Paper ID: 68720
oral

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

Author: Mr. Derek Harris
Skyrora Ltd, United Kingdom

SKYRORA: BUILT TO LAUNCH, BUILT TO LEAD

Abstract

Skyrora is a Scottish aerospace company specialising in the design, manufacture and deployment of rockets for the small satellite market. Skyrora aims to support the growth of the UK space sector through the design and development of an end-to-end orbital launch service, whilst identifying gaps in the UK and European space industry supply chain to create carefully selected, innovative solutions. Our diverse team is constantly expanding with individuals spread across workshops in the UK and Europe working to achieve environmental launch. Inspired by the Black Arrow programme, this UK space heritage allows Skyrora to utilise proven technology such as our chosen propellant mixture of hydrogen peroxide and kerosene, producing less CO2 than competitors. Skyrora continues to develop Ecosene, the replacement high-grade aerospace fuel made from non-recyclable plastics. Alongside advanced manufacturing methods and a 'step-by-step' approach for critical testing and de-risking, we can provide versatile, cost-effective and sustainable access to space for small satellites, all launching from UK soil.Skyrora are developing our sub-orbital launch vehicles, allowing testing of the avionics, ground control systems, trajectories, payload deployment and recovery. In 2018 Skyrora launched the first of these vehicles, Skylark Nano, from Scotland. In May 2020, Skyrora were the first to successfully complete a static fire test in the UK for 50 years with Skylark L, and later launched the second sub-orbital rocket, Skylark Micro. With the launch of SkyHy and Skylark L, we will cross the Karman line to reach space and can continue to test the advanced technology before launching our commercial Skyrora XL vehicle. These milestones have been greatly received by universities and students looking to use this technology for research, as well as stakeholders, clients and investors who support Skyrora and Government ambitions to deliver the UK's sovereign space launch capability. In March 2021, we received funding of 3 million euros from the European Space Agency (ESA) putting Skyrora on track to becoming the first UK company to launch from European soil. Skyrora XL, the 23m orbital launch vehicle provides Skyrora's main launch service and is due to launch for the first time from the UK in 2022, having signed a multi-launch agreement with SaxaVord Spaceport in Shetland. Skyrora XL is a three-stage liquid propulsion vehicle with a re-ignitable third stage for in-orbit manoeuvrability. This allows payloads of up to 315kg to be placed in the exact orbit required, up to an altitude of 500km.