

Small satellite solutions from Scotland

A new era is dawning in the space industry, based on small satellite technology. It is now possible to conduct some space tasks using “baby spacecraft” or nano satellites, which weigh grammes rather than tonnes. Turning the technical and economic rules of space on their heads, is Clyde Space founder and satellite expert Craig Clark. His new firm, based at the West of Scotland Science Park in Glasgow is developing power systems from 1W to 2.5kW that will help power this new space age.

Clyde Space is Scotland’s only spacecraft manufacturer dedicated to serving the small satellite market, providing tailored and off-the-shelf subsystem solutions for spacecraft up to 500Kg. The Defence Diversification Agency (DDA) has been helping the company find test facilities for product development and manufacture, and to identify a number of potential candidates from its network of contacts in universities and research facilities across Scotland.

The product range currently includes spacecraft power systems, small satellite battery systems, digital and analogue systems; the technologies include solar cell array maximum power point trackers, safe battery management of all cell types and high power to volume/mass efficient DC-DC converters. The products are designed for high reliability and are suitable for applications that expose hardware to extreme environments. .

“Sputnik, the first satellite launched, was a small sat, and although it was hugely significant mission in space history, relative to subsequent achievements, it didn’t actually do much,” says Clark. “As a consequence of advances in the semiconductor industry in the late 1970s and early 1980s, small sats can now perform some of the tasks that only large satellites could do before.”

Clark founded Clyde Space after a successful career with Surrey Satellite Technology where he finished up as head of Power Systems, a role that gave him 11 years experience on over 20 missions, a career he is justly proud of. Most recently, Craig lead a team in the development and production of the power system for GIOVE-A, the first Galileo mission for ESA, which was launched in December 2005.

“Some non traditional spacecraft manufacturers, such as universities, are finding out the importance of a well designed power system the hard way. Some of these missions are seeing on-orbit power system failures. The power system may not be the sexiest electrical subsystem on board but it’s vital to the success of a mission.”

His next venture will be to develop unique directional control systems. “I have done a lot of work on reaction wheel systems, which are used to control where the satellite is pointing,” says Clark who worked on the flywheel for the ESA’s comet exploration mission, Rosetta. The flywheel is part of the lander and is due to land the comet in 2014, 12 years after the start of its journey in 2004.

Find out more at www.clyde-space.com