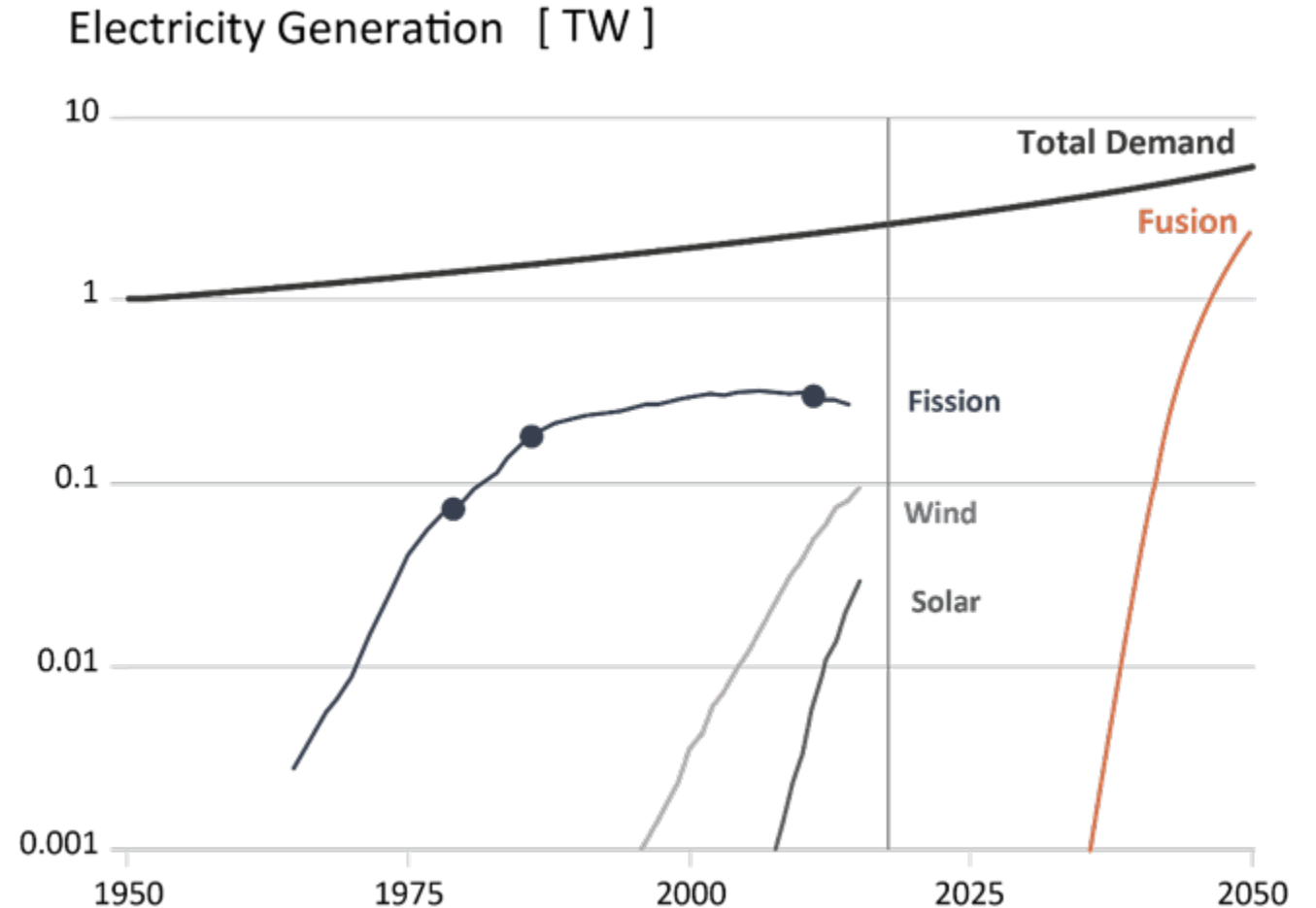


The path to commercial fusion



We need an energy source that scales to size of the problem

- Need three basic parameters:
 - Arriving ASAP
 - Quickly replicable, scalable
 - No roll off on deployments
- No barriers to massive scale
 - Manufacturable and affordable
 - Low land use, power dense
 - Can be sited anywhere
 - Few material inputs
 - Existing supply chains
 - Existing procurement channels
 - Re-use existing infrastructure





Introduction to CFS

- CFS Founded in 2018, spun out of MIT, on a mission to urgently deliver the fusion energy transition
- We have since grown to be the largest fusion company in the world
 - Raised more than \$2 billion from VCs, pensions, endowments, sovereign wealth funds, and strategics. >33% of the industry total
 - >800 FTE + >800 collaborators and contractors = 1600+workers
- Relying on proven physics and magnet technology to create the surest and fastest path to commercial fusion energy



Introduction to CFS



What's unique about us?

- Only concept based on proven plasma physics, not doing bench top discovery
- Only machine that is peer reviewed and aimed at actual net positive energy
- Halfway done building the only privately funded pilot plant in the world
- Building on key IP and providing options for other horizontal businesses
- Vertically integrated across multiple areas
- Founder and leader of industry association and most industry initiatives
- Driver of global engagements with government and regulatory stakeholders
- Long time collaborator with global universities and national labs

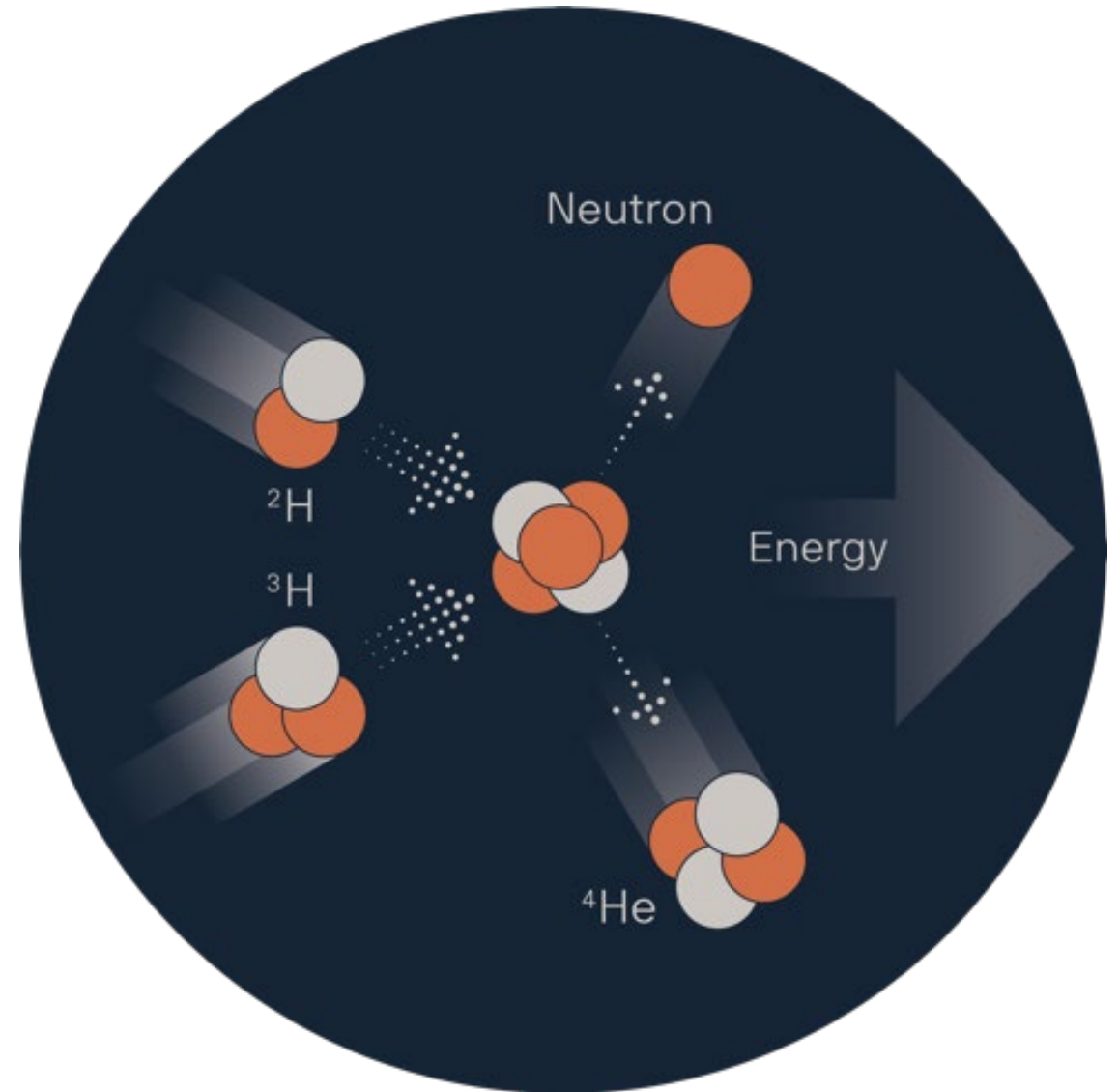
SpaceX • MIT • Tesla • NextEra Energy • Virgin Hyperloop • AECOM • General Electric • Apple • Applied Materials • Bombardier • Google • Los Alamos National Laboratory • Oak Ridge National Laboratory • Westinghouse Electric Company • Amazon • BP • CERN • Ford Motor Company • General Motors • Honeywell • Jet Propulsion Laboratory • Microsoft • ABB • Bechtel • Broadcom • Chevron • Constellation • Enel • Hyperloop • Intel Corporation • Lawrence Livermore National Lab • LEGO • Linde • Mitsubishi Power • NVIDIA • Orsted • Pratt & Whitney • Qualcomm • Rivian Automotive • Rolls-Royce North America • Siemens Energy • TerraPower, LLC • X Energy • X, the Moonshot Factory

Our expert team hails from a diverse range of industry leaders



Fusion 101

- Fusion is the process that happens in stars like the Sun.
- In stars, hydrogen fuses together into helium, releasing enormous amounts of energy.
- Commercial fusion systems will harness this energy to provide power to the world.

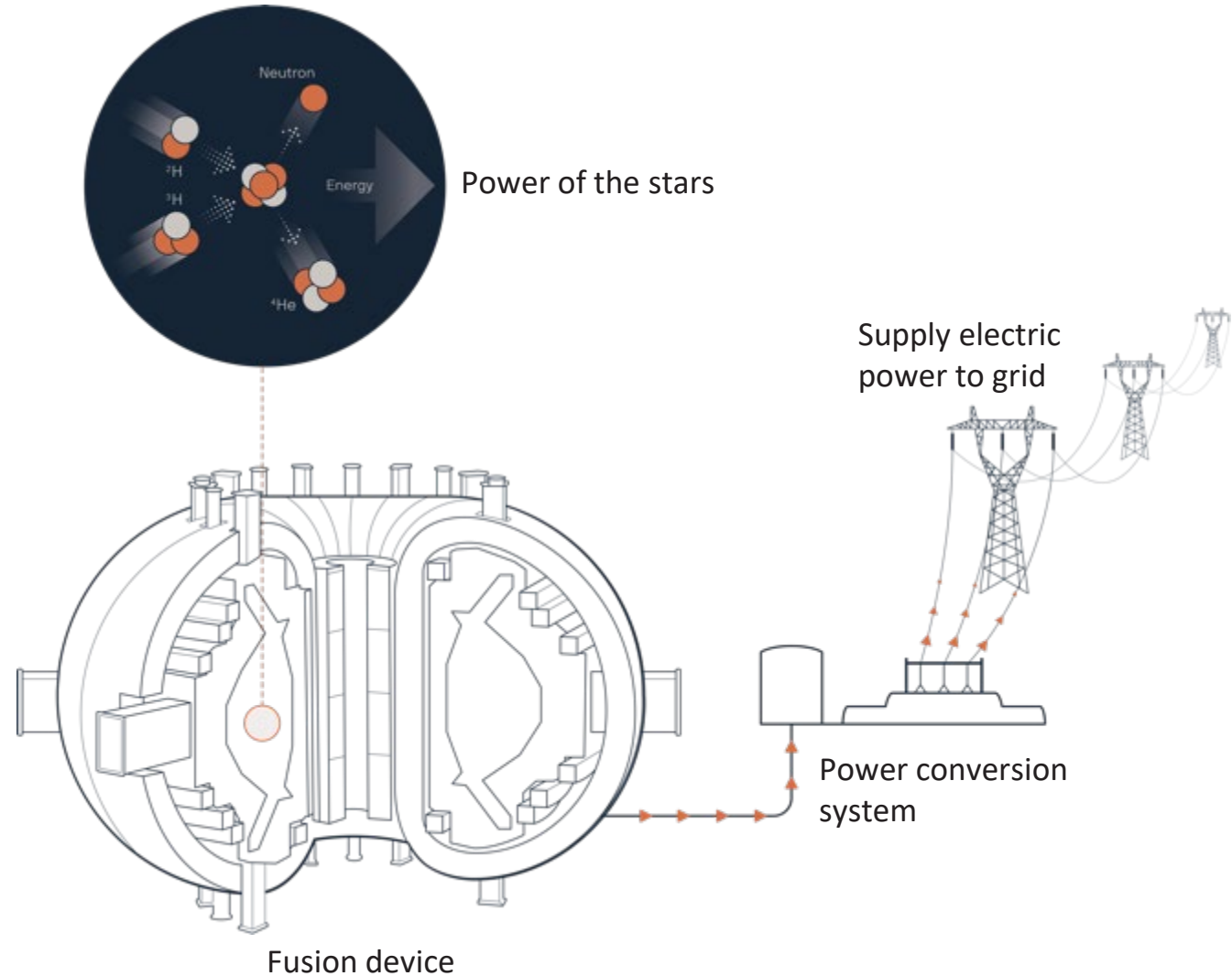




Introduction to Fusion

- **Clean** – zero emissions
- **Firm, dispatchable** – able to provide baseload or on demand power
- **Safe** – no chain reaction, no risk of meltdown, no decay heat, walkaway safe, no high-level waste or proliferation
- **Scalable** – affordable, modular, capable of siting anywhere, leverages existing infrastructure
- **Secure** – no geopolitically fraught supply chain, minimal fuel which can all be procured up front

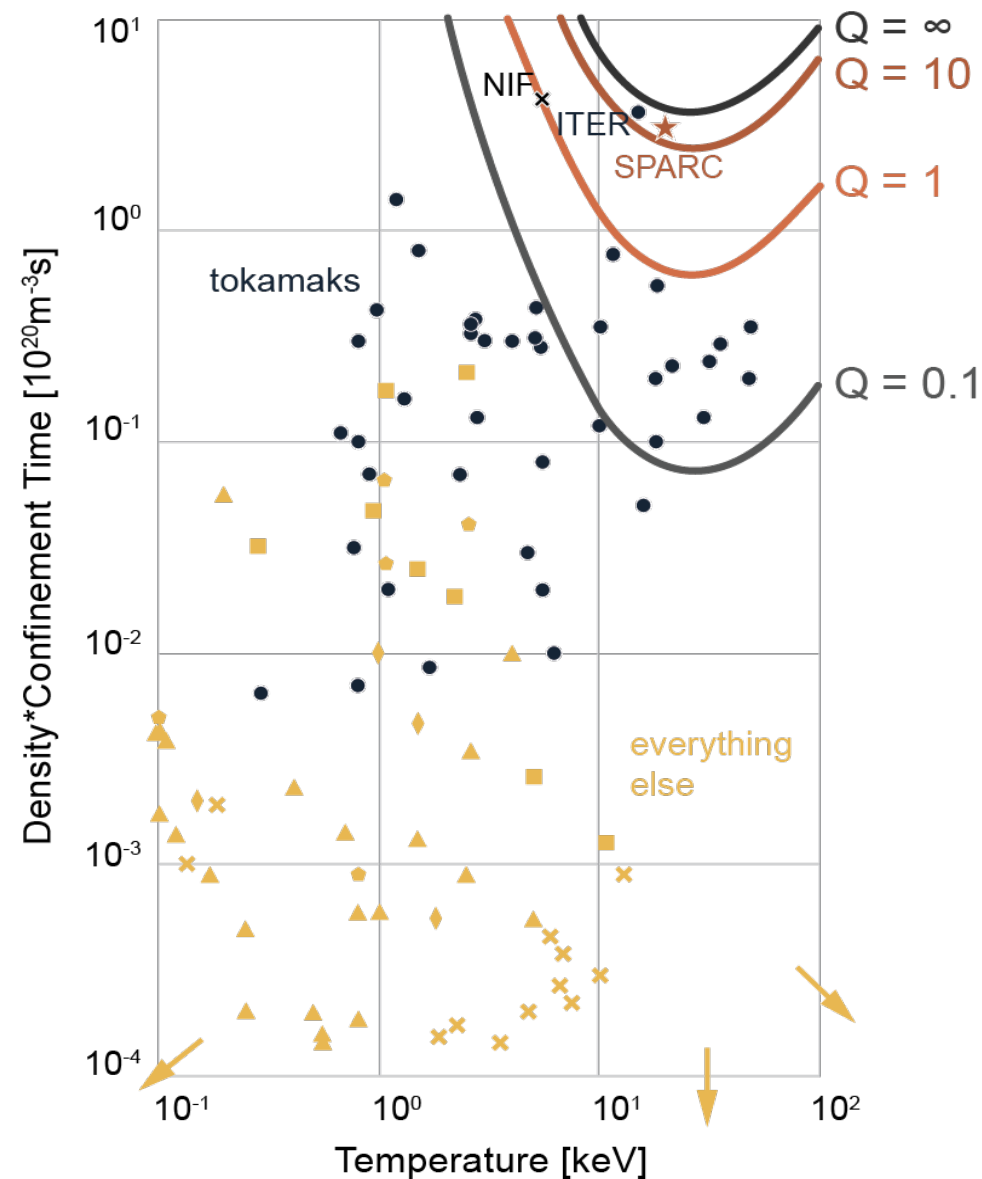
The ultimate power source –
build a machine to make energy instead
of relying on natural resources



On the cusp of commercial reality



- Fusion is scientifically proven, as demonstrated by the historic $Q > 1$ results by NIF
- The next step in the advent of the fusion industry: demonstrate fusion working in a commercially relevant form factor
- That means:
 - more power out than in ($Q > 1$)
 - at industrial scale
 - for durations that matter
 - with real fusion fuels
 - delivered in a package that can be replicated



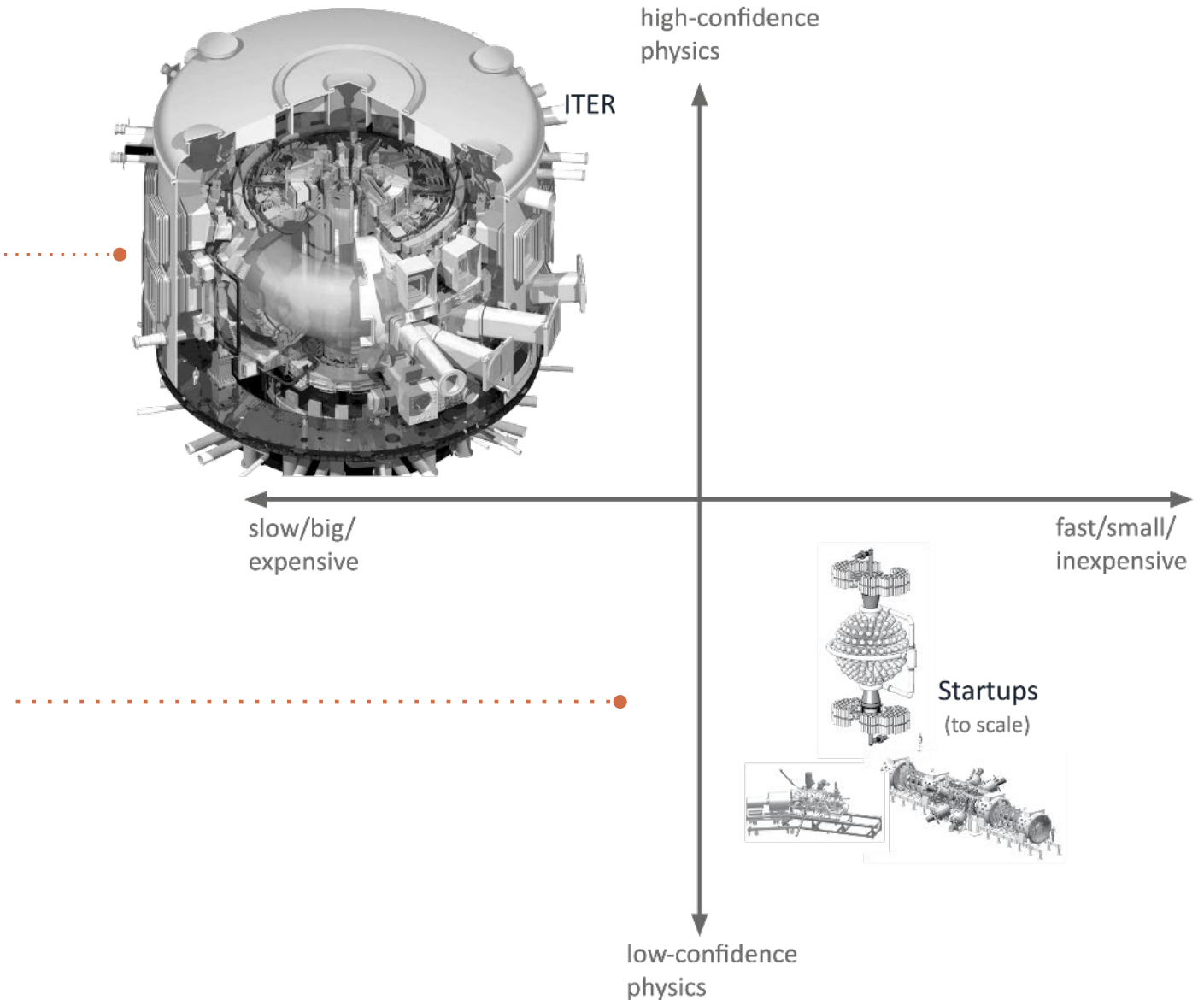


The fusion conundrum

- Government-funded approaches are big, slow, non-commercial

VS.

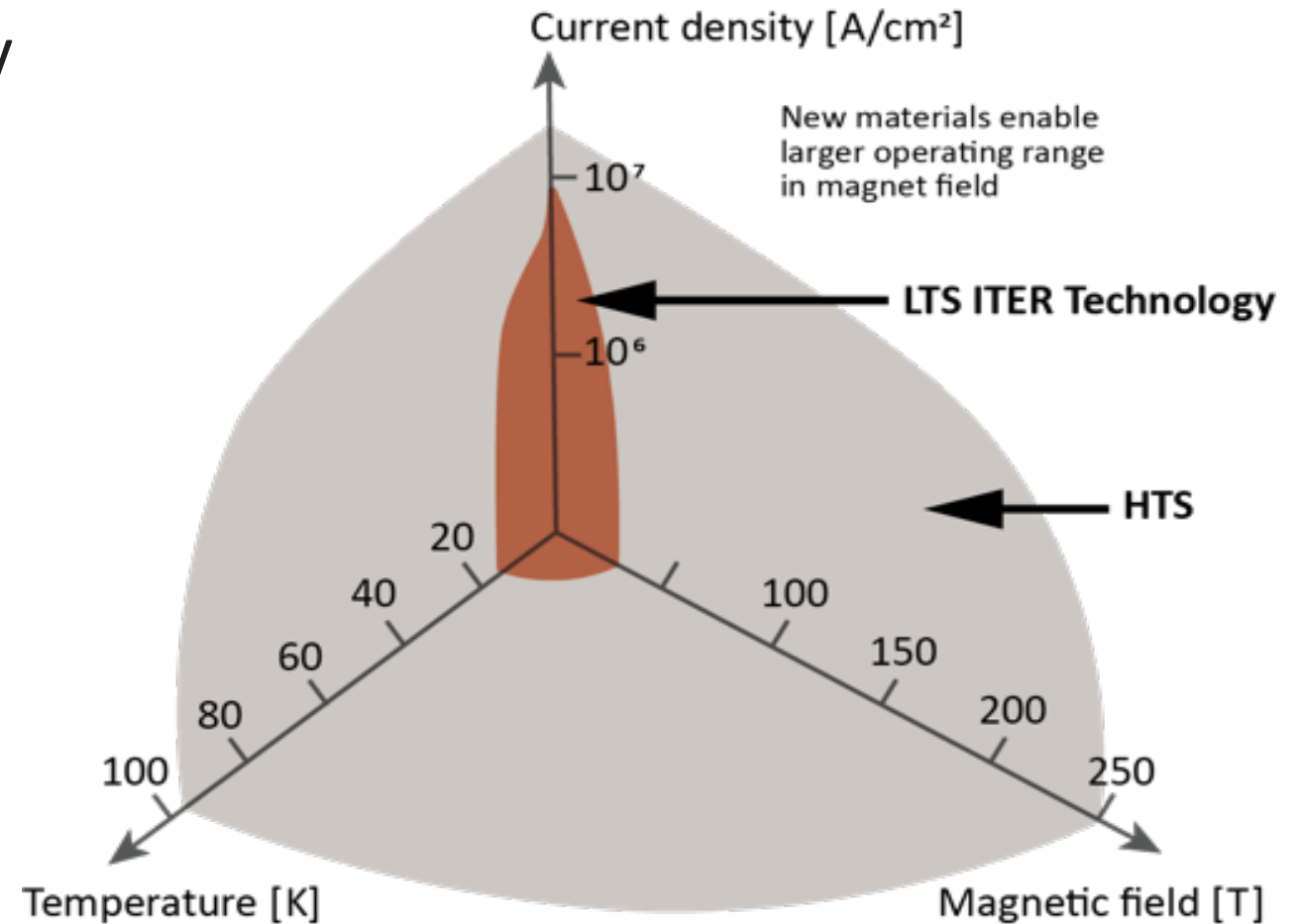
- Other startups are moonshot approaches that are orders of magnitude behind in scientific demonstration





Technology Overview –

- Nobel prize in 1983; commercially available in 2000's;
- New material enables re-optimization of magnet design
- September 2021, CFS demonstrated a 20T HTS magnet
- Doubling the magnetic field in fusion machines creates a 16x increase plasma power





CFS proprietary magnet technology unlocked this path

- CFS has invented and demonstrated a new generation of magnet technology
- Enabled by High Temperature Superconductor (HTS) magnet designs
- Radical innovation in design, manufacturing, and assembly
- Vertically integrating HTS material for even more speed and scale
- A platform technology — with applications beyond fusion

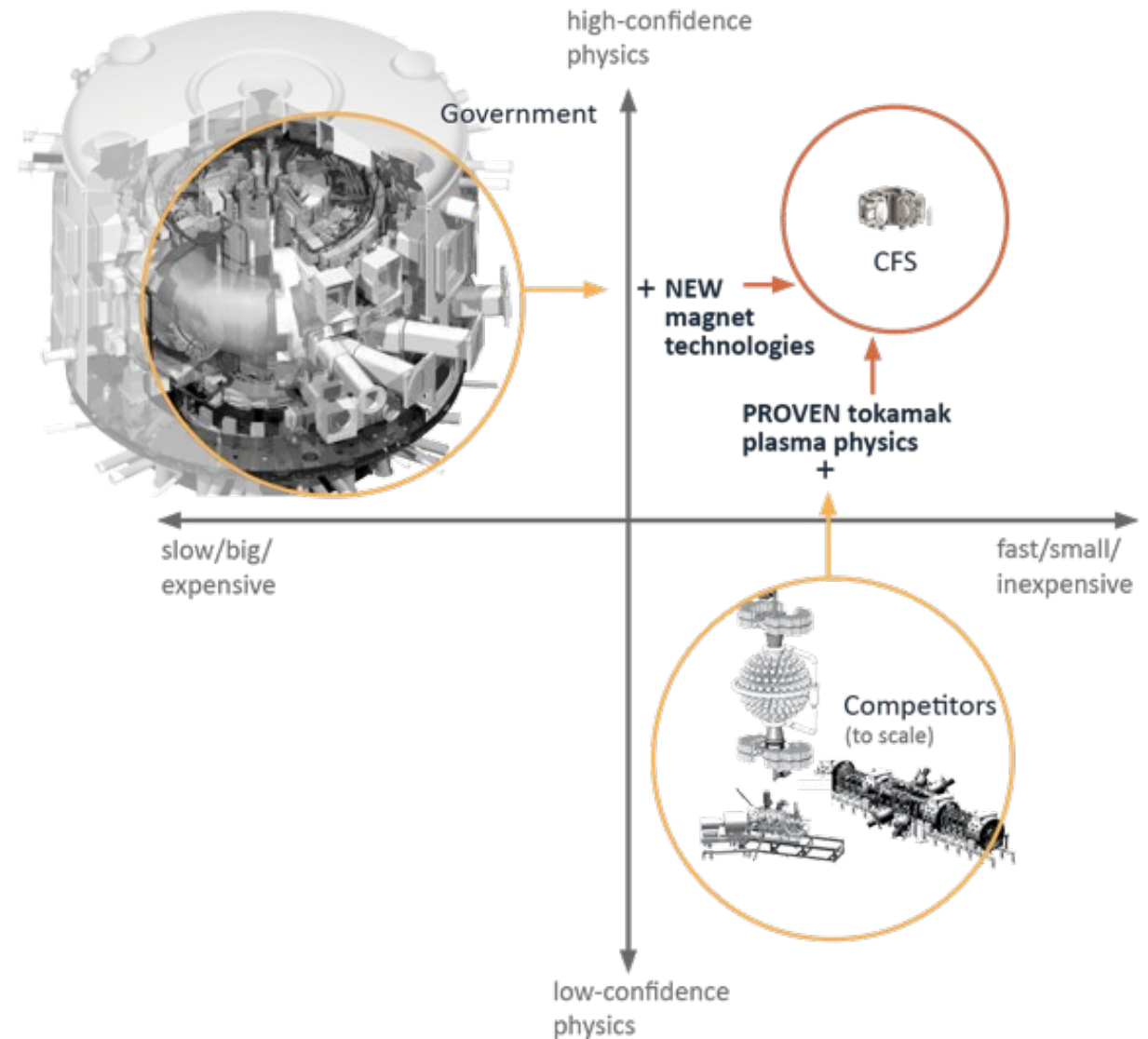
This technology unlocked a new pathway for fusion power plants – revolutionary when applied to tokamaks





Magnets solves the fusion conundrum

- CFS = proven science + CFS proprietary High-Temperature Superconductor (HTS) magnets
- Build smallest, fastest, simplest, lowest-cost energy solution



SPARC: the ARC pilot plant

- SPARC is a fusion power plant demonstration device — the prototype for ARC
- Will demonstrate 10x energy out than in
- Makes industrial scale fusion heat—100MW
- Based on established science with revolutionary engineering
- In a package that can be constructed anywhere in the world
- Delivered by a company built to make these quickly
- Modular, scalable, and replicable





SPARC: It will work

- Based on the most established and researched concept in fusion — the tokamak
- The newest of >150 tokamaks built around the world, but with new magnet technology
- Conservative assumptions; no scientific breakthroughs required to perform
- Design informed by thousands of data points of fusion performance
- Validated by fusion world experts in peer-reviewed papers of the SPARC physics basis — 7 of the top 10 read articles in *Journal of Plasma Physics*
- Joined by world-class fusion academic partners

“ For the first time, all the pieces of the puzzle are there: the physics, the policy drivers, and the investment.

Rafael Grossi, Director General, IAEA

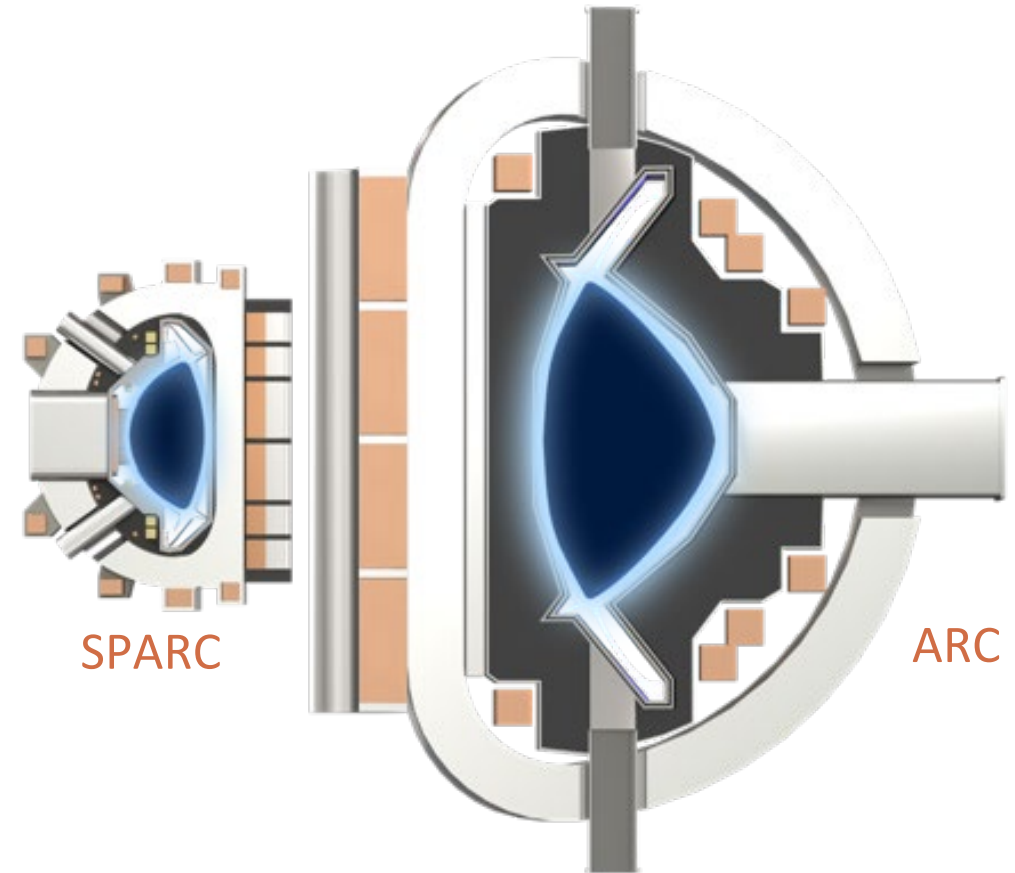
“ Reading these [physics] papers gives me the sense that they're going to have the controlled thermonuclear fusion plasma that we all dream about.

Cary Forest, University of Wisconsin



SPARC paves the way for ARC

- 13/17 subsystems are the same in ARC
- Demonstrates physics operational points for ARC
- Demonstrates coordinated track record of execution of a significant infrastructure project
- Establishes supply chain across >1000 global vendors
- Becomes the de facto commercial fusion regulation template
- Informs ARC economics using SPARC receipts — the highest fidelity data for fusion costs at scale

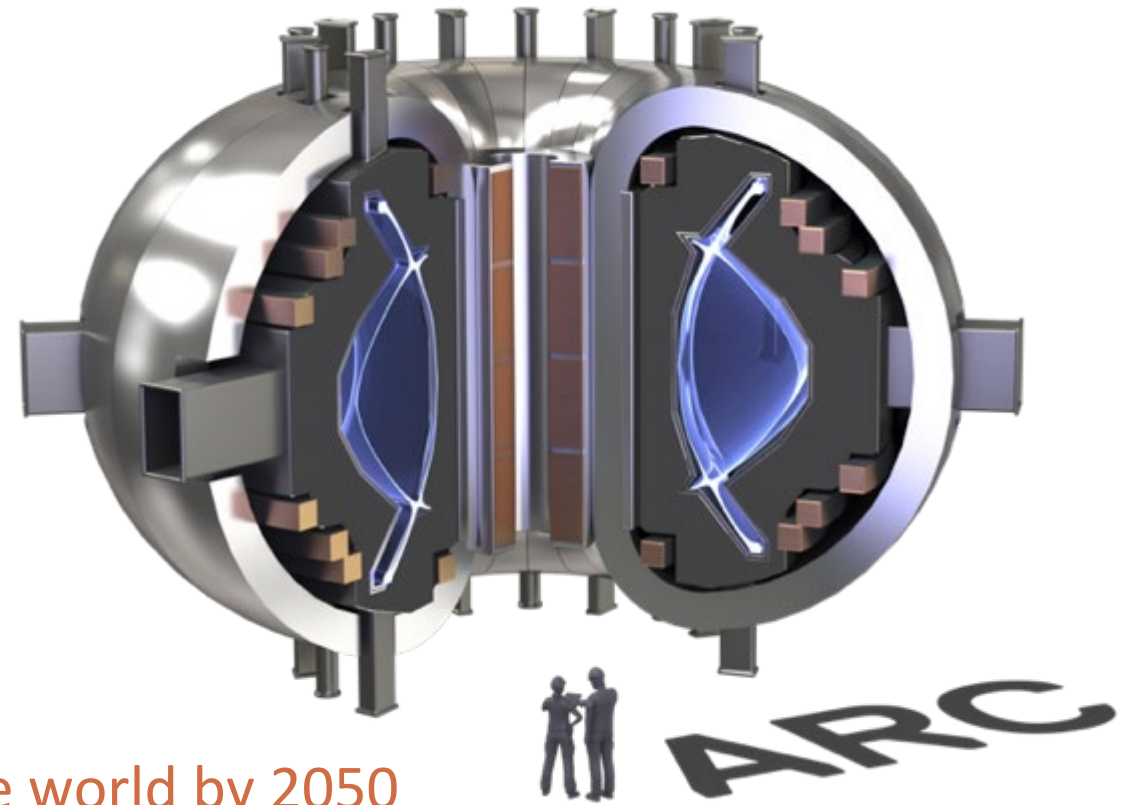


SPARC is half the size of ARC; they are non-dimensionally identical

ARC – the energy machine of the future



- The CFS power plant = ARC
 - 400MW net electric
 - Up to 90% Capacity Factor
 - Baseload or load following
 - Quality process heat — 600C
 - Flexible siting near loads
 - No volatility of fuel supply or cost
 - Small footprint
 - Fits into existing grid infrastructure



Our plan — deploy 1000s of ARCs around the world by 2050



ARC is the solution that scales

- No fundamental material limits
- Can re-use existing fossil fuel infrastructure
- Co-opting adjacent heavy industry supply chains
- Already being built with local, non-specialized labor

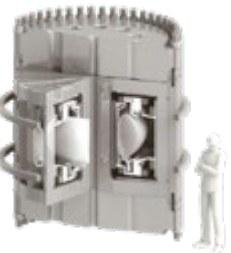
To deploy thousands of Power Plants world wide



Risk retirement in concrete steps



COMPLETED:
Alcator C-Mod
Record-setting
tokamak



COMPLETED:
Demonstrate groundbreaking
HTS magnets

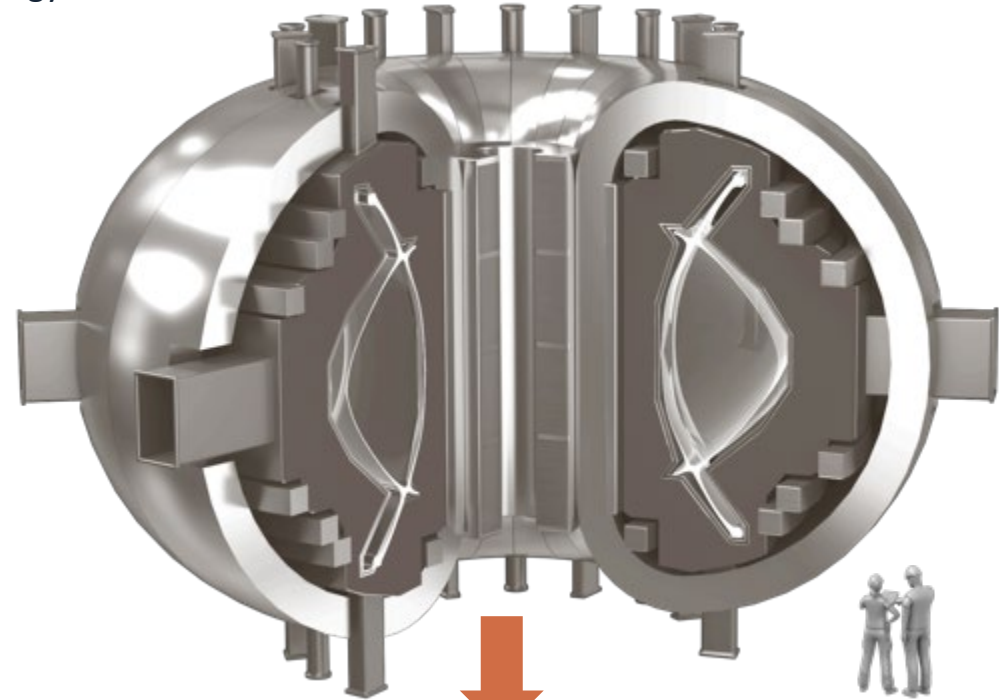


**CONSTRUCTION UNDERWAY
for 2026 LAUNCH:**
SPARC Q>1
Achieve net fusion energy



Commercially-relevant net fusion
energy for the first time

EARLY 2030s:
ARC deployed
~400 MW



Carbon-free commercial
power on the grid

Fusion regulations are very different from fission



Private fusion power plants:

- Do not contain special nuclear material
- Do not produce long-lived or high-level radioactive waste
- Do not operate on chain reactions, instead instantly shut down
- Do not produce decay heat after the fusion stops

Most approaches use tritium (radioactive) within the fuel cycle

- ARC minimizes the amount of tritium on site

All approaches produce neutrons and activated materials

- Low level waste with existing storage facilities in the US

Byproduct materials are regulated separately from fission, like nuclear medicine.

The approved regulations means lower regulatory burden, faster construction times, and lower overall costs to operate





**Commonwealth
Fusion Systems**

