

Abstract

With the boom of the New Space movement, a growing number of startups and small and medium-sized companies are offering space-based solutions to stimulate the space industry, not only in Germany but all across Europe.

Hylmpulse Technologies, ISAR Aerospace, and Rocket Factory Augsburg are three of the most promising European mini-launcher companies located in Germany.

In 2020, the companies Tractebel DOC Offshore, Media Mobil, OH B and Harren & Partner joined forces in the German Offshore Spaceport Alliance known as GOSA. Their unique competencies in their respective fields of maritime offshore and space projects promise to make it an exciting venture.

The aim is to provide a maritime launch base in the heart of Europe, specifically in the northwest German economic zone located by the North Sea. This will enable launches of small satellites to Polar or Sun Synchronous Low Earth Orbits. It will also provide an opportunity for the growing New Space location market to develop, creating a broad economic ecosystem spanning from the manufacturer of the smallest screw to the complete application of the product.

The GOSA consists of two main focus areas: On-Shore and Off Shore.

On-Shore consists of the preparation area, complete with a launcher assembly building located on a peninsula in Bremerhaven's harbor.

The Off-Shore will be the launch vessel itself and the corresponding launch control vessel.

The operational concept is for the entire launcher assembly, the preparation and integration of its payload, to be completed at the Bremerhaven preparation building. The launcher will then be integrated into the launch box and transferred to the RoRo-Ship.

After its shipping to the launch site, the offshore German exclusive economic zone (EEZ), the launcher will be erected and prepared for launch.

The infrastructure and the operational concept is kept modular, with flexible interfaces to be able to serve different types of launchers and offer rapid turnaround between launches. The project has the ambitious target to offer launch possibilities for European and international mini launcher providers, as well as to serve the worldwide growing small satellite market.

Currently, a feasibility study is being performed under the leadership of OH B.

The main challenges from the overall system are to assess if a launch from the North Sea is possible with regards to environmental, safety and economical aspects.

One of the key technical challenges is to develop a launch box system. This can be easily integrated into an existing commercial RoRo-Ship together with all relevant systems, which are usually present for a launch complex.

This paper will provide an overview of OH B DC's involvement with GOSA. It will focus on the launch box and its main components, but also provide information about the preparation building, the telemetry, and the control and command systems.