FUSION
INDUSTRY ASSOCIATION

Industry Perspective

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INFUSE Virtual Workshop
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Outline

- Quick FIA & industry overview
- Industry perspective on INFUSE
- Any questions

FIA Membership


Affiliate Members
BAYFUSION
Microsoft
OPTICA
Formerly OSA
Advancing Optics and Photonics Worldwide
Google
Kansai Electric Power
power with heart
THALES
MITSUI & CO.,LTD.
Mitsubishi Corporation
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Hogan Lovells
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ARNOLD MAGNETIC TECHNOLOGIES
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NEW LIGHT FUSION CONSULTANTS
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IDOM
ETEC
EAST TENNESSEE ECONOMIC COUNCIL
FUSION ENERGY INSIGHTS
EnF
EnableFusion
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K&L GATES
TELEDYNE BROWN ENGINEERING
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OCEM
POWER ELECTRONICS

How to Accelerate Fusion

Public Private Partnerships

The private sector should work with the scientific research that governments have pursued for decades. Public-Private Partnerships that include government support to private fusion companies can rapidly accelerate fusion development by driving new private financial support.

Ensuring Regulatory Certainty

The regulatory regime for fusion should be predictable, proportional to the risk, and supportive of innovation, while also giving confidence about ensuring public safety and security. Fusion energy regulation must be permanently separated from fission regulation and should not require lengthy permitting process for every facility.

Incentives Build a Global Fusion Energy Industry

Fusion does not need special status or excessive subsidies but should have a level playing field as it grows into a new industry.

Quick industry overview

- **45** verified private fusion companies
- **$7.1 billion** in investment
- Continued optimism in commercialization timelines
- **57%** increase in government funding in public-private partnerships
- Geographical diversity: **13 countries** are home to at least one fusion company
- Number of employees increased to **over 4,000**
- AND! *many challenges remain*

A Global Industry

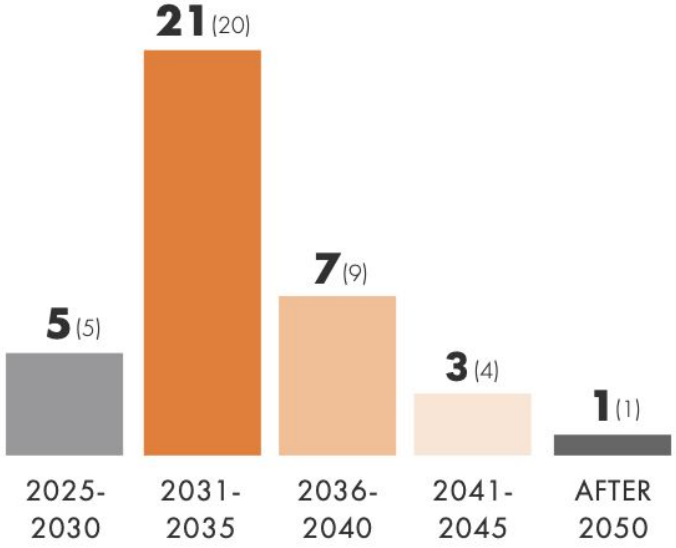
- 25 American Fusion Companies
  - With > 80% of the investment
- Global diversity
  - 13 countries with at least one fusion company
- Global supply chain, workforce, and scientific leadership

Timelines

13. Predictions

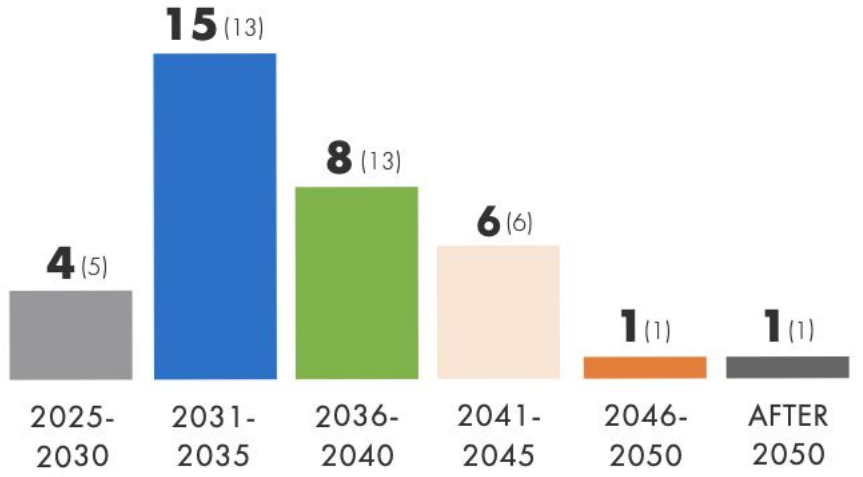
When will the first fusion plant deliver electricity to the grid? (37 responses)

**Last year's response in brackets*



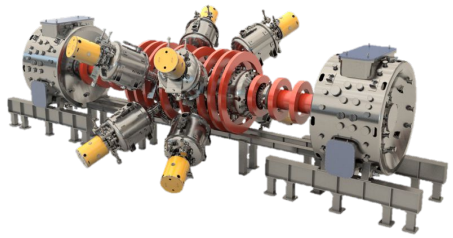
When will the first fusion plant demonstrate a low enough cost/high enough efficiency (Q) to be considered commercially viable? (35 responses)

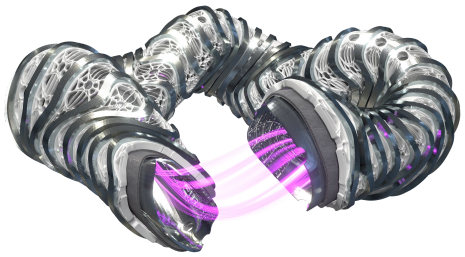
**Last year's response in brackets*

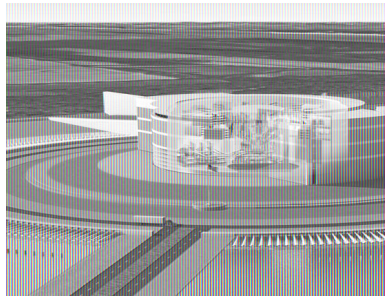


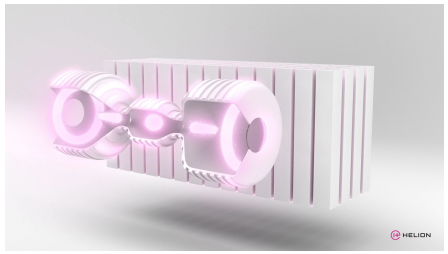
Industry's Timeline

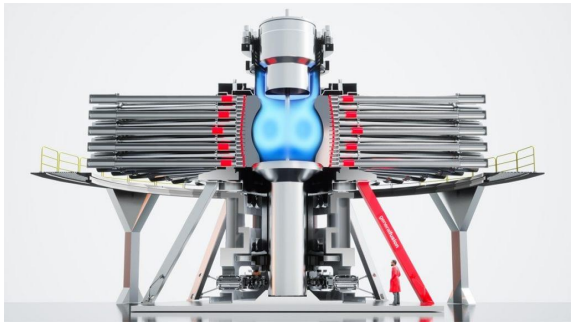
60 years of research	Mid 2020s	Late 2020s	Early 2030s	Mid 2030s
• Scientific basis for fusion energy	• Scientific Proof of Concept	• Design and build Pilot Plants	• Operate Pilot Plants, first sales	• Commercial Fusion, rapid scale-up to global deployment











Variety of Approaches

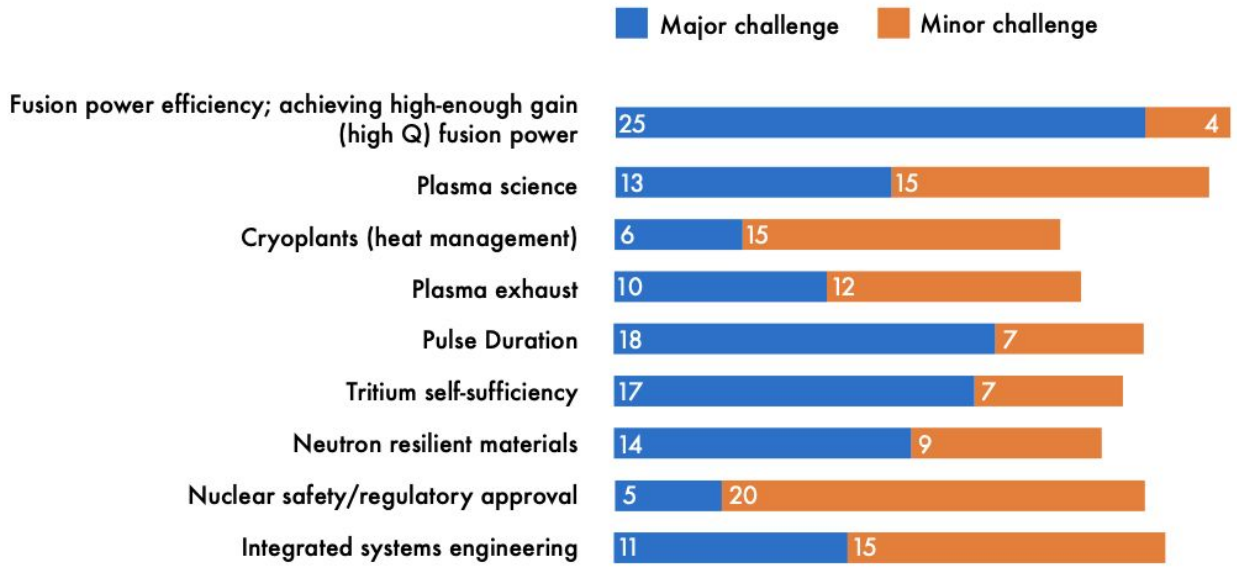
Specific approach

- **8** Stellarator
- **7** Laser-driven inertial confinement
- **3** Tokamak
- **3** Spherical tokamak
- **3** Field Reversed Configuration
- **2** Z-pinch
- **2** Magnetized target fusion
- **1** Levitated Dipole
- **1** Magnetic mirror
- **1** Centrifugal Magnetic Mirror
- **1** Magnetic-electrostatic confinement
- **1** Magnetized Liner Inertial Fusion (MagLIF)
- **1** Muon-catalyzed fusion with high density fuel
- **1** Open magnetic confinement (Mirror machine)
- **1** Magnetic electrostatic
- **1** Plectoneme
- **1** Poloidal magnetic confinement
- **1** Pulsed magneto-plasma pressurized confinement
- **1** Shock-driven inertial confinement
- **1** Short-Pulse Laser-Driven Inertial Confinement
- **1** Spindle cusp
- **1** Dense Plasma Focus
- **1** Electro-centripetal confinement
- **1** Agnostic

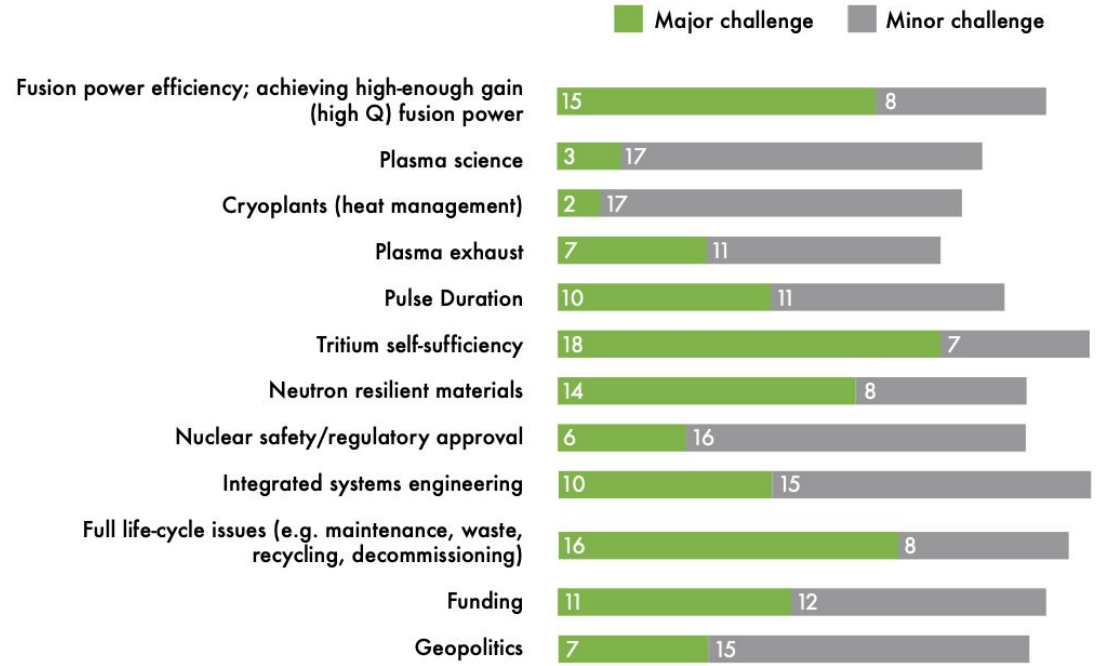
Challenges

14. Challenges

What do you see are the main challenges for fusion energy up to 2030?
(38 Reponses, non-reported answers indicate not seen as a problem/don't know)



What do you see are the main challenges for fusion energy after 2030?
(36 Reponses, non-reported answers indicate not seen as a problem in this timescale)



Industry perspective on INFUSE

- The FIA supports INFUSE and its ability to build cross-cutting partnerships towards fusion commercialization and enhance public-private sector collaboration. We advocate for its growth to match the need for fusion energy at scale.

- Basically - we love it and we want more of it.

We love it!

- 24 FIA members have received an INFUSE award.
- We urge its expansion in our advocacy efforts.
- Collaboration between sectors is key to accelerating commercialization.
- The focus on commercially relevant aspects is important.

FUSION INDUSTRY ASSOCIATION

Fusion Industry Association Launches U.S. Strategic Priorities Document Ahead of Election

From the FIA, Partnering with Governments

What Should the Next President and Congress Do To Commercialize Fusion Energy?

We call on the incoming President and Congress to support several key areas to support commercial fusion in th

1 **Increase Funding Fusion Energy Research, Development & Deployment**

Annual fusion research, including funding for public-private partnerships that will deploy fusion energy dem should be funded at the levels Congress authorized in the CHIPS and Sciences Act (over $1 billion per Congress should pass a one-time supplemental investment[1] of $3 billion to build the infrastructure and su term fusion commercialization.

2 **Align DOE Programming with Commercial Efforts**

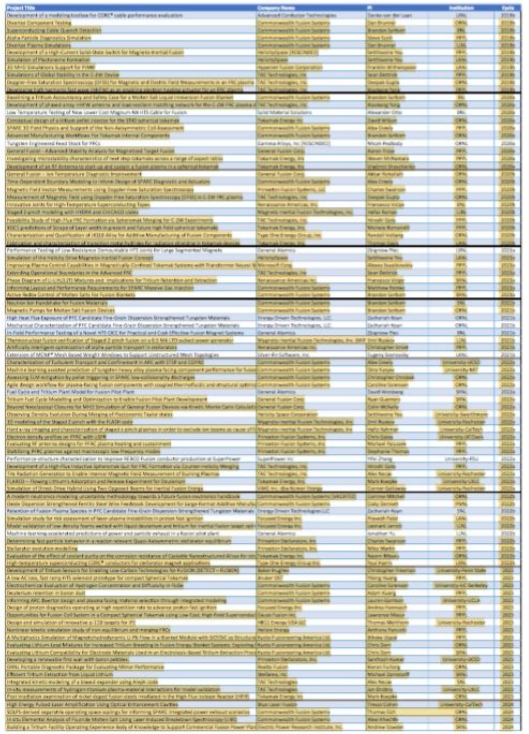
The DOE should commit to supporting the commercial fusion energy industry's effort to commercialize with that will solve remaining science and technology gaps on the way to demonstration. Congress must reau fusion program, prioritizing and expanding commercially relevant fusion R&D programs like FIRE, INFUS the Milestone Program to support pilot-scale demonstrations and other programs. DOE collaboration w nations like Canada, Japan, and the U.K. will efficiently accelerate commercial fusion. Finally, Congre President should restore the Office of Fusion Energy[2], led by an Assistant Secretary of Fusion Energy to s and existing public-private partnerships, fusion collaborative programs, global engagement, and more.

3 **Deployment Incentives for Fusion Energy**

To provide investor certainty, Congress and the new President must support and maintain a techn approach[3] to energy incentives that treat fusion like other clean energy sources. The Inflation Reduction Ac neutral" tax credits, like §45Y and §48E, have identified fusion energy as a "zero greenhouse g technology." They must be retained. Congress should amend other IRA tax credits, like §45X, to level the p Incentive programs, like the Loan Program Office, CHIPS for America, and others should support fusion ene

4 **Regulatory and Permitting Reform**

Establishing a regulatory and permitting regime that is efficient, enables scale, and is appropriate to risk for the commercial deployment of fusion energy. Already, Congress and the Nuclear Regulatory Comm determined that fusion machines will be regulated separately from nuclear fission. As the President ar consider energy regulatory and permitting reform, fusion must be included.



And – we want more of it! (more streamlined & funding please)

- Negotiations take a long time.
- Different labs have different CRADA negotiations processes.
- INFUSE should be funded at higher levels.
  - $20 million is our ask (currently funded at $6M)

Growth in public-private partnerships

Notable public-private partnerships that have moved forward in the last year include:

- The US' Milestone-Based Fusion Development Program, that in June 2024 announced eight companies had signed contracts with the Department of Energy to deliver comprehensive pilot plant designs. INFUSE continues to award public-private partnership program projects.

- Germany's new "Fusion 2040" program that will invest directly into private companies

- Japan's "Moonshot" program

- The UK's ambitious new "Fusion Futures" program that invests in the key technology providers

- The European Union's recent effort to create a consortium that will define how it will invest in private fusion by 2026

- ITER has announced its interest in public private partnerships and its intention to directly share knowledge with private fusion companies.

Thank you!

For more information:
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www.FusionIndustryAssociation.org