# FMGC – Flight Management and Guidance Computer

**GUIDANCE**

GENERAL

The FG part gives the AP, FD and A/THR functions. These functions work according to modes generally chosen on the FCU. The normal way to operate the aircraft is to use the management part as reference source for the guidance part.

**AP**

The AP function calculates the signals for the flight controls in order to follow the selected modes. The AP controls the pitch, roll and yaw axis according to the selected modes. Example of AP mode: Altitude hold.

**FD**

The FD displays the guidance commands on both PFDs, allowing the pilots to fly the aircraft manually according to the FMGC demands. Two cases have to be considered: AP not engaged: - the FD function displays symbols on the PFD which gives orders to the pilot to maintain the desired parameter(s). In this case, the pilot follows these orders by acting on the flight controls. AP engaged: - the FD function displays symbols on the PFDs representing the AP orders to be monitored by the pilot.

**A/THR**

The A/THR function calculates the signal necessary for engine control in order to follow a given mode. Example of A/THR mode: Acquisition and holding of a speed or a Mach number.

**MANAGEMENT**

**GENERAL**

The FM part mainly gives the flight plan selection with its lateral and vertical functions. The FM part gives the navigation, performance optimization, radio navigation tuning and information display management. Data computed by the FM part is occasionally used by the FG part.

**FLIGHT PLAN**

A flight plan contains the various elements and constraints of the route the aircraft must fly along from take-off to landing. A flight plan can be selected, built-up, modified and monitored through the MCDU.

**LATERAL FUNCTIONS**

The main lateral functions are:

- aircraft position determination,

- Inertial Reference System (IRS) alignment through the MCDU,

- automatic or manual (through MCDU) selection of VOR, DME, ILS, ADF frequencies,

- guidance computation along the lateral flight plan.

A navigation database supplies all necessary information to build a flight plan; however, pilots can enter other data using the MCDU.

**VERTICAL FUNCTIONS**

The main vertical functions are:

- optimized speed computation; the resulting target speed being used as reference for guidance functions,

- performance predictions as time, fuel, altitude, wind at various points of the flight,

- guidance computation along the vertical flight plan.

A performance database supplies necessary data; however pilots have to enter other data using the MCDU.