessee
Milestones in past 12 months	• Published the physics basis for our Infinity Two Fusion Power Plant (7 papers) in the Journal of Plasma Physics (JPP) • Successfully tested Advanced Fusion HTS Magnet for Stellarators • Completed an Initial Design Review of the Infinity Two Fusion Power Plant
Recent company investments	Added a multi-axis CNC machine, large large-format 3-D printer, large cryogenic tank in our magnet lab near Boston.
Key collaborators/partners	Collaborators include: Tennessee Valley Authority, MIT, CFS, ORNL, UWMadison, LBNL, PPPL, UT-Knoxville, Columbia University
Recent spin outs/patents/commercial innovations	~20 new patent filings
Recent published papers	• A comprehensive, Unified Baseline Physics Design for the Type One Energy Stellarator Fusion Pilot Power Plant "Infinity Two" • The Infinity Two Fusion Pilot Plant baseline plasma physics design • Magnetohydrodynamic equilibrium and stability properties of the Infinity Two Fusion Pilot Plant • Breeder blanket and tritium fuel cycle feasibility of the Infinity Two Fusion Pilot Plant

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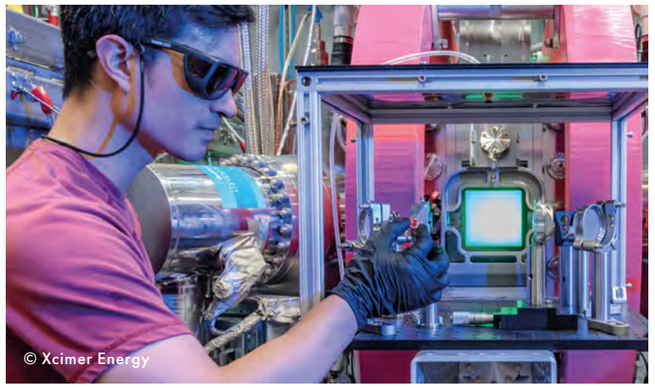
XCIMER ENERGY CORPORATION

FIA MEMBER

XCIMER ENERGY

Xcimer will combine technologies in a new way, to build the world's largest laser and apply the physics proven by NIF to a commercial energy system.

Location	Denver, Colorado, USA
Contact details	info@xcimer.energy
Year founded	2022
Founder names	Conner Galloway, Alexander Valys
Primary target market(s)	Electricity generation
Total funding declared to date	$120,000,000
Employees (incl. full time consultants)	85
General approach	Inertial confinement
Specific approach	Laser-driven inertial confinement
Fuel Source	DT
Planned energy capture approach	Lithium neutron 'blanket'
Pilot plant timescale	2035
Anticipated MWe of commercial operating facility	300 MWe-2 GWe
Interim plants or facilities planned	Engineering / "wall-plug" breakeven demonstration, using the world's largest, highest-energy, most powerful and brightest laser.
Milestones in past 12 months	• First excimer laser amplifiers constructed, validating excimer kinetics and operating regime • Other major components of our prototype laser beamline, Phoenix, completed and validated
Key collaborators/partners	LANL, LLE, NRL, General Atomics, Westinghouse, University of Illinois, Texas A&M, SRNL, ORNL, MIT, Colorado State University
Recent published papers	Hybrid direct drive with a two-sided ultraviolet laser, https://doi.org/10.1063/5.0221201



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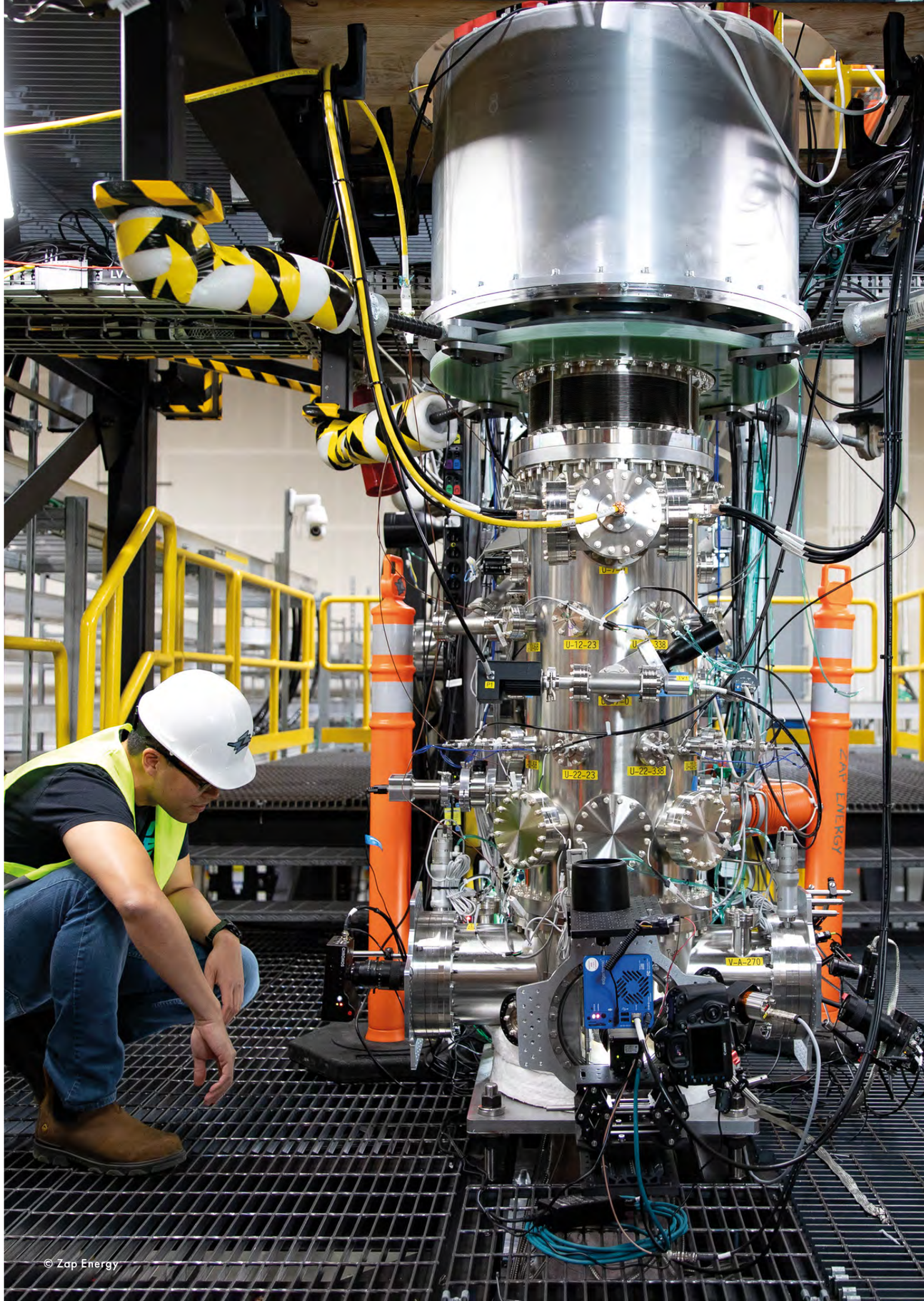
ZAP ENERGY

FIA MEMBER

ZAP ENERGY

Zap Energy is building a low-cost, compact and scalable fusion energy platform that confines and compresses plasma without the need for superconducting magnets or powerful lasers. Zap pursues fusion science and engineering in parallel, advancing both plasma performance and the development of key enabling technologies for economically compelling power plants.

Location	Everett, Washington, USA
Contact details	reachout@zap.energy
Year founded	2017
Founder names	Benj Conway, Brian A. Nelson, Uri Shumlak
Total funding declared to date	$338,000,000
Employees (incl. full time consultants)	150
General approach	Magnetic confinement
Specific approach	Z-pinch
Fuel Source	DT
Planned energy capture approach	Liquid metal with heat exchanger
Pilot plant timescale	Pilot Plant Conceptual Design Review in progress.
Anticipated MWe of commercial operating facility	200 MWe thermal/50 MWe net electric per module. Multiple modules per facility.
Interim plants or facilities planned	Century is Zap's 100kW-scale SFS Z-pinch power plant technology demonstrator. It is being used to validate repetitive pulsed power supplies, plasma-facing circulating liquid metal walls with heat exchange, resilient electrode systems, and power plant technology integration. The system is operational and advancing toward its full capacity of 100 kW of input power.
Milestones in past 12 months	• FuZE-Q high voltage upgrade and record neutron yields • FuZE multi-electrode upgrade • Century Phase 1 operated continuously for three hours, producing a series of over 1,000 plasma shots at 0.1 Hz without a failure • Meeting DOE milestone validation, each shot had more than 100 kA of input current, and was discharged in a flowing liquid metal wall environment with a durable liquid-metal tipped cathode system • Followed by first operation of third generation liquid metal loop, centrifugal metal wall, and integration with Century Phase 2
Recent company investments	Zap capacitor prototyping facility complete and first benchmark components produced.
Key collaborators/partners	University of Washington, Lawrence Livermore National Laboratory, Los Alamos National Laboratory
Recent published papers	• Time-resolved measurement of neutron energy isotropy in a sheared-flow-stabilized Z pinch, Nuclear Fusion 65, 026070 (2025) • Plasma pressure profiles in a sheared-flow-stabilized Z-pinch, Physics of Plasmas 31, (2024) • For further publications, see zapenergy.com/research



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