# DIBAU

DIBAU is developing an integration concept for a hydrogen-electric propulsion system in the Do328 UpLift and laying the foundation for a flight permit.

### Six partners

The consortium led by H2FLY covers the entire chain: from the propulsion system and the aircraft to operations at Stuttgart Airport.

### 30 months

From August 2026 to January 2029 the integration concept takes shape: from the requirements for the demonstrator to the path to the flight permit.

### A real aircraft

The concept is being developed for DLR's Do328 UpLift, an existing demonstrator aircraft.

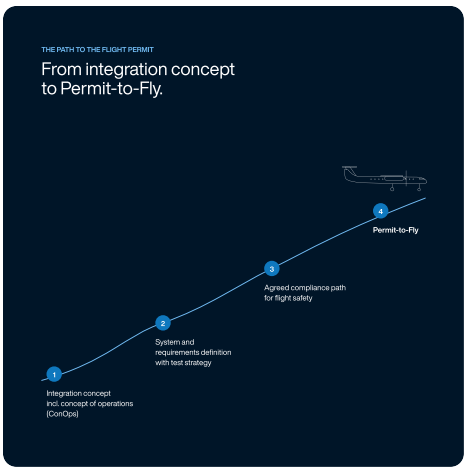
### Federally funded

DIBAU is part of the aviation research programme LuFo Klima VII-1.

## THE CHALLENGE

Hydrogen-electric propulsion is considered key to emission-free flight. For aircraft in certification category CS-25, however, proven integration concepts are still lacking. Liquid hydrogen must be stored, conditioned and distributed safely on board, the fuel cell system integrated into structure, cooling and electrics, and operation aligned with the existing aircraft architecture. On the ground there is no refuelling infrastructure at the airport, and there is not yet a robust compliance path for the flight permit.






## THE PROJECT GOAL

DIBAU is developing a conceptual integration guide for a hydrogen-electric propulsion system in the Do328 UpLift demonstrator aircraft, laying the foundation for a flight permit (Permit-to-Fly). The aim is a complete integration concept including a concept of operations (ConOps), a verifiable system and requirements definition with test strategy, and an agreed compliance path for flight safety. This is complemented by health monitoring, a display and control concept in the cockpit, the connection of the flight test instrumentation, and a refuelling concept with a mobile liquid hydrogen ground station at the airport.

HOW THE CONSORTIUM WORKS

## Six partners from research, aviation industry and airport operations work together in DIBAU.

The partners work together along the chain aircraft – propulsion system – operations. First, they gather the requirements and boundary conditions of the demonstrator and assess integration options for the tank, fuel cell system and electrical power distribution. Building on this, they develop the system definition, interface and safety assessments and the test strategy to demonstrate airworthiness. In parallel, the partners work out operating and emergency procedures, the cockpit interface and the connection of the instrumentation, and bring them together with the concept for the mobile liquid hydrogen ground station and the processes at Stuttgart Airport.

PARTNERS AND FOCUS AREAS

### H2FLY

Design of the hydrogen-specific systems – fuel cell, $LH_2$ tank and distribution, cooling –, safety-related basis for the compliance demonstration and development of the mobile $LH_2$ ground station

### German Aerospace Center (DLR)

Integration and operating concept for the Do328 UpLift, flight safety assessment and Permit-to-Fly strategy in coordination with the authority

### Diehl Aerospace

Health monitoring of the propulsion system based on integrated modular avionics (IMA) and a display and control concept (HMI) for monitoring on board or from the ground

### BTU Cottbus-Senftenberg

Selection of e-motor and inverter with a view to certifiability, thermal management of the overall system and safety analyses for the Permit-to-Fly

### CHESCO

Roadmap to the Permit-to-Fly with verification and test strategy, detailed analysis of the electric powertrain and assessment of the required test rigs

### Stuttgart Airport

Requirements for airport facilities and processes, refuelling concepts, contribution to the mobile $LH_2$ ground station and transferability to other airports

FUNDING

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