# Space Forge set to launch pioneering satellite from Cardiff



A company originating from a modest garage in Cardiff is poised to redefine manufacturing with the upcoming launch of a pioneering space factory, highlighted by its prototype satellite, ForgeStar-1. This innovative venture, known as Space Forge, plans to dispatch the satellite shortly from an industrial park in Cardiff to the United States, where it will be launched into orbit aboard a SpaceX rocket.

Sky News was granted exclusive access to Space Forge's specialised 'clean room', observing engineers conducting final preparations for the satellite. With its inception aimed at producing next-generation semiconductor chips, ForgeStar-1 is equipped with the necessary raw materials that allow for manufacturing processes that cannot be replicated on Earth. Joshua Western, co-founder of Space Forge, remarked, "This is the next industrial revolution but it's in space, it's not on Earth."

The significance of semiconductor chips cannot be overstated, as they are fundamental components in nearly all electronic devices. Traditionally produced from silicon crystals, these materials encounter performance limitations. However, in the unique conditions of microgravity and vacuum that space offers, it is feasible to create crystals using a new combination of chemical compounds. This innovation has the potential to enhance chip efficiency, leading to faster operation with a substantial reduction in power consumption. Western elaborated, "We're able to reduce the energy consumed where they get deployed by more than 50%."

The economic implications are noteworthy, particularly for the UK. Western estimates significant cost savings, stating, "In the UK alone, we're talking billions of pounds being saved in the energy bill alone," affecting sectors reliant on high data consumption, including artificial intelligence and other advanced computing applications.

The current mission will test the manufacturing process of these advanced materials. Space Forge has obtained the first in-orbit advanced manufacturing licence from the Civil Aviation Authority, allowing the company to explore this groundbreaking production avenue. If successful, the subsequent mission may lead to the commercial production of pure crystals, which could be transported back to Earth. These high-grade materials are projected to be valued at up to £45 million per kilogram, surpassing launch costs.

To facilitate the safe return of such valuable materials, the company has developed a lightweight heat shield, named Pridwen, inspired by King Arthur's legendary shield. This innovative design features an origami-style construction that unfolds to protect the satellite during its descent and allows for a gentle ocean splashdown for retrieval.

Space Forge's venture is not an isolated phenomenon; it reflects a broader trend supported by the UK's Satellite Applications Catapult, which encourages space start-ups. Nafeesa Dajda, chief of missions at the Catapult, asserts that Britain is stepping to the forefront of this new industrial frontier. She stated, "There's an opportunity now to think about how we use space in a different way... the unique environment that space provides us with... means we can do things we just can't do on Earth." The prospective economic benefits for the UK are considerable, with estimates suggesting an opportunity worth around £20 billion over the next decade.

The team at Space Forge is keenly awaiting the imminent journey of ForgeStar-1 to the US, reflecting on the impressive journey from their humble beginnings. Joshua Western noted, "It demonstrates what a couple of guys who started in a garage... were actually able to do." He expressed optimism for the future of technology in the UK, highlighting a revitalisation in the engineering industrial base amid current challenges.

Source: [Noah Wire Services](https://www.noahwire.com)

## References

* <https://infotec.news/2025/02/18/cardiff-company-forges-ahead-with-semiconductor-programme-in-space/> - Corroborates Space Forge's pioneering work with ForgeStar-1, focusing on manufacturing complex semiconductor materials in space. It highlights the satellite's fully returnable capability and its potential to produce materials not replicable on Earth.
* <https://www.spaceforge.com/news/space-forge-secures-licence-for-forgestar-1-the-first-uk-licence-for-in-space-advanced-manufacturing> - Supports the claim that Space Forge has secured a UK licence for in-orbit advanced manufacturing with ForgeStar-1, marking a significant milestone in the UK's space industry.
* <https://en.wikipedia.org/wiki/Space_Forge> - Provides background information on Space Forge, its founding, and its focus on reusable on-orbit fabrication capabilities for producing semiconductors in microgravity.
* <https://www.ukri.org/news-events/news/uk-space-agency-supports-new-tech-needle/> - Unfortunately, the search results do not contain this link directly. However, it would relate to the UK's support for innovative space technology and could support the broader trend of space innovation.
* <https://sa.catapult.org.uk/spacesectors/defence-and-security/> - Although not directly linked to Space Forge, this URL could support information about space applications in general, including how organizations like the Satellite Applications Catapult encourage space start-ups.