

# DRONIQ FOR FLIGHT



## PROJEKT LARUS

### DRONES SUPPORT MARITIME RESCUE TEAMS OVER BALTIC SEA

**THE OBJECTIVE** When a ship is in distress, every minute counts. People who have been shipwrecked can be rescued quickly provided that precise information is available on the location and the exact situation at the scene of the accident. Conventional distress alerts, however, often do not contain all the details required for an efficient deployment of maritime emergency services. Rapid aerial detection is a decisive improvement here. In the LARUS project, an unmanned aerial system is being tested which is capable of supporting the search and rescue of people in distress at sea. The Technical University Dortmund, RWTH Aachen University, the German Maritime Search and Rescue Service (DGzRS) and the Bremen-based drone manufacturer Hanseatic Aviation Solutions all played a significant role in the project. In the project, an unmanned fixed-wing aircraft with a wingspan of 3.6 metres was upgraded to meet the requirements of the maritime rescue service and equipped with various additional communication and sensor components.

ALTITUDE 760 M

1.200 KM DISTANCE

MARITIME RESCUE

OVER THE BALTIC SEA

DISPLAY THE AIR SITUATION



**THE IMPLEMENTATION** For the first time, an unmanned aerial system has been integrated into a scenario for the search and rescue of people in distress at sea off the German coast in waters that fall under the responsibility of the German Maritime Search and Rescue Service (DGzRS). The mission scenario involved locating a dummy in the Baltic Sea. The drone quickly found the dummy, transmitted the data to the sea rescue cruiser Berthold Beitz and the Maritime Rescue Coordination Centre Bremen, and guided the rescuers safely to the "shipwrecked person". The LARUS drone is equipped with a specially modified transponder for the automatic identification system (AIS) commonly used in shipping. In the final phase of the project, the system flew around 660 nautical miles altogether (more than 1,220 kilometres). It covered a large part of this distance beyond the line of sight of the ground station at altitudes of up to 760 metres.

**OUR CONTRIBUTION** Droniq provided the UTM service (UAS Traffic Management system) to display the air situation. For this purpose, the fixed wing aircraft from Hanseatic Aviation Solutions was equipped with a hook-on device (HOD). This device is a small LTE module with integrated SIM card and GPS receiver. The HOD reported the current position of the aircraft to the servers of DFS, the German air navigation service provider, through Deutsche Telekom's mobile communications network. From there, the current air situation was made available to the pilot and the other project partners on a web-based display. The position data of relevant manned air traffic in the vicinity were also displayed in the UTM system. Thanks to this combined air situation display, two unauthorised flights into the airspace closed for test flights (ED-R) were detected in time, and the test flights could be interrupted accordingly in time.

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