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VTOL-EGM UNMANNED AERONAUTICS FROM BREMEN

A joint project of OptoPrecision GmbH, the b.r.m. IT & Aerospace and the Institute for Environmental Physics (iup) at the University of Bremen.

Within the framework of the project, a UAS was developed for efficient environmental monitoring. This makes it possible to reach the location of the source of pollution and carry out direct measurements. This will be used for monitoring of ship emissions. OptoPrecision's unmanned aerial vehicle VT-4 is a robust CFRP high-performance vertical take-off aircraft with hybrid propulsion. The VT-4 "Rochen" was designed for long flight times at low altitudes. From 2019 to 2022, the VTOL-EGM project was funded by the European Regional Development Fund (ERDF) and successfully completed. The developments of the VTOL-EGM project have clarified requirements in the area of complex BVLOS operations and formed the basis of a future U-Space living lab North-West Germany and the German bight.



DEVELOPMENT OF A UAS CONTROL CENTRE IN BREMEN FEASIBILITY STUDY



Ministry of Economic Affairs,
Labour and Europe





U-SPACE LIVING LAB NORTH-WEST GERMANY AND THE GERMAN BIGHT

The challenges and solution for the use of drones in industrial, university and civil areas require an orderly and coordinated use of the corresponding airspace. To make this possible, a living lab is planned on the basis of the implementing regulation EU-2021/664:

Based on the U-Space concepts, an integrative airspace for manned and unmanned aviation is to be created. With the support of AVIASPACE BREMEN e.V., the goal of safe airspace integration is envisaged by the initial steering group: b.r.m. IT & Aerospace, Droniq, Fraunhofer IFAM, OptoPrecision, Airfield Oldenburg – Hatten.

The goal of a cross-border project “U-Space North-West Germany and the German bight” is the gradual development of such airspace structures, the operation of UAS within these structures will experience a considerable simplification and automation of coordination as well as an increase in safety, taking into account all relevant airspace users.

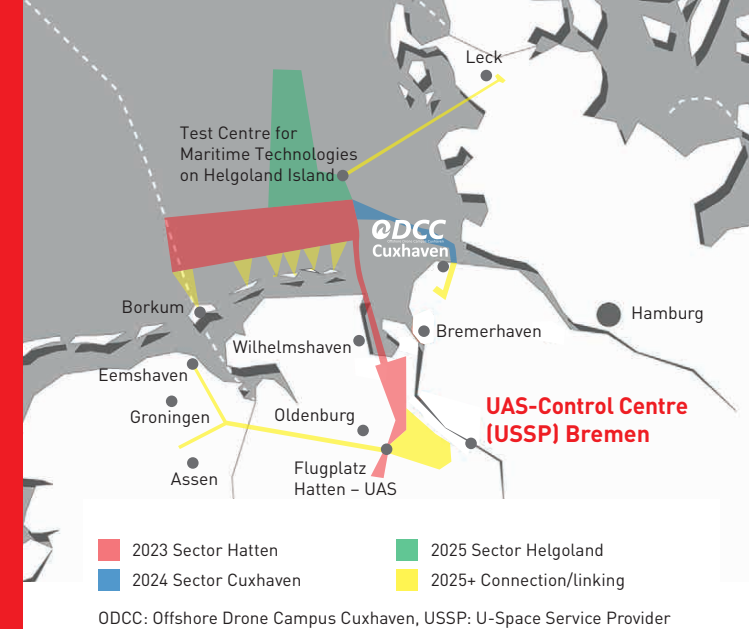
Initial flight routes could connect the first sites: Test Centre for Maritime Technologies on Helgoland Island, Flugplatz Oldenburg – Hatten (Hatten-UAS), Offshore Drone Campus Cuxhaven (ODCC).

To realise this, suitable routes for drone operations require an expansion of corresponding infrastructure and the provision as well as procedural standardisation and development of suitable operational arrangements. The future project framework foresees a cooperative involvement of all stakeholders concerned. Nearly 200 stakeholders are already involved – further expansions are welcome.

BREMEN AERONAUTICS AND SPACE LOCATION

In the aerospace industry, more than 140 companies and 20 institutes with around 12,000 employees generate annual turnover of more than 4 billion euros.

Measured against the number of inhabitants, Bremen has the highest employment density in these industries in Germany. Future-oriented jobs, especially for highly qualified people, characterise the space industry and the aviation sector. Top-level research in the state of Bremen provides sustainable support for industry in areas such as materials science and production technologies, space systems, remote sensing, bionics and robotics.



ODCC: Offshore Drone Campus Cuxhaven, USSP: U-Space Service Provider

UAS CONTROL CENTRE IN BREMEN

Whether for industrial, university, governmental, security or civilian purposes, the use of drones will increase sharply in the coming years and will very likely even exceed the volume of manned air traffic. For coordination purposes, central offices are needed that can initiate collision avoidance and appropriate avoidance procedures for unmanned aviation.

The establishment of a UAS control centre Bremen (USSP = U-Space Service Provider) is being investigated within the framework of a feasibility study. “In the feasibility study, in addition to the elaboration of the essential USSP services (network identification service, geo-sensitisation service, UAS flight approval service, traffic information service, weather information service and compliance monitoring service), other functions such as data security and consistency in data centre operations, green IT concepts, connectivity to air traffic control organisations and a GDPR-compliant digital transformation will be considered,” says Harald Rossol, b.r.m. IT & Aerospace. For this purpose, b.r.m. IT & Aerospace has been awarded a grant for the implementation study by the “Forschungs-, Entwicklungs- und Innovationsprogramm (FEI)” (Research, Development and Innovation Programme) of the Bremer Aufbaubank (BAB).