
The purpose, function and layout and locations of an ECAM cockpit

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The pilot's job on all aircraft includes continuous monitoring of the flight instruments. It also includes checking the plane for damages and dangers for proper operation of the engine and airframe systems. For commercial aircrafts, this can mean monitoring numerous gauges such as temperature and pressure in addition to manoeuvring the aircraft. The electronic centralized aircraft monitoring (ECAM) system is designed to assist the pilot with this duty.

The basic concept behind ECAM is to automatically perform the monitoring duties for the pilot. When a problem is detected, or a failure occurs. The primary display unit, along with a sound and visual display alerts the pilot. Corrective action that are needed to be taken are then displayed to correct the failure. By performing system monitoring automatically, the pilot is free to fly the aircraft until a problem occurs and is detected by the ECAM unit.

ECAM Unit Arrangement Initial ECAM systems only monitored airframe systems and engine parameters were displayed on the traditional full-time cockpit gauges. The newer models of ECAM systems incorporate engine parameters displays and airframe systems.

An ECAM system has two monitors. These may be LCD or CRT. The left or upper monitor, depending on the aircraft panel layout displays information on system status and any warnings associated corrective actions in a checklist format. The right or lower monitor displays accompanying system information in a pictorial form, such as a diagram of the system being referred to on the primary monitor.

The ECAM monitors are typically powered by separate signal generators where aircraft data inputs are put into two flight warning computers. Analog inputs are first pushed through a system data analogue converter and then into the warning computers. The warning computers process the information and forward information to the signal generators to illuminate the monitors.

There are four basic modes of an ECAM system which are flight mode, advisory, failure mode and manual. For a normal flight the flight phase is used. The phases of a normal aircraft on flight phase is pre-flight, take-off, climb, cruise, descent, approach and post landing. Advisory and failure related information will appear automatically as the situation might be. When an

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advisory information is shown on the primary monitor, the secondary monitor will automatically display the system schematic with numerical values. The same is true for the failure-related mode, which takes control over all other modes regardless of which mode is selected at the time of the failure. Colour coding used on the display unit to draw attention to matters in order of importance. Display modes are selected via the ECAM control panel shown in the unit arrangement. Flight fault announcing system.

ECAM flight warning computers self-test upon start-up. The signal generators are also tested. A maintenance panel allows for testing annunciation and further testing upon demand. BITE stands for built-in test equipment. It is standard for monitoring systems to monitor themselves as well as the aircraft systems. All of the system inputs to the flight warning computers can also be tested for continuity from this panel, as well as inputs and outputs of the system data analogue converter. Any individual system faults will be listed on the primary display as normal. Faults in the flight warning computers and signal generators will annunciate on the maintenance panel. Follow the manufacturer's guidelines when testing ECAM and related systems.

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