



GRIFO Radar Family

Introduction

Since the mid '90s, the GRIFO radar family has accumulated more than 100,000 operational flight hours with over 450 units sold. The GRIFO radar family is a X-band coherent pulse-doppler multimode-multirole fire-control radar, providing heightened performance to new and upgraded aircraft.

Its modular architecture, based on a number of configurable compact Line Replaceable Units (LRUs) allows for easy integration with modern avionics suites for a cost effective solution.

Product Capability

GRIFO has a strong and well recognised position in the market, particularly in the area of fighter aircraft retrofits and light combat aircraft. This position has been acquired thanks to a design based on flexible hardware and software open architectures which support tailored customer solutions. Further design and installation advantages include: air-cooling, lightweight, embedded scan converter and symbol generator, HOTAS and HMD designations. The GRIFO customer also benefits from on-site manufacture and repair capabilities.

The radar architecture is based on an air-cooled transmitter with fully-coherent high-efficiency TWT, a multiple-channel receiver, a processor based on high-rate DSP's, wideband waveform generator, four waveforms (low, medium, medium look-up and high pulse repetition frequency), all including range and velocity de-stagger for optimal long range target detection in any clutter condition.

From an operational point of view, GRIFO offers a comprehensive suite of operational, field proven modes supporting air-to-air and air-to-surface missions. The accuracy of its multiple target tracking system can support weapon aiming compatible with semi-active and active missiles (e.g. AIM-9L-M-X, Python 4; BVR). It provides precise air-to-surface ranging supports for CCIP and CCRP. It also offers a modern, effective, flexible ECCM solution and its high resolution capability provides sub-metric SAR and ISAR images in both air-to-air and air-to-surface with target classification and identification. IFF functions are available in accordance with user's mission requirements.

Air-to-air modes include: range while search (normal and adaptive), velocity search, spot, situation awareness, track while scan (10 targets tracked, 8 displayed), single and dual target tracking, raid assessment. Air combat is supported with six different functions.

Air-to-surface modes include: ground mapping (real beam, doppler beam sharpening, SAR), air-to-ground ranging, moving target indicator, track-while-scan, search-and-track of moving

surface targets. Navigation support is provided with weather avoidance, terrain avoidance modes and beacon interrogation.

The GRIFO fire control radar family offers three basic configurations differentiated by their average transmitted power (80, 200, 500) and the size of the flat plate array antennas which are tailored to the specific platforms.

GRIFO-80:

The lightest configuration of the radar, the Grifo-80 is suitable for aircraft with limited cooling and power supply capabilities. It offers support to air combat and ground attack missions. The radar features a Medium Pulse Repetition Frequency (MPRF) waveform, optimising Look-down modes. It does not need ECS thanks to its embedded air cooling system. Mass is less than 55 Kg. The MTBF (flight guaranteed) is over 150 hours.

Platforms where Grifo-80 is installed include the F-7P and F-7PG, operated in Pakistan. Weight, dimension and cooling characteristics make Grifo-80 suitable for sub-wing pod-mounted installation to widen operative missions of very light trainer aircrafts such as K-8 and IAR-99

GRIFO-200:

Available in different versions, all sharing basic characteristics described above and: antenna scan coverage $\pm 60^\circ$ in both azimuth and elevation; mass less than 90 Kg; MTBF (flight guaranteed) over 220 hours. Designed for the F-5E/F platform, the GRIFO-200 is successfully installed, in different variants, on the L-159, Mirage III/EA, HH-60 and has been selected for the M-346. Countries where Grifo-200 is currently operational include Singapore, Brazil, Czech Republic, Pakistan, South Korea.

GRIFO-500:

The most powerful member of the GRIFO family, featuring an air-cooled transmitter. Mass is less than 120Kg. The MTBF is over 220 hours. Basic characteristics and capabilities are shared with GRIFO-200. Designed for the JF-17 platform, GRIFO-500 is suitable also for installation on F-16, Mirage 2000, MiG 29, SU 27.

Future Development

The GRIFO radar is continuously upgraded to meet growing Customer expectations for advanced capabilities and performances. The next stage in GRIFO's development will be the implementation of an E-scan capability.

A road map for the GRIFO radar's development will provide:

- Both versions: M-scan and E-scan (active or passive)
- Multi-channel architecture in reception, supporting high levels of performance in tracking, fully exploiting the advantage provided by E-scan antenna.
- Modular high through-put processor architecture, providing variable computation capability adapted to the needs of the specific application.

Operational advantages will include:

- Detection range increase
- Situational awareness increase

- Reduction of the pilot's workload
- Enhanced functionalities for A/A and A/S, as well as simultaneous radar modes
- Readiness to net-centric operations and integration of sensors

Conclusion

SELEX Galileo has over 60 years of expertise in radar design, development and production. The GRIFO Radar family has maintained a strong market position since the mid '90s. Over 450 units have been sold to six countries for six different platforms, with over 100,000 operational flight hours accumulated.

Thanks to its broad range of capabilities, the GRIFO Radar family offers Customers an optimal solution at an affordable price. As part of the continuous product update, SELEX Galileo has already engaged in a road map for the development of the GRIFO radar family's development towards an E-scan capability.

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