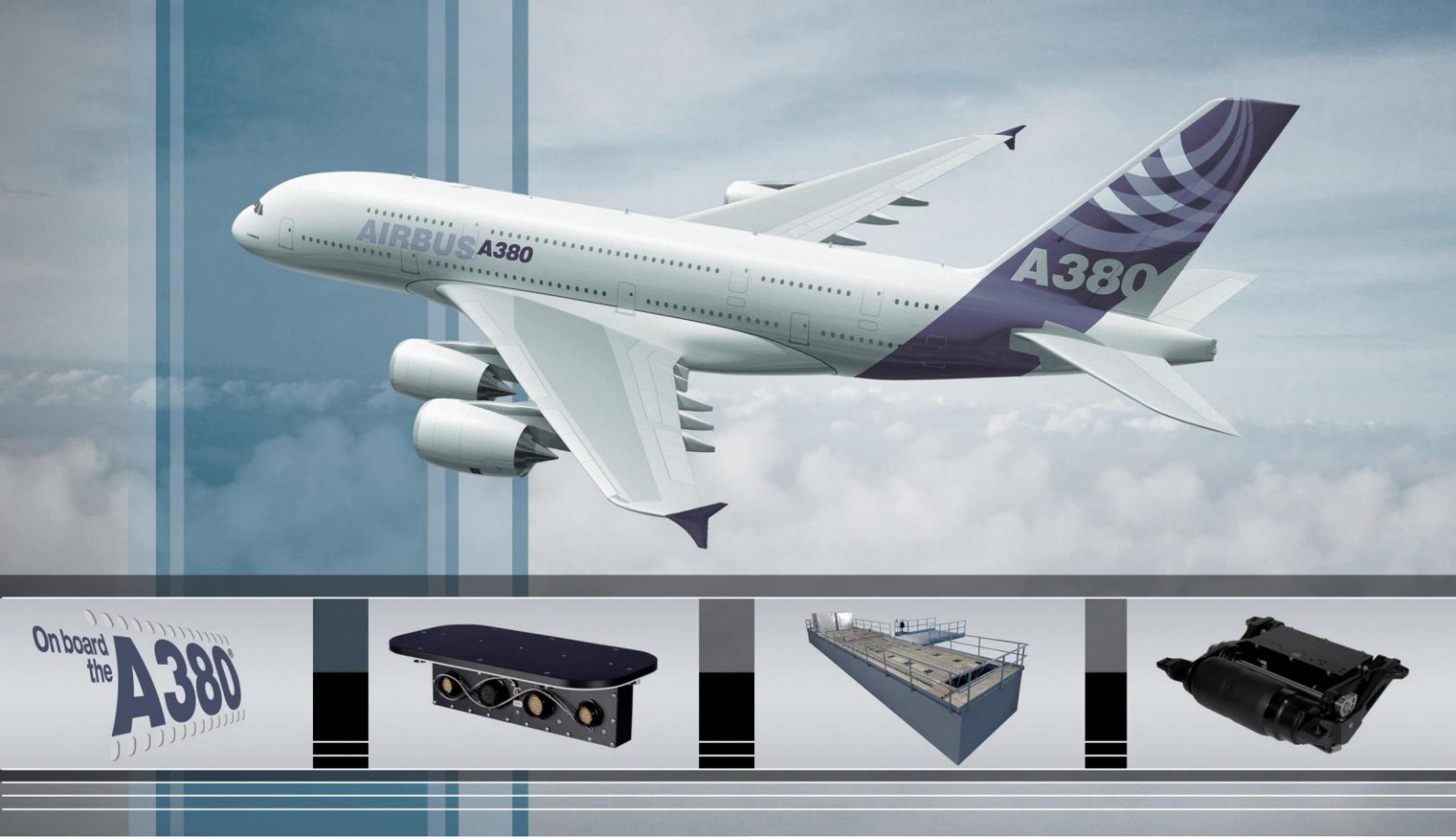

Electrical Cargo Loading System

Innovation for the A380

Cargo Loading Systems from Airbus DS Airborne Solutions (ADAS) in Bremen are fitted on numerous Airbus aircraft (e.g. A330/A340-200/300, A340-500/600 or the A300-600 Freighter), and are also part of the Airbus flagship A380. Two and a half years in development, this state-of-the-art ADAS system ensures that luggage and other cargo is quickly loaded, and thus plays a crucial role in keeping flights on schedule.

The A380 Lower Deck electrical cargo loading system embodies absolutely new features compared to previous ADAS designs and ensures that luggage and other cargo is quickly loaded.
For the first time, the system will communicate with the on-board maintenance system (OMS) via a specially developed control box which interlinks all systems of the aircraft to a central computer. It is now possible to monitor the status of the cargo loading system components (Control System and PDUs), for example, from the cockpit. The second feature is an automatic rotation process for the pallets and containers. This “pallet turning” feature permits optimum use of the rear cargo hold.

Also absolutely new are the power drive units (PDUs) of the cargo loading system. Unlike conventional models, these new drives have two motors which allow independent elevation of the power drive unit (“Lift”) and turning of the roller (“Drive”).

The system architecture is distinguished by its very high flexibility. All system units communicate via a CAN bus network. Allied with a decentralized concept of using sec-tor control boxes this allows for modular adoption of the system to different cargo compartment sizes and saves weight.

Before the ADAS components were integrated into the A/C, they already had undergone extensive practical trials, as simulated tests in our modern laboratories in combination with system tests on our new A380 Lower Deck Test-Rig. Additionally ADAS has performed – thanks to Lufthansa – an in- service evaluation on an A340-600 for around 12 month. Together with the A/C our system has received its type certification in late 2006.

Technical Data

System Componentes	Technical Features
Operations	- With electrical aircraft power - Independent from other ECLS - On ground only - Semi-automatic (ulds moved by the ECLS and manually locked) - One man operation by OCP and ICP handling
Main functions	- ULD transport with electrical power drive units - Human machine interface - Monitoring of electrical system components - Transmit of fault data to OMS via ARINC - Receive of A/C data
Compartment Control Box (CCB)	– Installed in the doorway area of each cargo compartment – Distributes, controls and monitors the AC and DC cargo compartment power supplies – Monitors the joystick commands from OCP and ICP – Monitoring and control of transversal pdu‘s in the ballmat area
Sector Control Box (SCB)	– Installed in the floor of the cargo compartments – Control and monitoring of pdu‘s and proximity switches
Door area Control Box (DCB)	- Installed behind the side wall lining in the FWD and AFT cargo compartment - Monitors the ARO proximity switch in case of the pallet turning unit - Monitors the door sill latch proximity switches - Communication with OMS via ARINC - Communication with DSMCU
Outside Control Panel (OCP)	- Located behind a service door in the outer skin of the A/C fuselage besides the cargo door - Standard OCP for FWD and AFT cargo compartment - OCP for pallet turning at AFT cargo compartment - Option OCPLS for lane select function - 5-way joystick including SPLIT command - System power ON/OFF switching and indication
Inside Control Panel (ICP)	– Located in the ceiling of the ballmat area near the cargo door – 2-way joystick for FWD/AFT command
Power Drive Unit (PDU)	– Designed to transport ulds with both smooth and uneven bottoms – Provides ULD hold function – Equipped with an ULD present sensor – Self-erect PDU (installed in the ballmat area driven in longitude and transversal direction) – Spring-lift PDU (installed outside the ballmat area driven in longitude direction)

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