

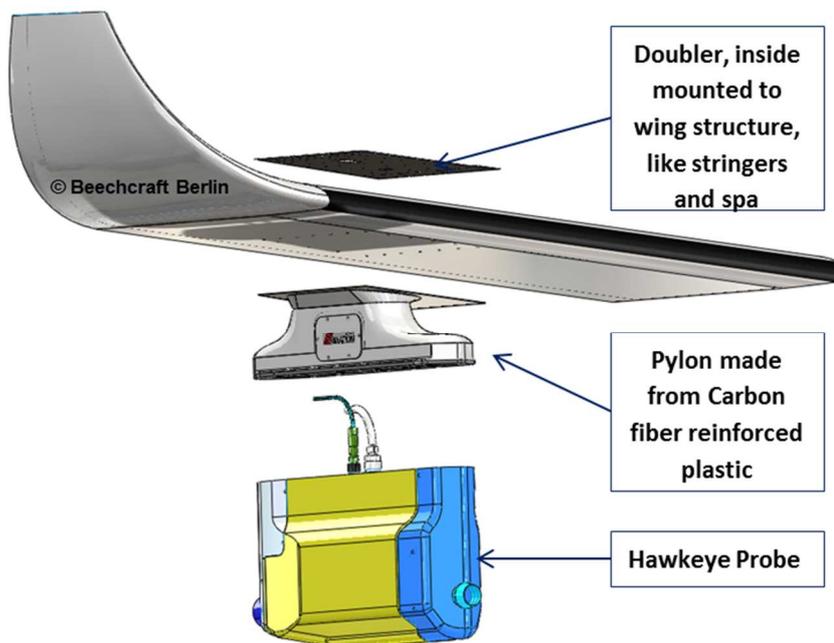
Weather research and Airborne Laser Scanning with a KINGAIR C90 EASA STC 10042830



The King Air C90GTi is modified to an airborne laboratory for atmospheric environmental research missions as well as laser scanning for 3D geo-referencing application. Two configurations are currently operating:

1. Atmospheric environmental research with Hawkeye and CAPS-probe certified for flight into known icing:

Within this configuration, a new high-sophisticated weather research probe, named 'Hawkeye', from SPEC Inc. has been installed on the right wing tip. This STC



contains a Beechcraft Berlin designed standard hard point for all **KINGAIR** wing tips.

The pylon mounted on the hard point is customized designed by Beechcraft Berlin Aviation for the Hawkeye from SPEC Inc. It's made from carbon fibre plastics and carries a quick connection for the cables (fibre optics and conventional

cable). The probe is a cloud particle and precipitation probe that combines a forward scattering module for sizing particles, a CCD camera and two imaging arrays. The **overall size and weight of the probe are (810*406*165) mm and 30 kg**. Power and Fibre optics cables are routed thru the wing.

Left hand wing tip carries for this configuration the CAPS probe. CAPS-Probe (Cloud Aerosol and Precipitation Spectrometer) is used for meteorological research purposes like detection of small particles in the atmosphere. The CAPS system is a combination probe to characterize cloud parameters. CAPS include a Hot-wire Liquid Water Content Sensor, a Cloud and Aerosol Spectrometer and a Cloud Imaging Probe. The system was developed by DMT (Droplet Measurement Technology). The probe is mounted onto the customized Beechcraft Berlin designed and provided wing pylon. The system on wing tip weights all together ~30kg.



CAPS Probe on Left hand wing tip

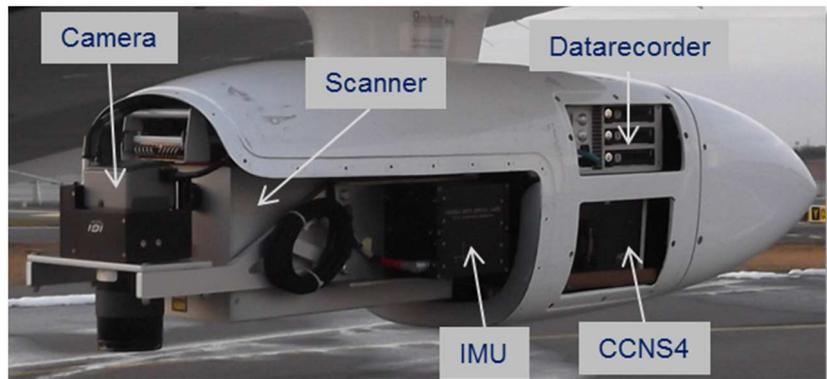
2. Airborne Laser Scanning with Riegl Laser Measurement Systems on the left hand wing tip:

The CAPS probe can be exchanged by a LIDAR system for 3D geo-referencing application for a second configuration. Then, the wing tip of the King Air is equipped with a multi-purpose pod that carries the LIDAR and flight mission equipment.



LIDAR and Mission systems inside external multi-purpose pod

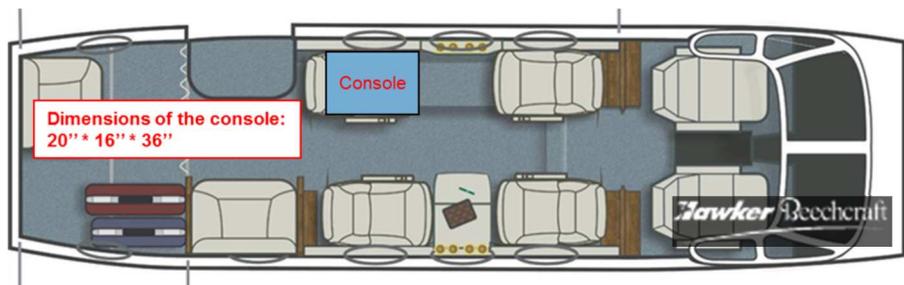
This multi-purpose pod consists of Laser Scanner Camera, Datarecorder, Inertial reference unit (IMU), CCNS4 and Sensor Measuring Unit (SMU). The entire system combined aircraft guidance, mission planning and direct georeferencing. Data recorder and CCNS4 are mounted on shock mounts on separate shelves. The rear end enables space for further equipment and side access to the data recorder and CCNS4. This multi-purpose pod weighs in the shown configuration 60kg.



For an easy system demount the wing tip has a quick change interconnection panel. It is fix to the wing and disappears under the pylon after installation.



Inside cabin one passenger seat is superseded by a measuring console to carry power control, inverter, measuring and computer systems.



Ethernet sockets are intergrated into the cup holder of the table for remote controlling the alls systems.

The measurement system - master switch panel is installed at the instrument pedestal to give full power controll to the pilot. A load shedding system designed by Beechcraft Berlin to cut off electrical power in case of any alternator failure.

