



A400M VIRTUAL WORLDS

A400M TRAINING WITH VIRTUAL AND AUGMENTED REALITY EXTENSIONS

Rheinmetall has a long and distinguished history in the development and production of innovative and advanced training systems for the Air Force, Army and Navy.

The company is involved in numerous multinational and global training programs for a wide range of aviation-based platforms such as the NH90 helicopter, Tiger attack helicopter, Eurofighter (Typhoon) combat aircraft, A400M military transport aircraft and C-390 military transport aircraft.

Rheinmetall offers a complete range and tailored training solutions from computer-based training, procedures and systems trainers, cockpit procedures and maintenance trainers to full-mission flight simulators up to Level-D as well as networked tactics simulators.

Several virtual and augmented solutions have already been developed and implemented in the area of flight simulation at Rheinmetall Electronics. The applications allow users to immerse themselves in a virtual world in a variety of ways as part of their training to maximize their personal training experience. These remain in the memory for a long time and raise the training effect to a new, next level. Furthermore, these training solutions are cost-efficient and can be made

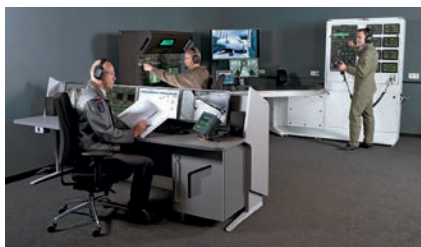
available after the initial development as often as needed to perform a large amount of training courses in parallel.

FLIGHT SIMULATION TECHNOLOGIES

- Introduction of holistic training tools in the field of flight simulation.
- Simple and intuitive augmented and virtual reality handling, exactly adapted to the respective field of application.
- For military transport aircraft, e.g.:
 - Embraer C-390
 - Airbus A400M
 - Lockheed Martin C-130J
- For helicopters, e.g.:
 - NHIndustries NH90
 - Airbus Helicopters Tiger
- In the field of
 - pilot and crew training
 - loadmaster training
 - maintenance training
- Use of new, modern and intuitive technologies to obtain an holistic sustainable training on highest standards.

A400M LMWST VIRTUAL REALITY ADD ON – EXAMPLE 1

Within the scope of A400M Loadmaster Training, there are Loadmaster Workstation Trainer (LMWST) developed, integrated and delivered that include a virtual representation of the situation in the cargo bay. Now the representation based on fixed camera positions has been extended with the help of virtual reality hard- and software. The trainee can now move freely in his virtual world in the cargo hold and can observe all situations from any possible view. This helps him massively to prepare ideally for his later tasks on the A400M aircraft and also to internalize malfunctions and the correct behavior on it in a drill-like manner.



A400M CHT AUGMENTED REALITY ADD ON – EXAMPLE 2

The CHT (Cargo Hold Trainer) provides a full-scale replica of the rear fuselage with a fully functional cargo compartment. The system provides hands-on training for all ground operations and selected in-flight scenarios without the need to take up valuable aircraft operating hours. Key training objectives include mission configuration conversion, load preparation, loading and unloading, performing on-site and in-flight procedures, multi-crew operations and crew resource management. What was missing here was an opportunity to train procedures in the area of aerial delivery. These include, for example, the dropping of cargo or the dropping of paratroopers, including the problems that may occur. Especially in this area the use of Mixed/Augmented Reality is perfectly suited and overlays the CHT device or the aircraft on the ground with virtual animated content/loads to be able to perform training for e.g. Aerial Delivery Missions in a realistic manner.



A400M MTR WITH AUGMENTED REALITY SUPPORT – EXAMPLE 3

The central training facility for the technical and logistical training of the A400M aircraft technicians in accordance with EASA guidelines is implemented in Wunstorf/Germany at LTG62. For this purpose, Rheinmetall supplies maintenance training rigs (MTR) on which the maintenance procedures can be trained without the need for aircrafts. The rigs are supplemented by augmented reality, which can be used to train the entire range of procedures, including e.g. cockpit checks, securing circuit breakers, affixing warning notices which could not be trained on the hardware rigs themselves. This AR support enables certification according to EMAR/DEMAR regulations.

