COCKPIT PROCEDURE TRAINER
THE CH-53 HELICOPTER AS A USE CASE

THE CHOSEN TRAINING SYSTEM FOR 3 DIFFERENT VARIANTS OF THE CH-53: GA, GS AND GE

Airbus Helicopters, the main contractor for the refitting of the CH-53 helicopter, commissioned Telespazio Germany initially to develop a Cockpit Procedure Trainer (CPT) for the CH-53GA and to deliver both, a mobile PC-based and a replicated cockpit solution using touchscreen technology. The development of the CPT was performed in parallel with the development and testing of the first CH-53GA helicopter prototype. The CPT has been the first training device available for the CH-53GA aircrew training.

FIRST VARIANT CH-53GA

In the context of a modernisation programme, carried out by the German Army, 40 German Army helicopters of type CH-53 were upgraded to the new version CH-53GA. That upgrade included the modernisation of the avionics and mission equipment system as well as the electronics and electrical system. The flight deck is now equipped with five big multi-function displays and two control & display units.

DELIVERY

Telespazio Germany delivered the CPT to Airbus Helicopters Deutschland in April 2011 for the training of the aircrew instructors. Subsequently, regular training started at Bundeswehr sites, currently at the Helicopter Squadron 64 (HSG 64) in Laupheim and Holzdorf. Four touchscreen cockpits equipped with instructor stations and displays for interactive diagrams are installed onsite. In addition to that, the CPT software is installed on a number of PCs, where it is used for part task training at the HSG 64 and for technician training at the Technical Training Centre of the German Air Force in Faßberg.

UPGRADE FOR THE VARIANTS CH-53GS AND GE

Since the year 2018, Airbus Helicopters has upgraded the older variants GS and GE of the CH-53 for the Bundeswehr. The upgrades include multi-function displays for the cockpits and an integration of a flight management system (FMS). Telespazio Germany was contracted by Airbus Helicopters to extend the functionality of the CPT software for covering the modernised variants GS and GE of the helicopter. The CPT now enables training for three variants: the CH-53GA, GS and GE. The CPT facilitates a seamless transition from one variant to the other during the training sessions.

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ONE TRAINING SYSTEM – TWO CONFIGURATIONS

The replicated cockpits with a combined instructor station include cyclic and collective sticks, pedals and an out-of-the-window view, which allows not only training on the autoflight control system but can even be applied for manual flight procedure training. In order to adapt the CPT to more flexible training conditions, the mobile version of the CPT also runs on laptops and can be used at any site for the training of the CH-53 aircrew. Both versions of the CPT – the replicated cockpit and mobile CPT – are based upon the same simulation & control infrastructure and graphics software.

DIDACTIC RESOURCES

At the instructor station, the instructor can monitor the actions executed by his students (Student Monitoring Mode), but can also interact directly with all elements of the helicopter, e.g. in order to demonstrate a procedure or a critical situation (Instructor Demonstration Mode). The Computer Guided Mode is available on the mobile version of the CPT and supports students to learn procedures in self-guided training. The instructor creates the procedures by recording his own lessons and actions together with feedback and support information, which are available to the students if necessary.

PROPERTIES

The simulation of the CH-53GA is combined with a range of training means that make the CPT an efficient training tool.

- **Malfunction Generator:** The trainer can draw up a schedule that activates the pre-defined helicopter system malfunction at any time during a training session.
- **Tactical Scenario Generator:** This feature allows the creation of threat scenarios. Within the simulation, foreign objects interact with the various helicopter systems like the Electronic Warfare System or the Identification-Friend-Foe (IFF) System.
- **Interactive Diagrams:** The interactive nature of the diagrams enables in-depth understanding of the system. They are displayed on a separate smart board, fully integrated into the simulation and show the system status at all times. Malfunctions can be activated directly at the components shown in the diagrams and have an immediate impact on the simulation.
- **Simultaneous Adjustment:** The configuration of the helicopter itself can even be modified during a simulation, e.g. by adding supplementary fuel tanks or sand filters.
- **Display of the Environment:** A commercial off-the-shelf and very affordable solution for the display of the environment and the environment conditions is added to the CPT. It supports the training for take-off and landing as well as for operating under degraded modes of the autopilot.

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