

LIQUID ROCKET ENGINE TESTING AT ESRANGE SPACE CENTER

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Abstract:

Esrange Space Center, owned and operated by the Swedish Space Corporation (SSC) since 1972 and located in the north of Sweden above the Arctic Circle (68°N, 21°E) has access to a vast, unpopulated recovery area of about 5200 km². The Esrange test bed facility now enables the development, qualification and acceptance testing of new liquid rocket engines in addition to pre-existing facilities to validate hybrid and solid motors. Additional facilities include expanded capabilities to test reusable first stages through jump tests and controlled landings. Two European commercial microlauncher companies; Rocket Factory Augsburg and Isar Aerospace continue to develop and qualify their engines at two separate facilities tailored to their specific needs and evolving requirements. The two facilities have enabled capability-building among various stakeholders within the supply chain from; fuel and oxidizer supply, to infrastructure development for rocket facilities in arctic conditions, whilst developing an iterative process to optimize general operational and safety procedures. The evolution of capabilities and strengthening of customer-range cooperation since 2020 has allowed for serious introspection and a push towards increasing the efficiency in operating and implementing test facilities as more diverse customer needs are understood and integrated. As Esrange Space Center and the offered services continue to grow, the goal is to build on and enhance the existing legacy to respond to, support and host the future commercial space sector in mainland Europe from development to launch.