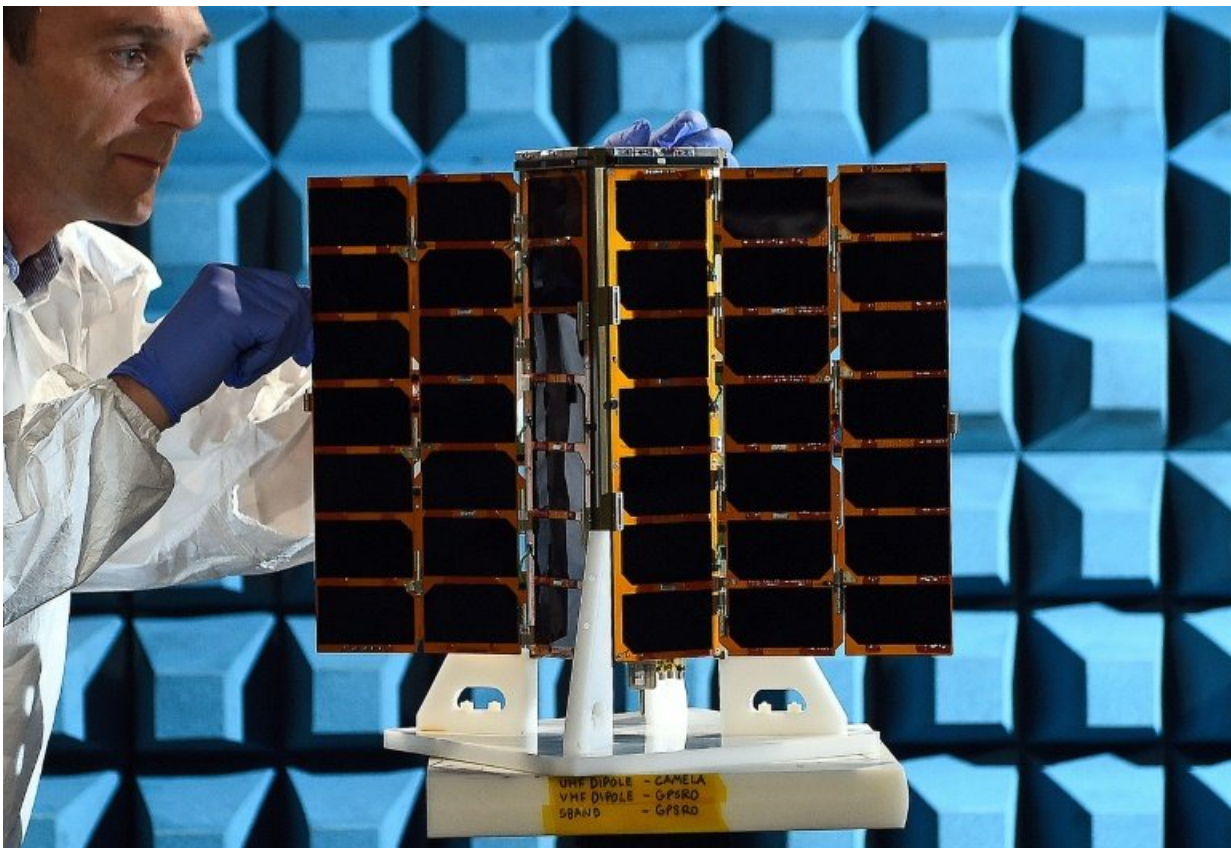


From ships to satellites: Scotland aims for the sky

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US satellite firm has built 80 satellites in Glasgow since 2014

A shipbuilding hub since the days of the British empire, the Scottish city of Glasgow is now reaching for the stars with a growing space satellite industry.

Glasgow builds more satellites than any city outside of the United States, according to space industry experts, specialising in small "CubeSats" that can be used for anything from weather forecasting to global positioning.

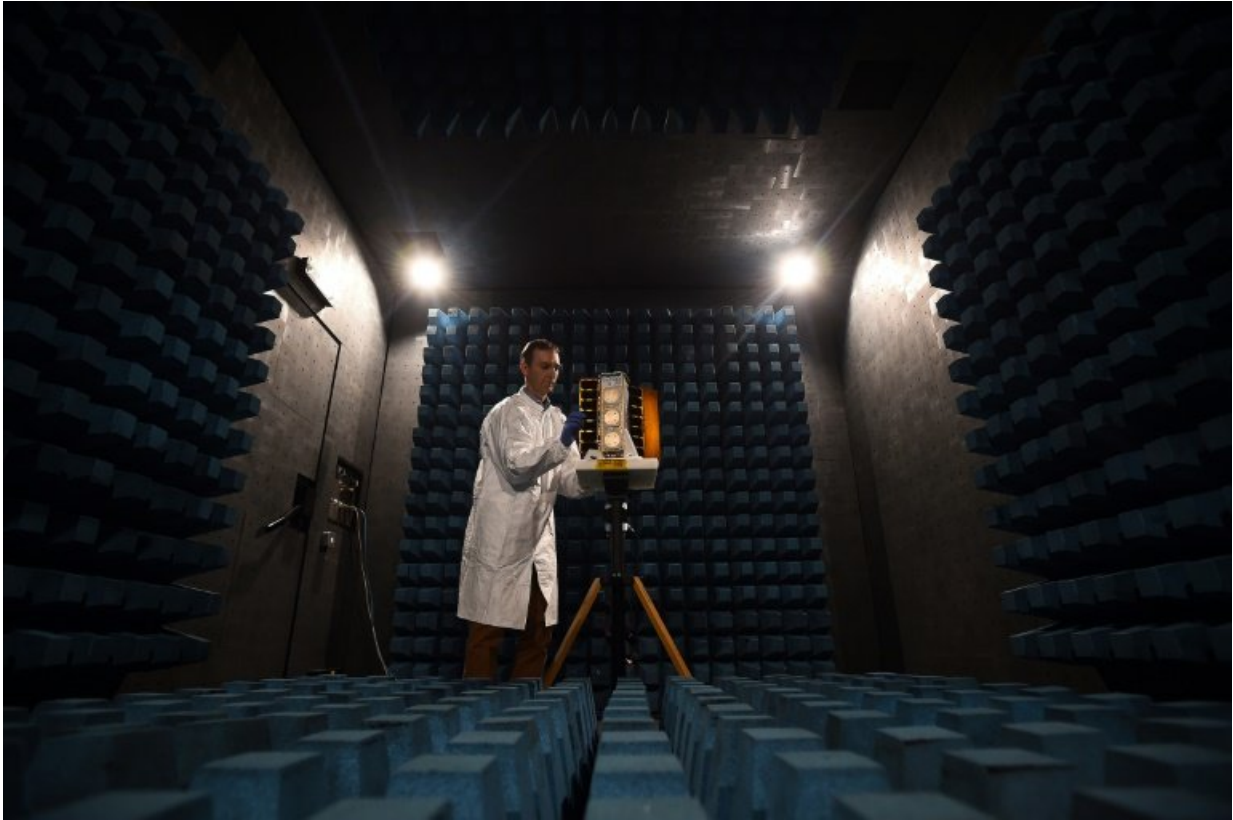
"Scotland has always been famous for making ships—and today we're making spaceships," Peter Anderson, head of business development at satellite maker Clyde Space, told AFP.

The company's offices are just a few metres (yards) from the imposing Finnieston Crane, a relic of the River Clyde's shipbuilding past once used to lift tanks and steam trains onto ships.

Clyde Space launched Scotland's first ever satellite in 2014 and within two years it was producing six satellites every month.

That set off a period of rapid growth in the space industry, which insiders hope will get a further boost from rumoured plans to build two new spaceports in Scotland.

Britain's plans for a home-grown space industry have been stepped up amid concerns it will be banned after Brexit from bidding for contracts on the European Union's £9 billion (10 billion euros, \$12 billion) Galileo global positioning system.



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The UK wants complete access to Galileo as it played a major role in the development of the system, which is expected to be fully operational in 2026, but the EU has decided to move a satellite monitoring base from Britain to Spain to "preserve security".

Prime Minister Theresa May has created a taskforce of engineering and aerospace experts, led by the UK Space Agency, "to develop options for a British Global Navigation Satellite System that would guide missiles and power satnavs", the government said.

'Costs more than gold'

In Scotland, the space sector has grown by over 70 percent since 2010 to a turnover of £2.7 billion last year, according to aerospace trade body ADS Scotland. The industry employs some 7,500 people, the group said.

Clyde Space shares an office complex with US satellite firm Spire Global which has built 80 satellites in Glasgow since 2014.

Spire's lead engineer Joel Spark said the company had benefited from a high-skilled workforce already in place from the days of the DotCom boom when the area was known as "Silicon Glen".



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"Silicon Glen was where a lot of handset manufacturing took place, small electronic devices with radio technology, and that is very similar to what we are doing so we were able to tap into that skillset," Spark said.

The burgeoning space industry has inspired smaller startups such as AlbaOrbital, which is preparing for the launch of its first satellite, Unicorn1.

The satellite, put together in AlbaOrbital's office on the south of the River Clyde, will be strapped to a larger payload and ejected from a spring-loaded launcher like a jack in the box.

"It costs more than gold per kilogramme to launch a satellite, so the idea of making a smaller cube made a lot of sense," Tom Walkinshaw, CEO of Alba Orbital, told AFP.

'Lots of tiny shoestrings'

And hopes are high that Scotland will soon have its own launchpads.



Satellite manufacturing technician Debbie Wardhaugh works at the offices of US satellite firm Spire Global in Glasgow

Lawmakers gathered in April on North Uist, an island off Scotland's west coast, to discuss proposals to build a vertical launch site.

Fledgling satellite firm Orbital Access recently set up shop at Prestwick Airport, near Glasgow, and UK rocket maker Skyrora has bought facilities in Edinburgh and Glasgow in anticipation of Prestwick's transformation into a spaceport.

Matjaz Vidmar, a researcher at the Royal Observatory Edinburgh, said: "We are expecting, at some point in the near future, a vertical launch site somewhere in the north of Scotland. But most likely, and most

immediately, there will be a horizontal launch site at Prestwick."

Horizontal launching involves carrying a rocket on a conventional aeroplane and propelling it into orbit from high altitude.

Vidmar said the rate of growth in satellite building in Scotland has been "bigger than pretty much everywhere else in this arena".

"If you put lots of tiny shoestrings together you get a pretty long piece of rope," he said.

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