ON THE THRESHOLD OF ABUNDANCE

SECURING THE FUEL OF THE FUSION AGE

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“You never change things by fighting the existing reality. To change something, build a new model that makes the old model obsolete.” — Buckminster Fuller

Inside

The Promise of Fusion

We already sparked the core of a star in a lab.
The threshold of an abundant future is upon us – and those who position themselves for that inevitability will be etched into humanity's history books.

Imagine it: a power plant shaping and containing lightning, using its raw fury to generate clean electricity and power the world.

In that world, energy is no longer a constraint – but a decentralized force that flows instead of controls. Suddenly, the gates open for every project once deemed impossible.

We can pull fresh water from the sea to hydrate deserts and feed billions.
We can pull carbon from the air and cool the climate itself.
We can build cities that float. Manufacture steel without fire. Even launch humanity into the cosmos.

This is not science fiction. It's the blueprint of the next civilization. And those who act now – will be the architects of it.

This paper exists to reveal just how close that future truly is – and to expose the constraint that could stop it in its tracks.

Because if we want an abundant world that restores hope for younger generations, we must confront the greatest bottleneck no one is talking about.

We must unlock the most essential – and still unclaimed – resource of the fusion age.

“Humanity has finally unlocked starfire — but unless we solve its fuel problem, the future it promises will remain just out of reach.”

Fuel Constraints in the Fusion Ecosystem

We are under no illusions here. Cosmo understands that fusion stands at a critical threshold. Billions are being poured in, signifying investor confidence. Labs are making progress, startups are promising wins as early as the 2030s. Despite not having a scalable fusion reactor in sight, the industry is racing towards that future as if it's already happening. However, it will all come to a screeching halt if we don't solve the fuel problem: tritium.

Thirty-six startups, according to the FIA global report 2025, declared that they use the deuterium-tritium (D-T) fuel source for their fusion reactions. It requires less heat to ignite than any other fuel source (a whopping 100M degrees Fahrenheit), its a bigger target for fusion collisions, and it has an industry behind it.

Deuterium we have plenty of; it's abundant in water. Tritium, on the other hand, is only made in nature high in our atmosphere or it can be produced artificially in a facility.

But how does tritium bring fusion to a halt?

Right now, there is roughly a total civilian supply of about ~25 kg on the planet. About the size of a basketball. And according to multiple reports and peer-reviewed papers, a single power plant could need from 50 kg to 100+ kg of tritium to run the plant year-round. A single plant!

The FIA estimates that by mid-century, we'll have 200 power plants up and running. That's approximately 10,000 kg of tritium that the industry will need, about 400x the current global supply.

Experiments reveal more troubling news. Even if we had enough tritium, we might still lose it. Tritium is notoriously difficult to control.

Imagine trying to catch every ounce of water as its being poured through your hands, good luck. Tritium seeps through reactor walls, and some materials that are exposed to radiation (irradiated materials) form pockets in their structure that capture and trap this nomadic element, merging with their structure.

Its elusive, radioactive, and it also happens to cost $30k per gram. That's a total value of about $750M for the whole basketball, and we are going to need hundreds of basketballs.

These points only prove to illustrate that without some form of accountability or trust for tritium, something the government and the public can breathe easy with, fusion is dead on arrival.

“What fuels this future is no ordinary element — it is scarce, unstable, leaking through our grasp, and no one truly owns it.”

Cosmo's Real-Time Tritium Trust Platform

At Cosmo, we aim to dissolve the bottlenecks of energy, power, and belief itself to usher in a future of abundance for humanity, so that we may chase our dreams and explore the cosmos, together.

That vision starts with making sure that fusion energy becomes a reality.

Our first step is building the world's first real-time tritium monitoring and accountability platform – the eyes of this elusive element. Because before we can produce tritium at scale, we must first account for every gram. If we can't see it, we'll lose it. And if we lose it, we stall. Minimizing losses is essential before we can farm more basketballs.

We are not here to build new reactors, we are here to ensure each reactor can function properly. Because abundance isn't unlocked by the reactor alone – it's unlocked by what allows it to be trusted, scaled, and sustained.

Imagine: in the control room of a fusion facility, operators view a live dashboard showing tritium levels across every subsystem – updated in real time, down to the gram. Think mission control for fusion, an OS as intuitive as Apple's, and as precise as SpaceX.

Operators use tablets synced to the central system, allowing them to respond instantly to anomalies. Regulators arrive not to audit stacks of paper, but to walk the facility with a device in hand, verifying every gram of tritium as they go.

This is not just software. It's trust, rendered visible.

“To unlock the future, we must first make its fuel visible — and Cosmo will be the lens that brings it into focus.”

A Vow to the Future

We are more than a company. We are a vow.

Most people feel the world truly is hopeless – and it's easy to think so. We see powerful dictators shaping geopolitics, rising carbon emissions traded for profit, and systems of exploitation hiding in plain sight. In the face of all this, a better future feels impossible.

But a hopeless future isn't fate. It's a habit. And habits can be broken.

When you believe the world is doomed and survival is all that's left, your brain rewires itself to match that reality. It only takes a few months of repetition to shift from "man, the world sucks" to "the world is, and always will be, evil." The brain doesn't care what you feed it – it just amplifies what you repeat.

We exist to interrupt that loop.

Cosmo offers an alternative. A visible, credible signal that another path is possible. Sometimes that's all it takes – a single glimpse of hope strong enough to whisper:

"Wait... there's another way?"

That spark is enough to plant a new seed in the mind. From there, new decisions take root. New futures begin to unfold. Not because the world changed overnight – but because you did.

So hear this, clearly:
The world is not doomed. And you are not powerless.

If you were standing at a crossroads – one path leading deeper into despair, the other toward a future you'd be proud to help build – and you had to walk either way...

Why not walk the one that could save everything?

“Even starfire needs belief to burn.”

The Real Tragedy

The greatest tragedy in science is not failure – it is silence. For too long, breakthroughs have gathered dust while humanity waits. Every scientist knows this pain: to see the truth, but not see it lived.

Cosmo exists to dissolve bottlenecks – to ensure that discovery does not die in the lab, but flows outward into the world. We call on every scientist – whether you study plasma, isotopes, genomes, or galaxies – to remember: your work is not just for papers, but for people. The world needs you to be heard, to be applied, to be unstoppable.

Science is not finished when it is published. Science is finished when it is lived. And when it is lived, it becomes the threshold of abundance.

It's up to us to remind the world that hope does not lie in politicians or markets – it lies in the hands of those who dare to discover and inspire.