



Commonwealth Fusion Systems

OPPORTUNITY MARKETING PIECE

> Chief Engineer

Location: New England Area

You bring the engineering expertise – we'll ignite the fusion.



Ropella360

A catalyst for connection



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ABOUT COMMONWEALTH FUSION SYSTEMS

The world's
largest and
leading commercial
fusion energy
company

CFS.ENERGY

Commonwealth Fusion Systems (CFS) is dedicated to delivering clean fusion energy to the planet with urgency, addressing humanity's most pressing challenges. The growing gap between global energy needs and available resources underscores the critical role of fusion in transitioning away from fossil fuels, marking a transformative chapter in the world's energy supply.

CFS is committed to developing fusion power plants and fostering a robust fusion energy industry, building on its track record of innovation. Our achievements include the creation in 2021 of the world's strongest high-temperature superconducting magnet, a groundbreaking technology that enables our commercial fusion energy approach."

With over \$2 billion in capital raised—more than any other fusion energy company—CFS has also attracted top talent to design, construct, and deliver commercial fusion power plants. Additionally, the company collaborates with policymakers and suppliers to ensure fusion energy is accessible on a global scale.

As CFS advances toward a fusion-powered future, it remains focused on setting and achieving milestones, validating progress, and inspiring others to join in the mission to revolutionize energy.



Learn about CFS's commitment to delivering fusion power



Humanity's
power move™

Learn about CFS's commitment to delivering fusion power

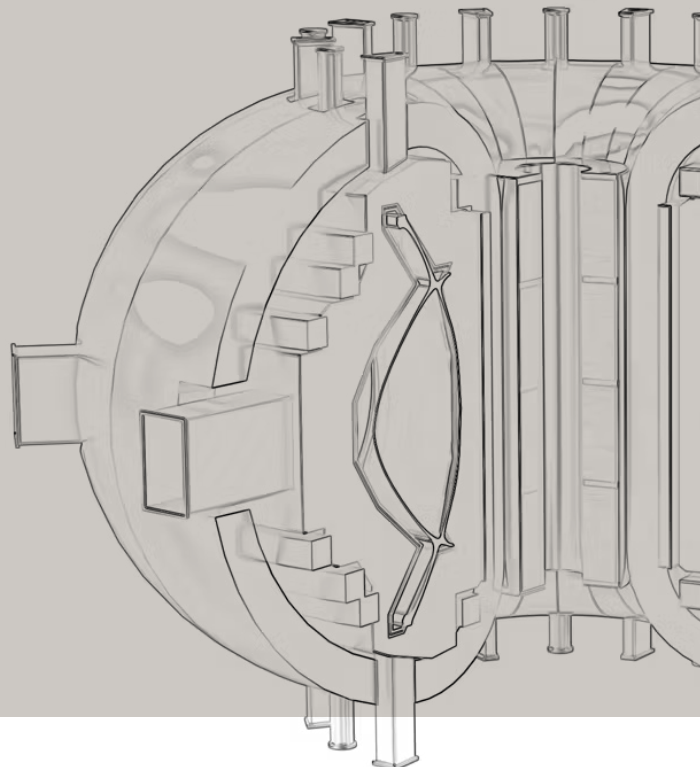
MISSION

CFS's mission is to deliver the urgent transition to fusion energy.

CFS is working to put fusion energy on the grid soon enough to matter for humanity's biggest challenges.

It's a big transition. Fusion is a critical part of the global shift away from fossil fuels. CFS is beginning this new chapter for the world's energy supply by helping to build a full-fledged fusion energy industry.

CFS will deliver fusion power plants the same way it's passed earlier milestones on its road map. That includes the 2021 test of the TFMC — the world's strongest high-temperature-superconducting fusion magnet — and the 2024 test of the CSMC, which proved the worth of the second of the company's two foundational magnet designs.



OPEN INNOVATION AT CFS

Fusion power will integrate a wide range of technologies, including cryogenics, artificial intelligence, neutron detectors, and high-voltage transistors. It will also bring together diverse people and organizations from varied backgrounds and locations, spanning U.S. National Labs with billion-dollar budgets, international research institutions, and small startups with just a few team members.

Commonwealth Fusion Systems believes that the fastest path to commercial fusion lies in leveraging the best technologies, talent, and institutions, wherever they may be. To support this vision, CFS has established a dedicated Open Innovation team, emphasizing its commitment to being an open and collaborative partner. This team actively identifies, recruits, and engages global partners and capabilities to help shape the future of fusion energy.

PARTNERSHIPS BRING RESULTS

CFS has established dozens of public and private research partnerships, supported by both private and public funding won from research agencies in open competition. These programs have built hardware, launched careers, and solved problems on the way to the first commercial fusion electrons. CFS routinely publishes work they complete with their partners in peer-reviewed journals, including:

- A collection of [papers](#) outlining the physics basis for the SPARC tokamak, demonstrating that its design is expected to reach energy break-even if appropriate high-field magnets can be built.
- A [demonstration](#) of a high-field magnet enabling SPARC
- A [new cable technology](#) capable of withstanding the extreme conditions of a fusion device.
- An approach to [monitoring cable operational safety](#) using fiber optics.

PARTNERSHIP OPPORTUNITIES

CFS continues to develop its partner network and relationships, with technical focus falling into three broad categories:

01. SPARC – Because SPARC will produce a burning plasma and reach plasma energy gain by mid-decade, it is an attractive [platform for public science](#) and an emerging new destination for scientists and research programs. Opportunities range from plasma physics to operations and diagnostics.

02. ARC – ARC will be CFS's first commercial power plant, building on the experience gained through SPARC and adding power extraction systems built around a molten salt loop. It will leverage novel materials and manufacturing, blanket and fuel cycle development, and remote maintenance technologies.

03. Other applications – CFS's unique magnet technology and manufacturing capability is enabling technology programs beyond the tokamak and outside of fusion altogether.

THE TECHNOLOGY AT CFS

DESIGNING AND BUILDING FUSION ENERGY SYSTEMS TO POWER THE WORLD

IN PROGRESS

SPARC: PROVING COMMERCIAL FUSION ENERGY IS POSSIBLE

SPARC is paving the way for the urgent transition to clean, safe, zero-carbon fusion energy. In 2027, it'll become the world's first commercially relevant fusion energy machine to produce more energy from fusion than it needs to power the process — a threshold called net energy generation or $Q>1$. That history-making moment will be to fusion energy what the Wright brothers' Kitty Hawk flight was to aviation: the breakthrough that'll make a life-changing industry possible.

We're building SPARC at our 60-acre campus in Devens, Massachusetts, where a team of physicists, welders, technicians, computer scientists, and more are working together to make it happen.

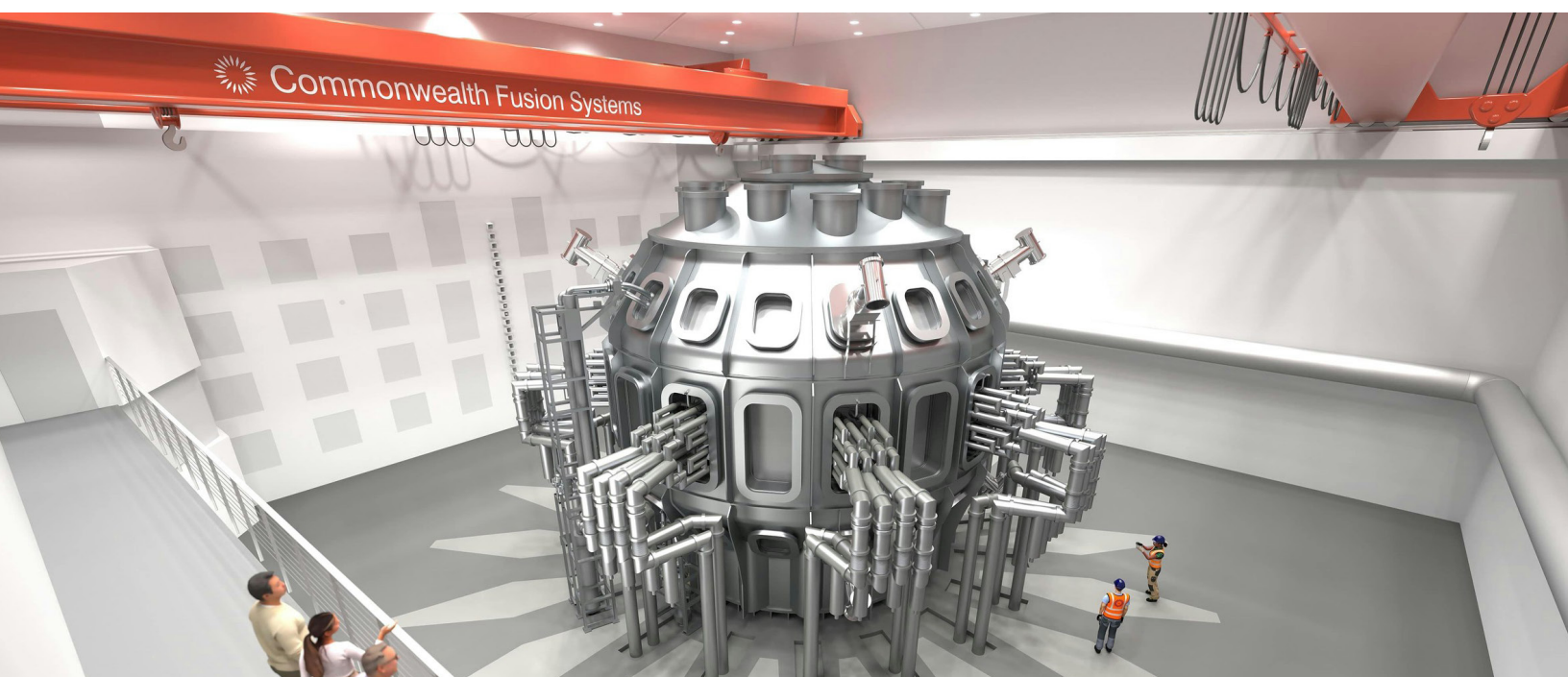
SPARC is a type of device called a tokamak — a donut-shaped machine that's the most viable,

scientifically proven way to recreate the sun's power source on Earth. SPARC uses powerful magnetic fields to create and insulate a highly energetic cloud of particles called a plasma until it's hot enough for the particles to fuse. Crucially, SPARC uses high-temperature superconductors (HTS) to enable stronger magnetic fields, making the design more compact and economical. We're building the HTS magnets at our factory alongside other essential SPARC components.

As well as demonstrating net fusion energy, SPARC's mission is to refine the core technology that'll be used in its successor, ARC, that'll put power on the grid.

SPARC's design combines decades of knowledge of plasma physics from dozens of tokamaks around the world with cutting-edge simulation tools and data analysis. Peer-reviewed papers published in the Journal of Plasma Physics detail the physics calculations that predict SPARC will achieve net energy — and meet its initial goal of $Q>1$ with a considerable margin.

As we work towards this milestone, we'll continue to validate our work through strategic alliances with universities, research centers, and national labs around the world.



ARC: PUTTING FUSION ENERGY ON THE GRID

ARC, the world's first grid-scale fusion power plant, will mark the start of the fusion age.

Commonwealth Fusion Systems is on a mission to deliver the urgent transition to fusion energy, the power source of the sun and other stars, and ARC is how we'll do it. When the first ARC plant arrives in the early 2030s, it'll provide the electrical grid with about 400 megawatts of clean, zero-carbon, power — a firm source customers can count on having when they need it. Then we'll build thousands more. It's a pathway for abundant, clean energy that can meet the rising demand for electricity and expand global energy access.

ARC is designed to be commercial, incorporating market feedback so it'll slot seamlessly into the power grid. It checks all the boxes for the electricity generation market: a firm supply of clean, safe, and affordable energy that works for dispatchable or baseload demand, all from a facility that can be built just about anywhere. And we're talking to customers now who want to sign up for its power.

ARC will be flexible and familiar. To the grid, it'll look just like the 2,000 natural gas plants already built in the US — except that ARC won't release any carbon dioxide or other greenhouse gases. Operators will be able to ramp ARC's power output up and down faster than possible with most fossil plants, making it easy to integrate with renewable resources and adapt to grid or market changes. More likely, ARC will supply steady baseload power that's increasingly needed to support new critical infrastructure and replace fossil fuel plants.

ARC will be compact, making site planning simple. Fusion fuel's energy density is 14 million times greater than coal and 4 times greater than fission. That's one reason each ARC will be about the size of a big-box store with about the same site needs. And it uses far less land than solar or wind energy. This makes it easier to build near areas with heavy power demand, with

significantly less development of transmission systems.

ARC will be safe. Unlike nuclear fission plants, fusion energy has no chance of runaway chain reactions or meltdowns, and there's no long-lived or high-level nuclear waste. US regulations treat fusion power plants similarly to how they treat particle accelerators, not nuclear fission plants — an approach that recognizes fusion's inherent safety and supports its rapid scaling.

ARC power will be affordable. ARC power will be the lowest cost source of clean, firm power that can be deployed anywhere. As its technology matures and component costs drop, ARC power will become even more competitive in the way that solar and wind power have.

ARC fuel will be abundant, ubiquitous, and cheap.

The fusion process heats two forms of hydrogen, deuterium and tritium, into a highly energetic plasma — a cloud of particles that fuse and release energy. A

liquid "blanket" captures that energy as heat, then transfers it to water that turns a steam turbine to generate power. Deuterium is available nearly everywhere and can be filtered from seawater, while ARC blankets will naturally produce tritium. And because only small amounts are needed, 30 years of ARC fuel can be delivered by a single truck when a new plant opens, with no price change risks down the line and no linkages to globally

fraught supply chains. With fusion fuel costs forecast to become effectively negligible, volatile power prices driven by fluctuations in natural gas prices will be a thing of the past.

ARC is more than a power plant. It's the foundation for a future of clean, scalable energy that meets global demand while reducing humanity's carbon footprint. Early customers will have an edge in the energy transition, while owners, investors and developers will benefit as ARCs grow from early deployment to dominating the firm power industry.

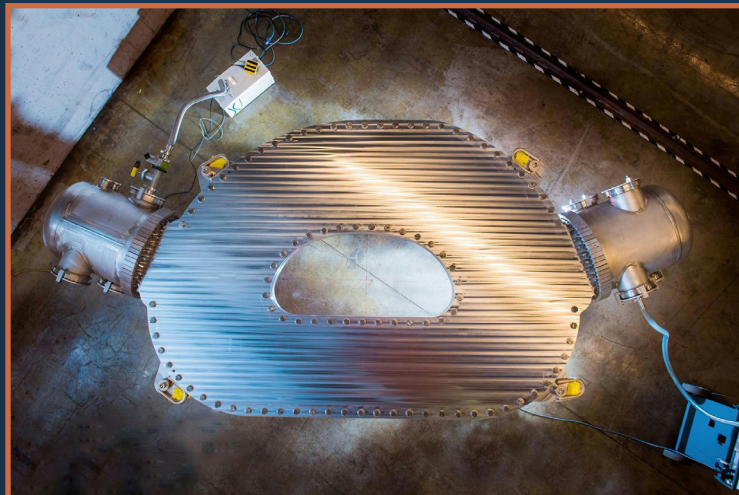
CFS will independently finance, build, own, and operate the first ARC power plant in Chesterfield County, near Richmond, Virginia — an area with a growing population, economy, and demand for energy. We expect this ARC project will create hundreds of jobs to build and operate the power plant.



DONE

HTS MAGNETS: ENABLING TECHNOLOGY

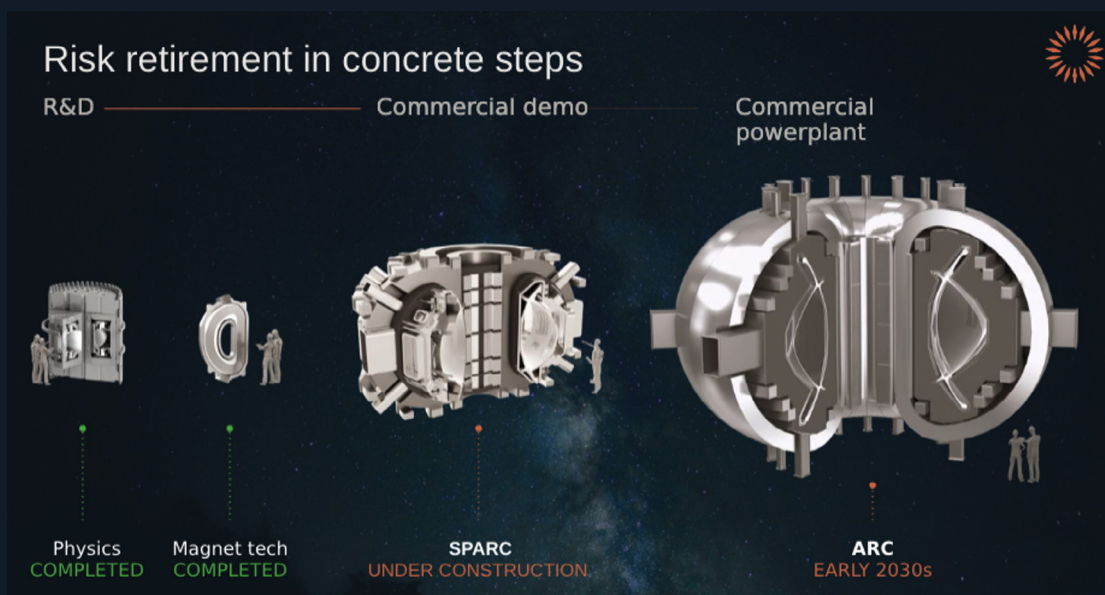
A new high temperature superconductor (HTS) recently reached industrial maturity: Rare Earth Barium Copper Oxide (REBCO). CFS is using HTS to manufacture the strongest fusion magnets of their kind that will enable our commercially-relevant fusion energy machine, SPARC. CFS will next scale magnet production and deliver its first fusion power plant in the next decade.



DONE

ALCATOR C-MOD: PLASMA PHYSICS BASIS

Alcator C-Mod is a compact, high-magnetic field tokamak at MIT that has provided much of the research basis for SPARC. As a result of DOE funded research on Alcator C-Mod the team developed the science that retired key risk in the path toward commercial fusion. The compact configuration enabled our team to rapidly incorporate innovations and provide time sensitive answers to questions surrounding fusion science and technology. In 2016, C-Mod broke its own record for plasma pressure in a magnetically confined device, an important measurement for fusion.





Commonwealth Fusion Systems

RELEVANT NEWS AND LINKS



February 14, 2025

HOW CFS IS BUILDING A FUSION FACTORY, NOT JUST A SINGLE FUSION MACHINE

[Read about it here](#)

Introducing Commonwealth Fusion Systems

Commonwealth Fusion Systems Blog

Humanity's Power Move

Virtual tour of CFS

Commonwealth Fusion Systems Raises \$1.8 Billion in Funding to Commercialize Fusion Energy

CFS Magnet Success Propels Fusion Energy Toward the Grid

The Quest to Build a Star on Earth

The New York Times

Fusion gets closer with successful test of new kind of magnet at MIT start-up backed by Bill Gates

CNBC

Status of the SPARC Physics Basis

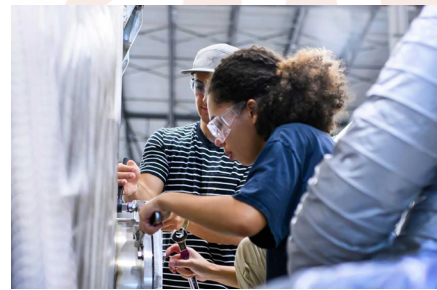
Journal of Plasma Physics

America's Best Startup Employers

Forbes 2024



THE CULTURE AT CFS



CFS is building a mission-driven team of top talent from around the world committed to delivering clean, limitless fusion energy to the world. A career at CFS is more than a job, it's a mission to develop a fundamentally new source of clean energy to meet humanity's rising demand for electricity and to combat climate change. CFS team members thrive in a fast-paced, dynamic environment and have demonstrated exceptional results through a range of different pursuits. We all align with our company values of integrity, execution, impact, and self-critique.

CFS CULTURE

CFS's goal is to inspire people to do their best work. They trust their team members to do what they think is best for CFS — empowering them with the support, autonomy, and resources they need to succeed. They communicate norms that can provide guidance for decision-making, but employees are also encouraged to break norms if the situation merits it.

FUSION INCLUSION INITIATIVE

CFS leadership is committed to proactively building a diverse company where a range of perspectives are valued and make us stronger and more successful. In addition to leadership, team members across CFS have led initiatives to increase diversity and offer opportunities for growth, learning, and understanding. The fusion inclusion group provides resources and leads company-wide events and activities aimed at improving diversity, equity, and inclusion.

HIRING TEAM



BOB MUMGAARD

Co-founder and CEO

As the CEO of Commonwealth Fusion Systems (CFS) Bob Mumgaard is responsible for the strategic vision and direction of the company, paving the way for a future of clean unlimited fusion energy. Since co-founding CFS with a mission to commercialize the high-field approach to fusion, Mumgaard performed his PhD work at MIT and during that time he contributed to the design of several small superconducting tokamaks for a variety of physics missions using high temperature superconductors (HTS). Prior to co-founding CFS, as an MIT fellow Mumgaard focused on how entrepreneurship, risk-retirement strategies, and partnerships could increase the speed of fusion from laboratory to market. He organized and led a team identifying strategies to utilize private finance and traditional academic resources to speed the path to fusion energy resulting in a collaboration model with MIT.

Mumgaard holds a PhD in Applied Plasma Physics and a MS in Nuclear Engineering from MIT, and a BS in Mechanical Engineering and BS in Engineering Physics from the University of Nebraska.



GARY STARK

Head of Construction and Support Infrastructure

Gary Stark is a seasoned engineering leader with over 27 years of experience, including 18+ years directing successful projects across the pharmaceutical, biopharmaceutical, power, and chemical industries. He excels in translating complex ideas and objectives into actionable plans and tangible solutions, consistently delivering results through effective team management and strategic oversight.

A New Jersey Licensed Professional Engineer (PE) with a Bachelor of Science in Mechanical Engineering (BSME) and an MBA, Gary has managed all aspects of the project lifecycle, from proposals and conceptual planning to budgeting, capital approvals, engineering management, procurement, and support for construction, commissioning, and validation. His experience includes leading engineering project teams of up to 90 professionals and executing multimillion-dollar projects.

In his role as a corporate-level engineer, Gary has supported multiple plant sites and projects within the fossil and nuclear electric utility sectors, where he successfully planned and implemented major maintenance initiatives and capital upgrades. Known for his technical expertise and leadership skills, Gary is a results-driven professional dedicated to achieving operational excellence and fostering innovation.



ALEX CREELY

Director of Tokamak Operations and Chief Engineer of ARC Conceptual Design

Alex Creely is a scientist and engineer dedicated to advancing clean energy solutions. He serves as the Director of Tokamak Operations at Commonwealth Fusion Systems (CFS), a Massachusetts-based company pioneering clean fusion energy. Since joining CFS in 2019 as the company's 13th employee, Alex has been a key contributor to its mission of developing transformative energy technologies.

With experience working on fusion projects worldwide, Alex brings a global perspective and unwavering optimism to the pursuit of a future powered by clean energy. His leadership and passion drive progress toward making fusion a viable and sustainable energy source for the world.



VALERIA RICCARDO

Chief Engineer

Valeria Riccardo is a versatile engineering leader with over two decades of experience in designing, analyzing, delivering, and operating magnetic confinement fusion devices. She excels in leading and mentoring engineering teams to tackle complex technical challenges while driving continuous improvement initiatives.

As SPARC Chief Engineer at Commonwealth Fusion Systems, Valeria oversees technical design, resolves project lifecycle challenges, and ensures compliance with engineering standards. She provides strategic guidance, mentors teams, and coordinates cross-functional efforts to optimize performance and longevity in SPARC operations. Additionally, she plays a key role in budget planning, workforce development, and shaping organizational growth.



CHRISTOPHER GOOSSEN

Senior Director, Mech. Engineering

Christopher Goosen is a seasoned mechanical engineering leader with over 18 years of experience in the energy and advanced technology sectors. Since July 2024, he has served as Senior Director, Mechanical Engineering at Commonwealth Fusion Systems (CFS), driving innovation in fusion energy to revolutionize clean energy solutions.

Before joining CFS, Christopher built an impressive career at Westinghouse Electric Company, where he played a key role in advancing nuclear reactor technologies, leading engineering teams, and managing complex projects across global markets.

Christopher's expertise in mechanical engineering and his leadership in cutting-edge energy solutions underscore his commitment to driving sustainable energy innovation.



JEN CROWLEY

Talent Acquisition

Jen Crowley is a seasoned talent acquisition leader with over a decade of experience in the high-tech industry. Currently at Commonwealth Fusion Systems, she specializes in attracting, engaging, and retaining top-tier talent. Jen also serves as Head of Solutions at Solutions by Sunday, LLC, where she focuses on data-driven decision-making in talent strategy. She holds a Master's in Industrial Labor Relations from Indiana University of Pennsylvania and a Bachelor's in Psychology from PennWest Clarion.

CHIEF ENGINEER

PLANT DESIGN AND ENGINEERING



Commonwealth Fusion Systems

The Chief Engineer has the responsibility for providing technical expertise and leadership in the planning, engineering, design, implementation, and support of highly engineered systems that will enable the functioning of a fusion power plant. Essential to the role will be the ability to examine the interactions of these various systems to ensure the integrated functioning performs as expected as well as proper functioning at the interface points between these systems. The successful Candidate will be responsible for providing technical support to the engineering and delivery teams, assist in defining functional requirements as well as participate in the review of designs, leading of technical tradeoff studies, determining applicable codes and standards, and defining of system architectures.

The successful Candidate must have strong technical knowledge and skills of process piping, process equipment, process design, and associated support systems of a thermal power plant of significant size. They do not need prior fusion experience as this will be taught on the job. The Candidate must have a demonstrated ability to review and comment on designs and provide clear technical feedback. The position requires an excellent working knowledge of the project delivery process including planning, design, manufacturing, construction and commissioning, and qualification. This position will work with in-house Engineering teams, R&D, Project/Construction Managers, partner firms, contractors, vendors, to design, deliver, and start up new facilities and systems.

You bring the engineering expertise – we'll ignite the fusion.

WHAT YOU'LL DO

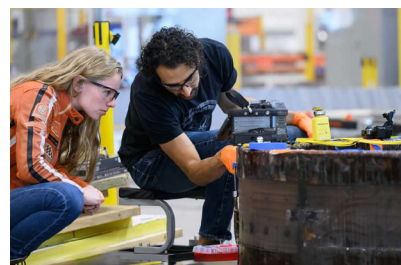
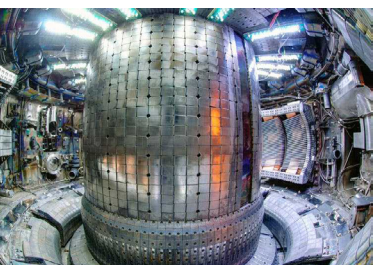
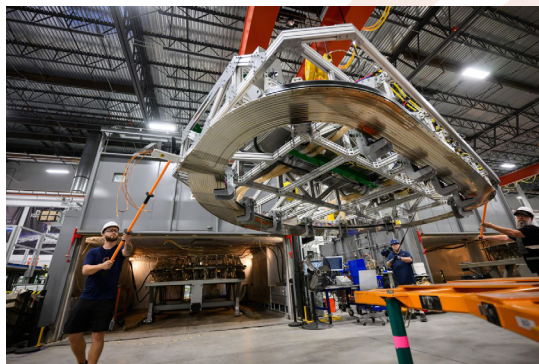
- Function as the Design Authority for SPARC and ARC Balance of Plant (BOP) systems, components, and structures supporting the fusion machine
- Oversee design, development, implementation, and analysis of technical products and systems. Responsible for establishing the design requirements and ensuring that design output documentation appropriately and accurately reflect the design basis
- Support the implementation of design at the job site, identifying, and communicating issues and facilitating their resolution. The candidate must also be capable of determining requirements and approaches for testing at both system and equipment levels
- Provide consultation and guidance through the design phases of a project including Design Basis development, concept, preliminary and detailed engineering and design, as well as development of detailed specifications for highly engineered equipment
- Provide high-level technical guidance and support to resolve complex design issues, ensuring continuous progress on design aspects of projects
- Understand the delivery trade-offs in terms of schedule, budget, manufacturability of different technical paths and align these with business objectives
- Mentor and provide technical guidance to less experienced staff, fostering a culture of learning and expertise development
- Work in a collaborative team environment with the opportunity for frequent interaction with team members
- Develop analytical processes/tools to improve effectiveness, quality, and efficiency of the engineering development effort
- Investigate emerging technologies to develop future product designs to meet projected requirements
- Prepare technical presentations and briefing them to customers, partners, and technical leadership teams

WHAT CFS IS LOOKING FOR:

- Degreed Engineer and a minimum of 20 years' experience in the engineering, design and installation of highly engineered mechanical, process, and electrical systems and equipment
- Experience is the design of complex process systems for the pharmaceutical, chemical, power or petroleum industries
- Experience managing process engineering teams
- Strong technical knowledge and skills in the process systems in a thermal power plant
- Effective meeting management skills
- Strong written and verbal communication skills
- Strong attention to detail and willingness to dig into details
- Ability to work independently with little day-to-day direction
- Leadership of technical teams delivering highly complex designs

MUST-HAVE REQUIREMENTS:

- Work in a facility that contains industrial hazards including heat, cold, noise, fumes, strong magnets, lead (Pb), high voltage, high current, pressure systems, and cryogenics
- Perform activities such as typing, standing, or sitting for extended periods of time
- Willingness to travel or work required nights/weekends/on-call occasionally



ABOUT THE New England AREA

The New England area offers an exceptional quality of life, blending rich history, scenic beauty, and a thriving innovation hub. It's an ideal place to live, whether you're drawn to bustling urban centers, charming small towns, or the great outdoors. The region's unique combination of cultural richness, economic opportunity, and natural splendor make it a standout choice for individuals and families alike.

One of the most exciting developments in New England is its reputation as a hub for groundbreaking innovation. For example, Commonwealth Fusion Systems (CFS), a leader in the pursuit of clean energy through nuclear fusion, is headquartered in Devens, Massachusetts. Devens is a strategically located community offering easy access to major cities like Boston, Worcester, and Nashua, placing residents within reach of vibrant urban amenities while maintaining a quieter, suburban lifestyle.

Living near Devens means you can enjoy the perks of Boston, just 35 miles away. As New England's largest city, Boston is renowned for its world-class universities, historic landmarks, diverse neighborhoods, and vibrant arts scene. From catching a Red Sox game at Fenway Park to exploring the Freedom Trail, Boston offers something for everyone. Worcester, just 20 miles

from Devens, is another dynamic city with a growing economy, thriving arts and dining scene, and a strong emphasis on healthcare and higher education. Nashua, NH, about 30 miles away, adds to the appeal with tax-free shopping and a mix of suburban and urban amenities.

Beyond its cities, New England boasts stunning natural landscapes. Residents enjoy the proximity to mountains, forests, and the Atlantic coastline, offering year-round outdoor activities like hiking, skiing, and sailing. In autumn, the region transforms into a breathtaking canvas of colorful foliage, drawing visitors from across the world.

The region's rich history and educational opportunities are unparalleled. Home to Ivy League universities such as Harvard and Yale and premier research institutions like MIT, New England is a global leader in education and innovation.

New England's charm lies in its balance—proximity to cutting-edge industries, such as those led by companies like Commonwealth Fusion Systems, paired with an unmatched quality of life. Whether you're seeking career advancement, cultural enrichment, or outdoor adventure, New England is a place where you can truly thrive.



Boston, MA

BEAUTIFUL

Massachusetts

AREA LINKS

Visit MA

Things to Do in MA

Devens Community

Things to Do in Devens

**The Best Things to Do
in Worcester**

Meet Boston

Discover Central MA

Visit New England

Discover New England

