The Path to Commercial Fusion Energy

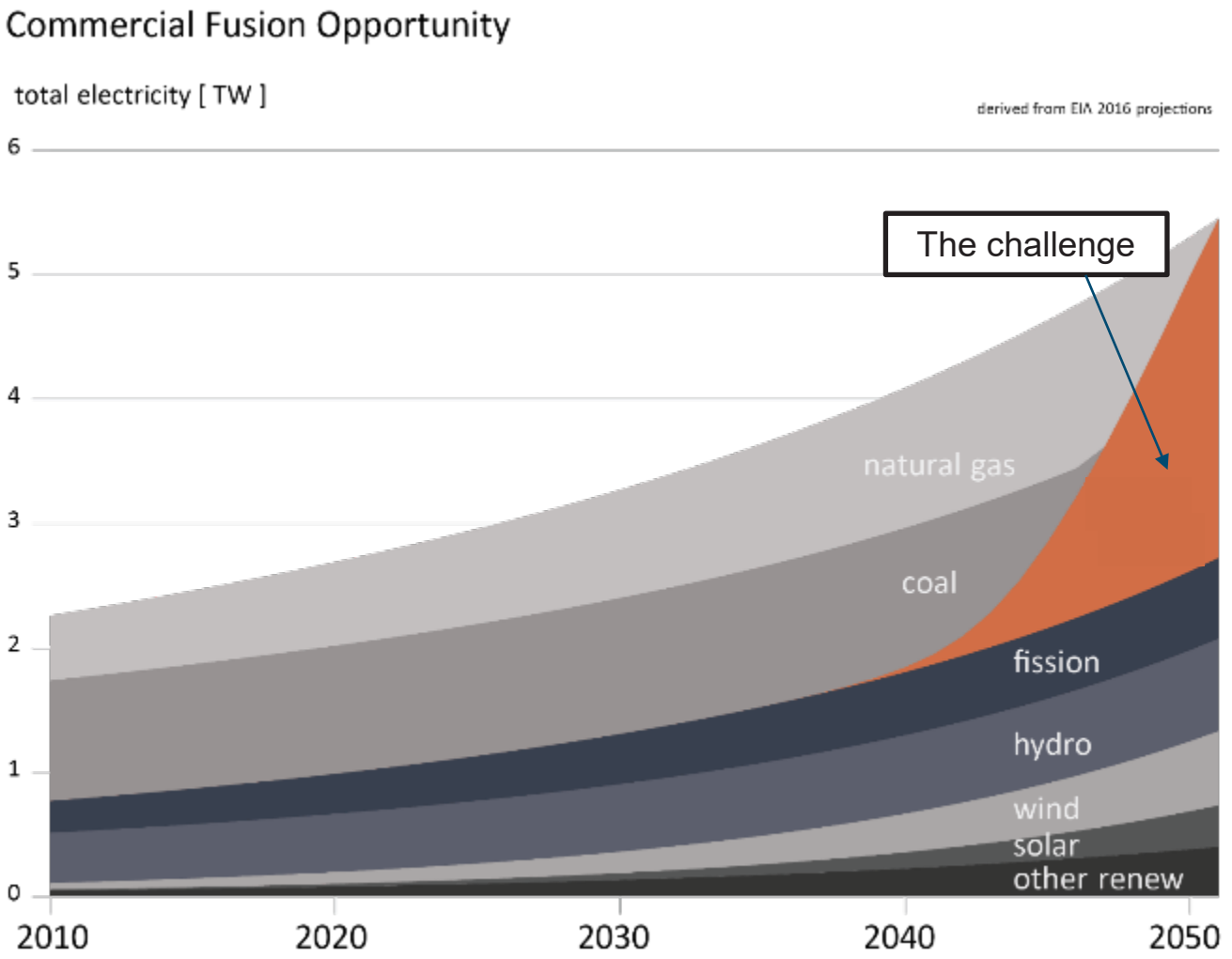
Commonwealth Fusion Systems

CFS on a path to deliver commercial fusion energy

- CFS was founded in 2018, spun out of MIT
- Raised more than $2 billion from a diverse group of investors
- Built a high caliber, diverse team
- Now >300 employees

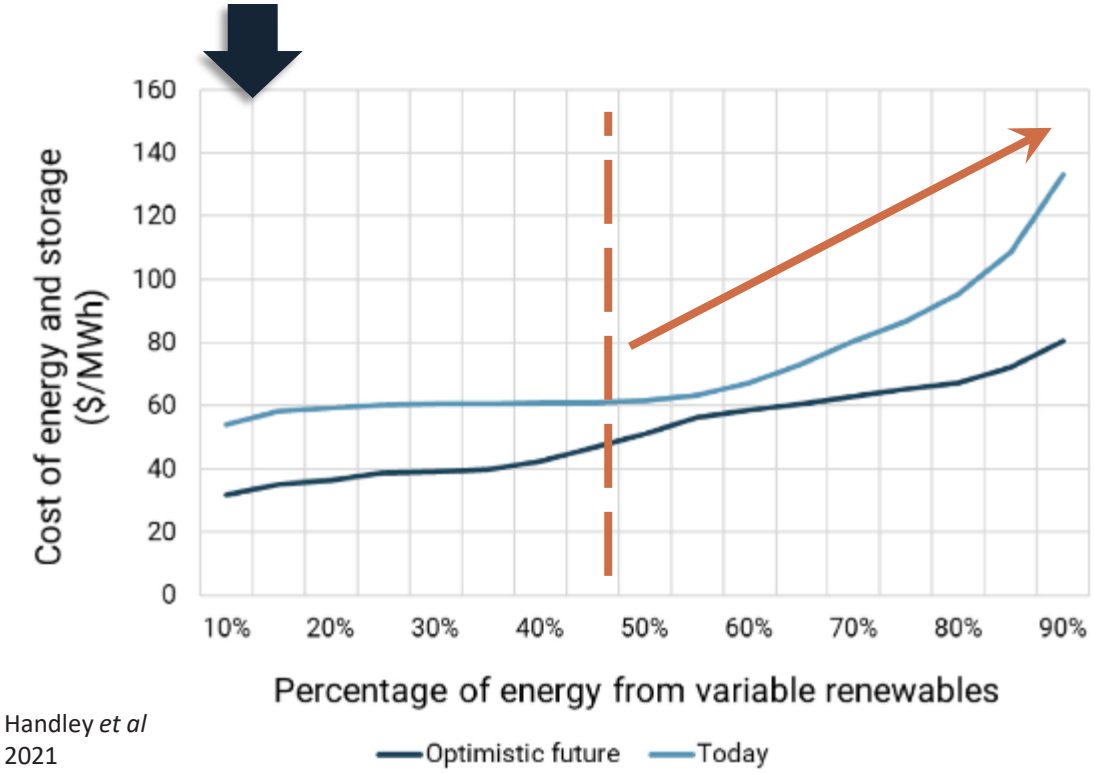
The world needs a new clean energy technology

- Need the largest industrial transformation in history, at an unprecedented rate



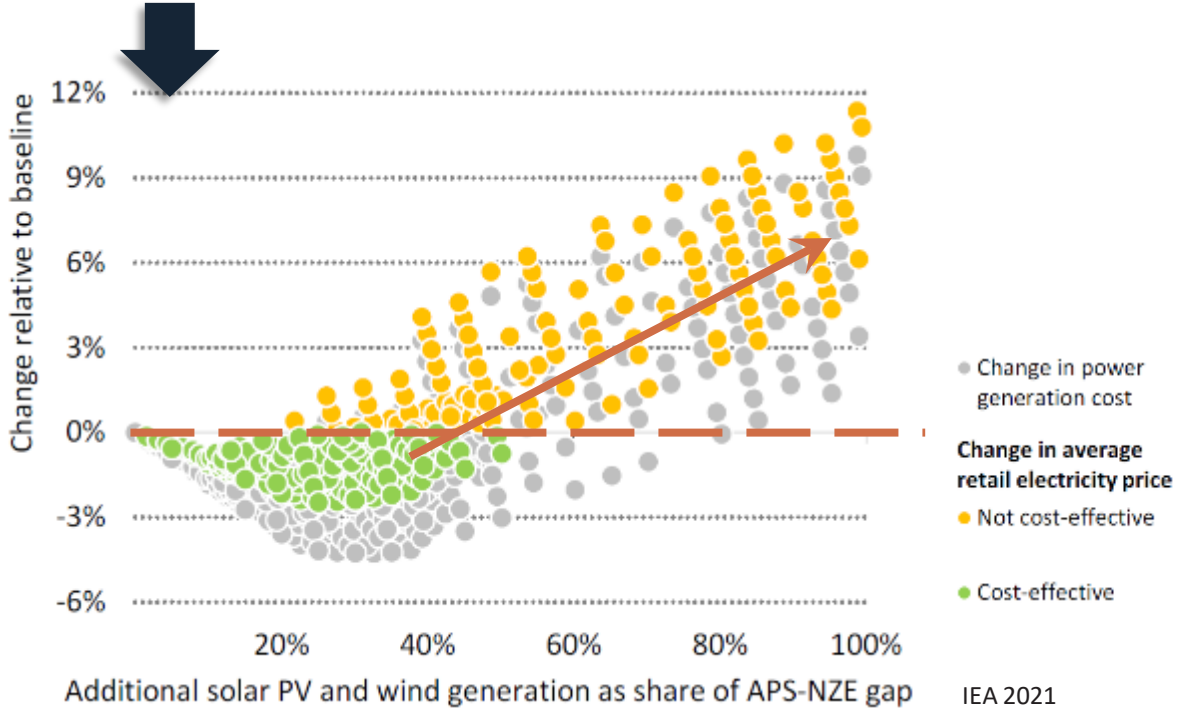
Current renewables cannot solve the challenge

- Solar, wind uncompetitive above 50% mix in California
- Consistent with experience in Germany



Handley *et al* 2021

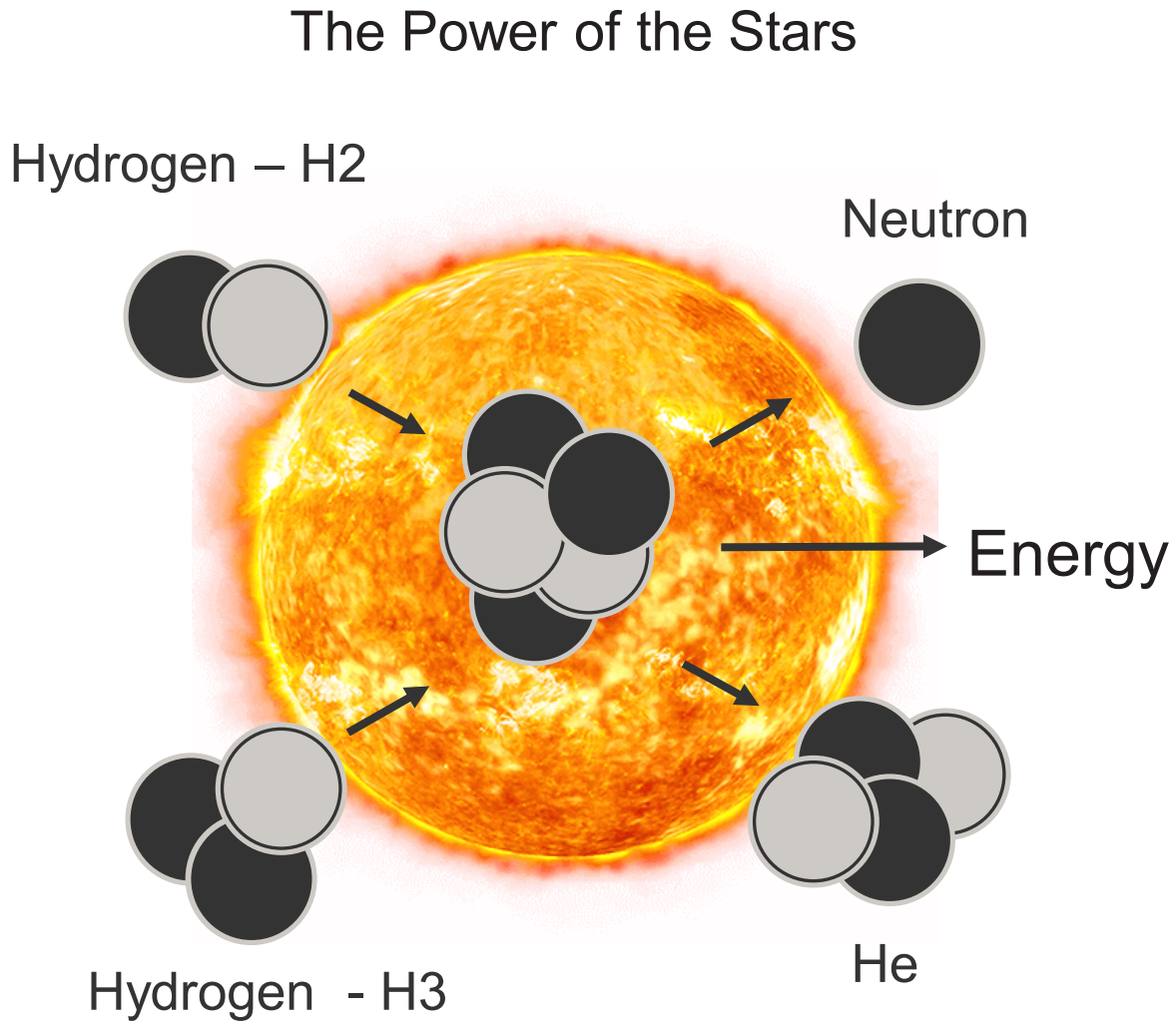
- Gap between Net Zero Energy (NZE) and next-best scenario cannot be handled entirely with renewables



IEA 2021

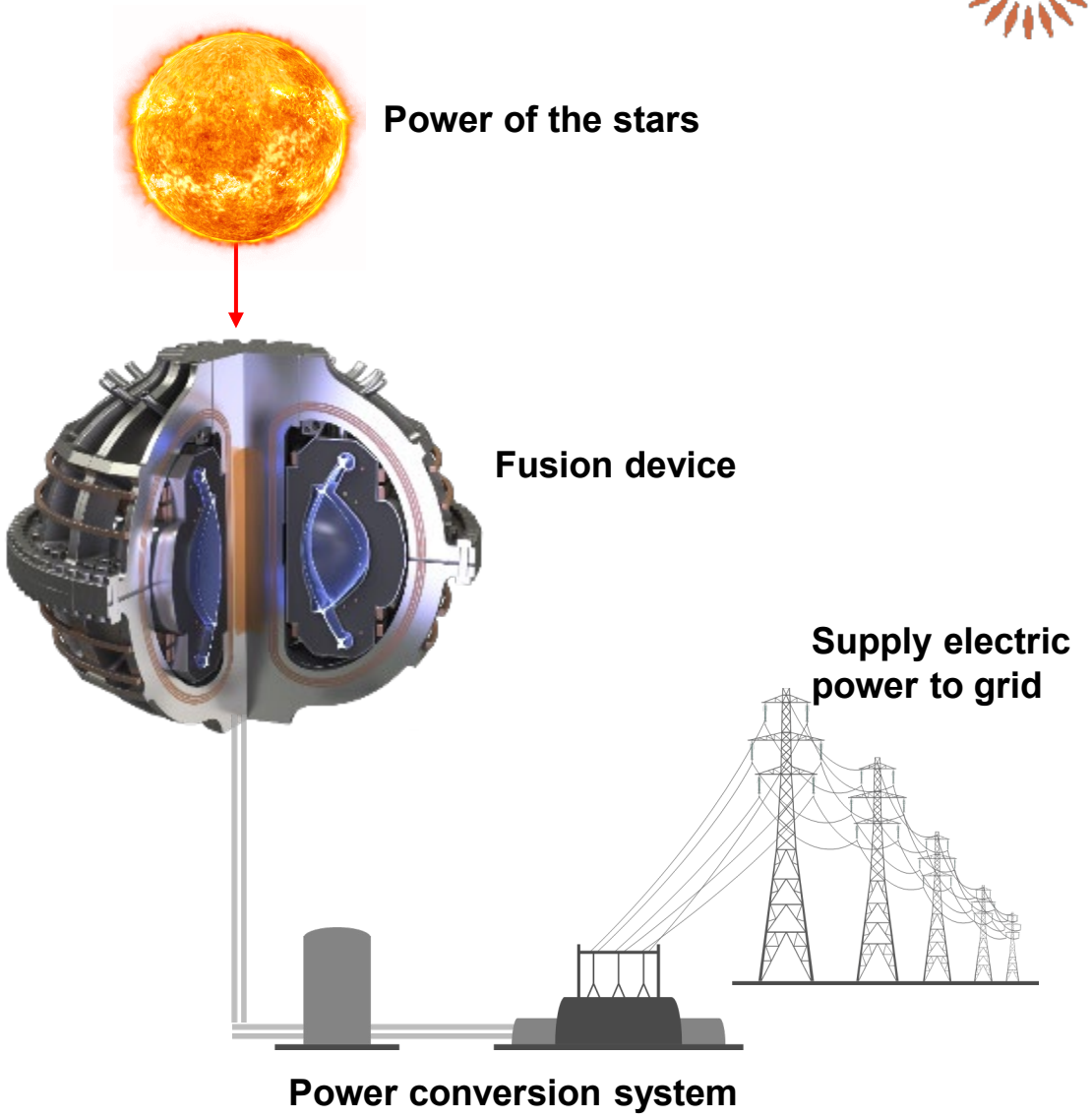
Fusion is the energy source to meet that challenge

- Process that happens in stars like the sun
- Hydrogen fuses together into helium releasing enormous amounts of energy
- Generates 200 Million times the energy per reaction as burning coal



Why fusion is disruptive

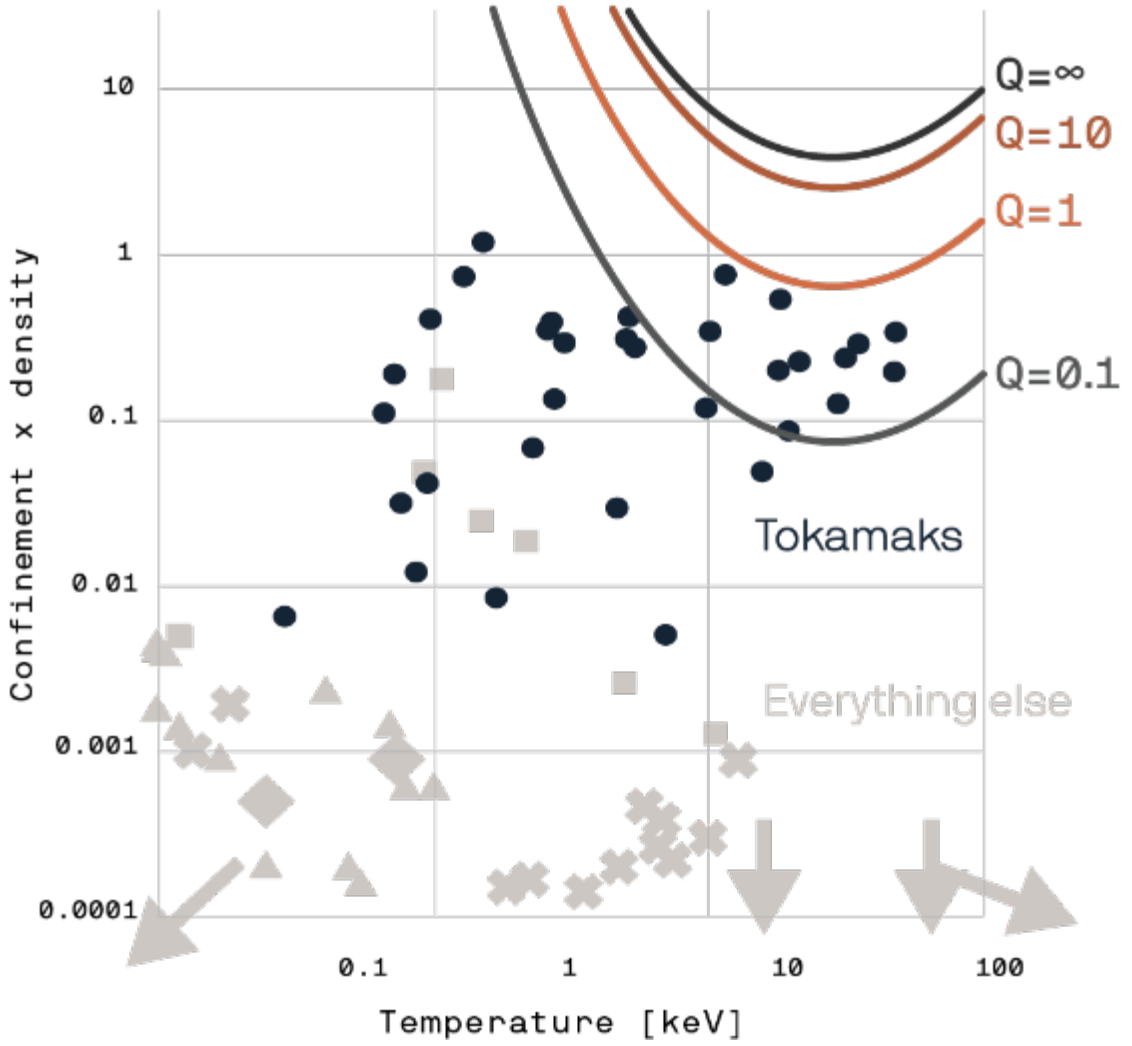
- Zero emissions, power-dense, dispatchable
- Inherently safe – no meltdown, no long-lived nuclear waste, no proliferation
- Economically competitive
- Scalable: build anywhere; inexhaustible fuel supply; leverage existing infrastructure, supply chains



We are surprisingly close

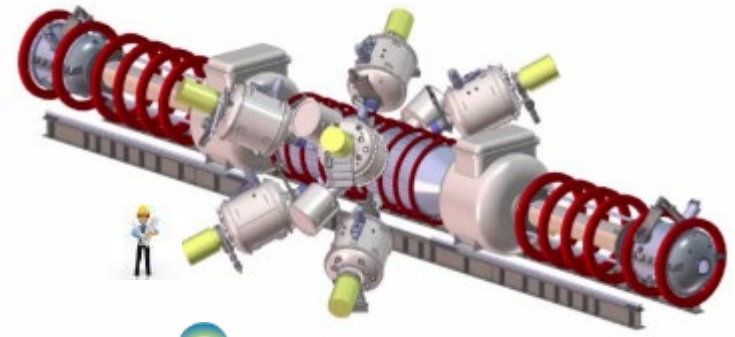
- Scientists have been been working on fusion for more than half a century.
- On the cusp of a key milestone — net gain energy — more energy out than in (Q>1).
- Machines called “tokamaks” are closest.

$$Q = \frac{\text{Fusion power out}}{\text{Heating power in}}$$



Fusion Energy Landscape

- 35 global startups with the goal of commercializing fusion
  - Goal of developing fast, less costly, commercial systems
- Growing quickly with more than $4 billion in private investment
- Governments also investing in fusion energy technology
  - China, UK, US, ITER



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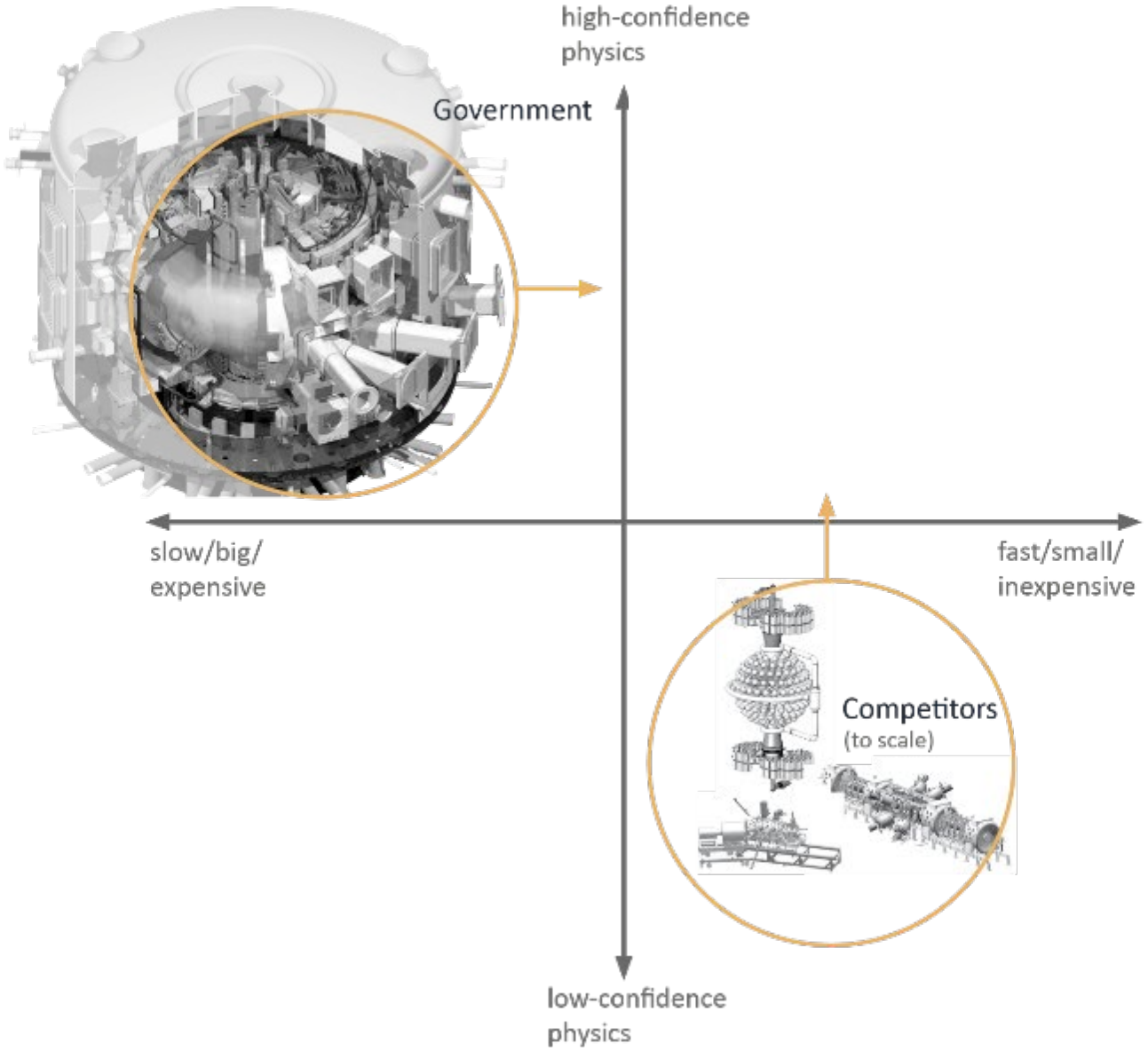
Fusion Energy Landscape

A trade off between uneconomic scale and emerging science

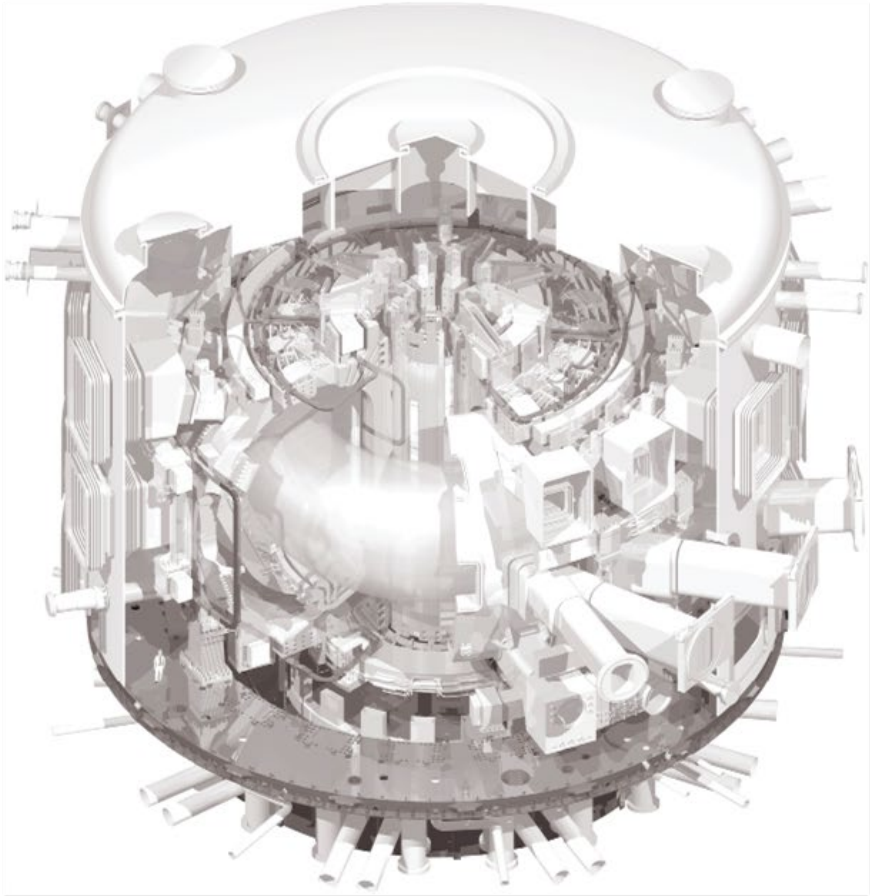


HTS Magnets: Game-Changing Technology

- New high-temperature superconducting magnets unlock CFS's path to commercial fusion energy

A game changer for commercial fusion

- New magnets allow for much stronger magnetic fields
- Smaller machine is faster and cheaper to build with high confidence it will work

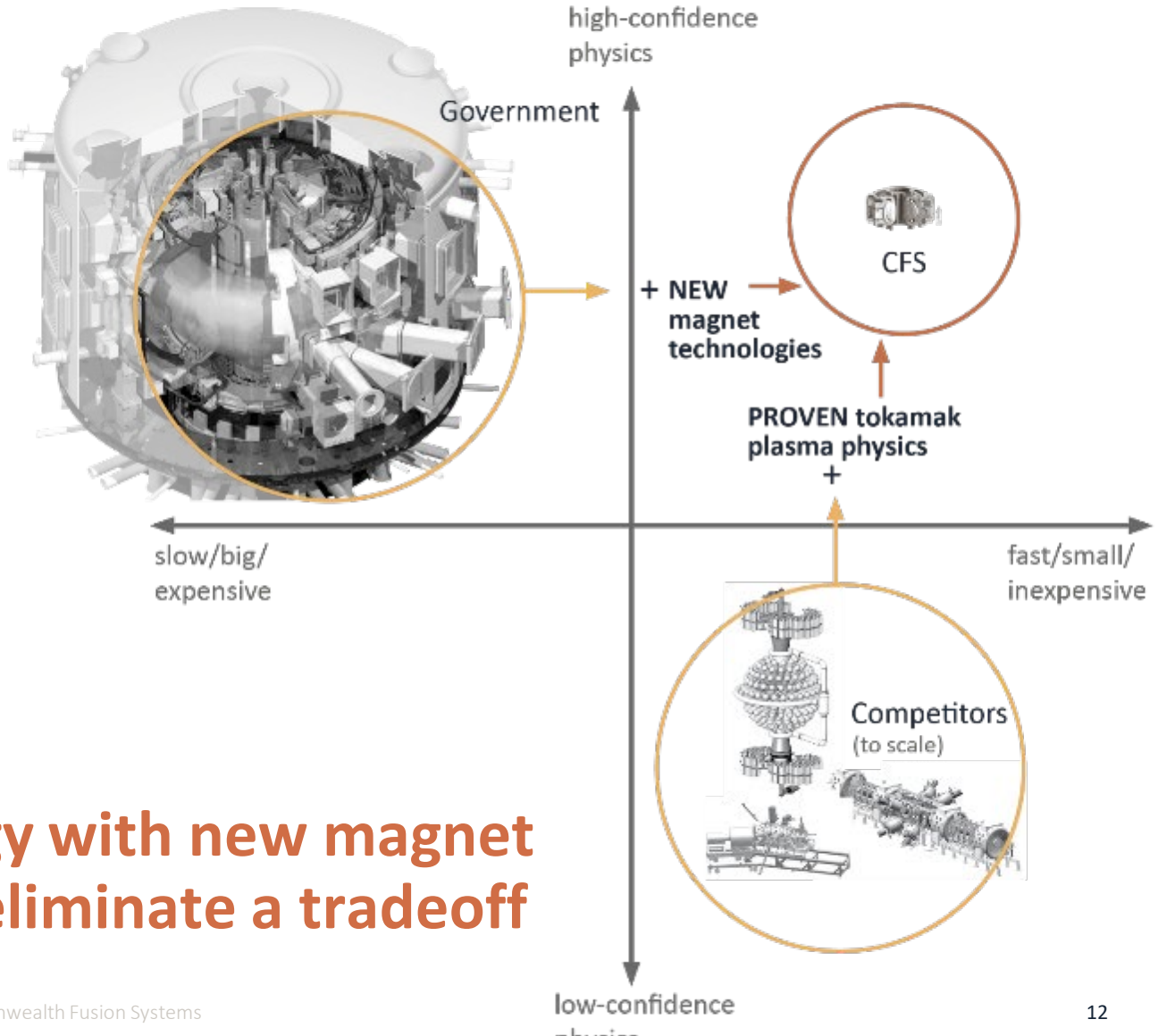


ITER: old magnets

SPARC:
new magnets

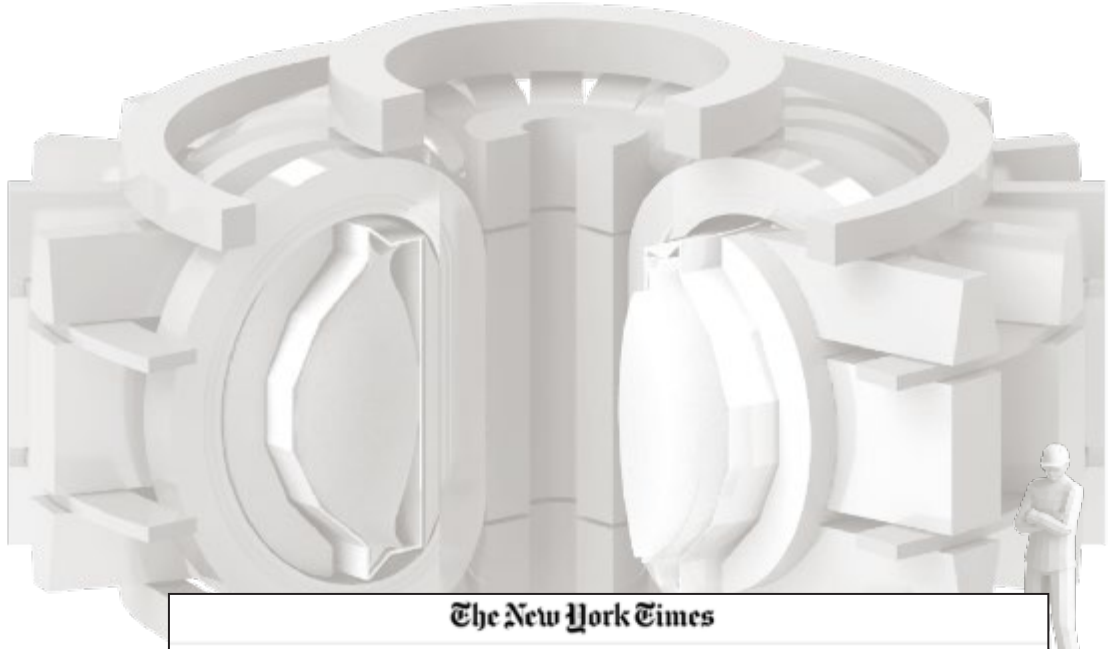
With HTS magnets, CFS's tokamak (called SPARC) will deliver positive net energy

- CFS = proven technology + CFS proprietary High-Temperature Superconductor (HTS) magnets
  - HTS Magnets require far less energy to enable a fusion reaction, enabling greater energy output than input
- Leader of a new energy industry



CFS combines established technology with new magnet technology to reach new scale and eliminate a tradeoff

SPARC pilot plant is on track to deliver positive energy in 2025



- First demonstration of net fusion energy
- Designed based on proven tokamak experience, but with higher magnetic field from novel HTS magnets.
- Not a power plant, but will demonstrate the non-grid systems of a commercial plant
- Designed to produce Q>10

The New York Times

Compact Nuclear Fusion Reactor Is 'Very Likely to Work,' Studies Suggest

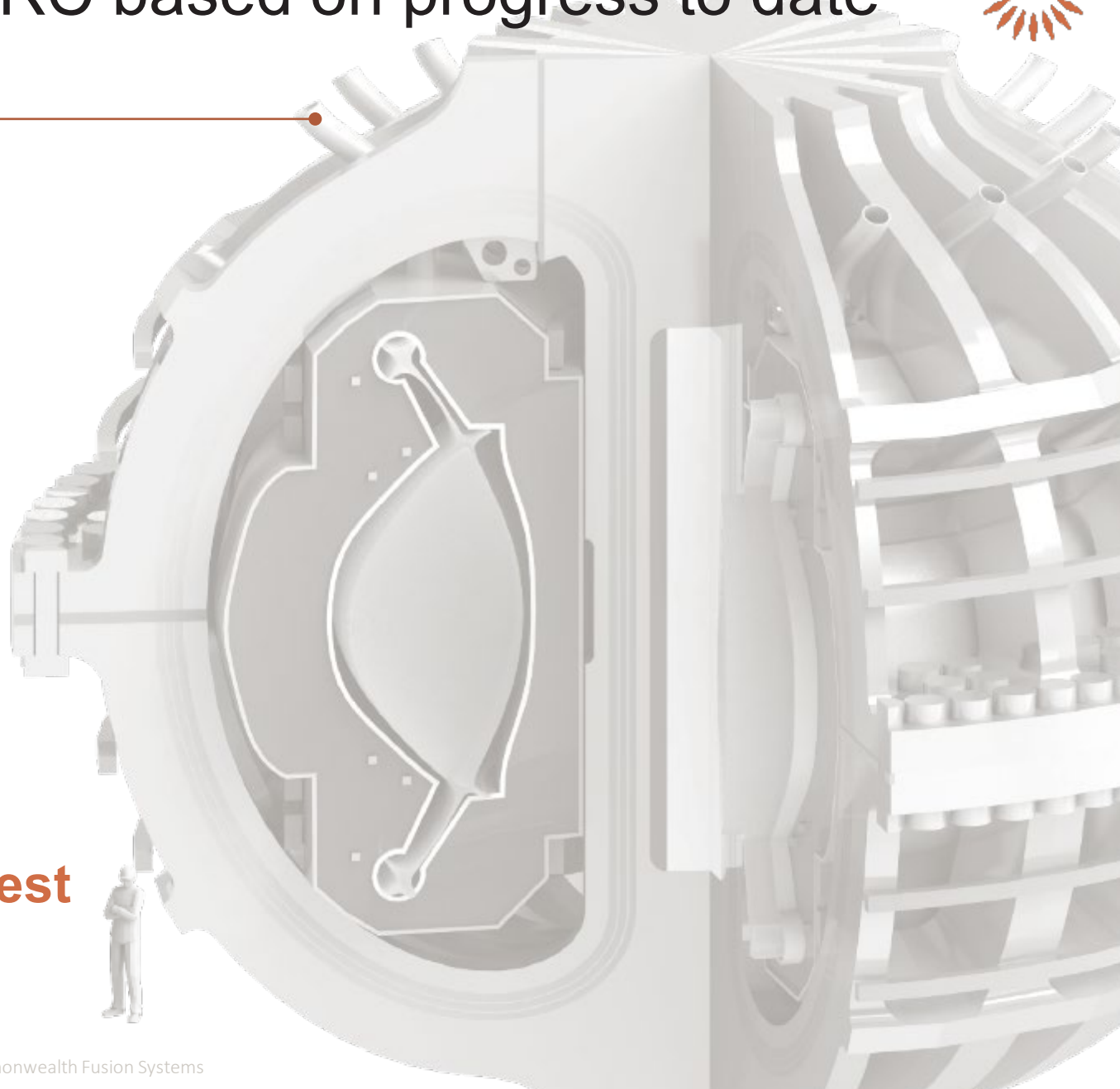
Seven peer reviewed papers in the Journal of Plasma Physics

We expect a "Wright Brothers moment" in 2025

Construction of SPARC and magnet factory in Devens, MA

We are accelerating work on ARC based on progress to date

- **ARC Power Station**
  - 1 GW thermal
  - 450 MW electric
  - Load following or baseload
  - Quality process heat - 600C
  - High capacity factor
  - Low operating costs
  - Flexible Siting
  - Lower regulatory burden
  - No volatility of fuel supply



We are actively searching for the best site to build and operate our first commercial fusion power plant.

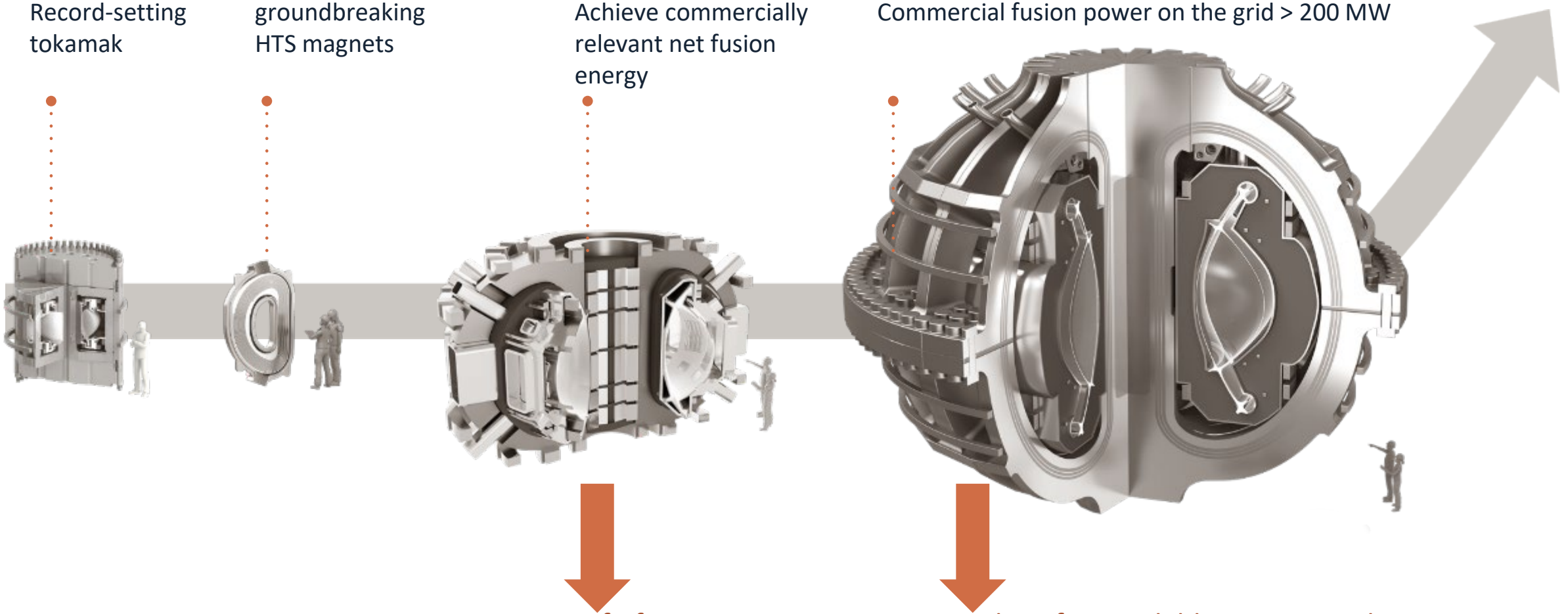
The fastest path to commercial fusion energy

Completed
Alcator C-Mod
Record-setting tokamak

Completed
Demonstrate groundbreaking HTS magnets

2025
Launch SPARC
Achieve commercially relevant net fusion energy

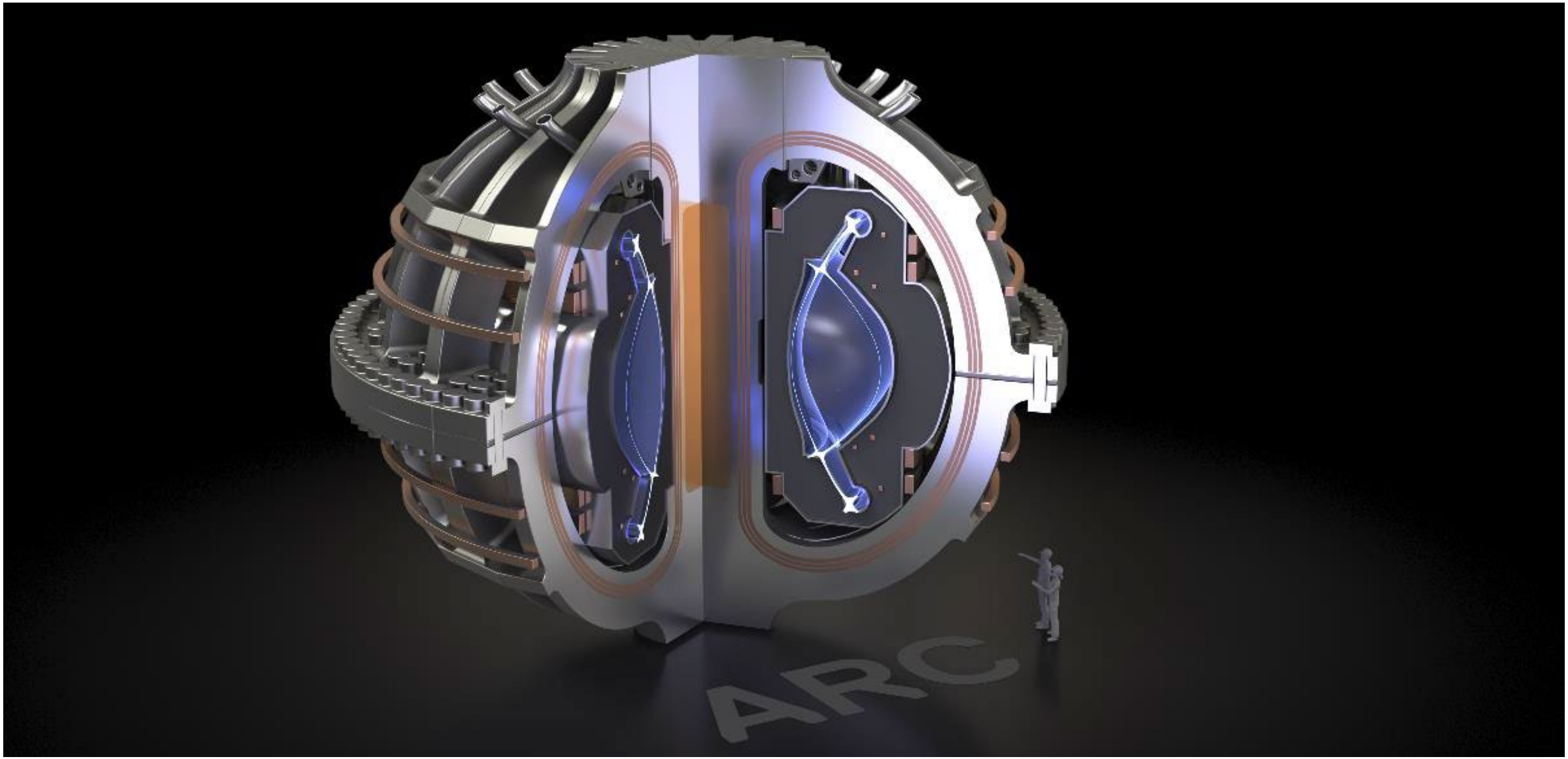
Early 2030s
ARC deployed
Commercial fusion power on the grid > 200 MW



SPARC: Proof of concept

ARC: Carbon-free scalable commercial power

ARC: World's First Fusion Power Plant

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