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RECOGNITION

**RAMEM** has been **recognised** as one of the five most innovative SME’s in the Region of Madrid (Spain). Many awards and accreditations recognise its experience, such as two recent awards granted by the prestigious Spanish Network of Business-University Foundations and the Garcia Cabrerizo Foundation.
Design, manufacture and certification of GSE/AGE and Aeronautical Tooling.

- Manufacture of parts for instrumentation, rakes and supplies for RIGS.
- Manufacture of flight parts (for aircraft, engines and systems).
- Rework and repair of flight parts.

RAMEM is part of SUMA AEROSPACE
www.suma-aerospace.com
A company dedicated to the development and supply of onboard electro-mechanical equipment throughout the whole life-cycle of the product.
Olympus engine (Concorde)
1970’s

2010’s
EJ200 engine (Eurofighter)

> EXPERIENCE
More than 50 YEARS of EXPERIENCE:

We are backed by the experience and technology acquired since 1958, with the manufacture of more than 8,000 different aeronautical references. As a result, we form part of a select group of companies that participate in programs such as the A350, A380, A400M, EUROFIGHTER, TIGER, METEOR, EJ200, XWB, TRENT or TP400.

We take pride in supplying flight components\(^{(1)}\) and GSE/AGE for AIRBUS and EUROFIGHTER, instrumentation components for ROLLS-ROYCE, reworks and repairs of flight parts\(^{(2)}\) and engine tools for EUROJET, RR, CFM, SNECMA, P&W and GE.
WE CAN START FROM ONE IDEA

- CAD-CAE: Computerised Design and Mechanical Analysis: Structural, Electrical, Fluid Dynamics.
- Mechanical design as per customer requirements.
- Generation of Technical Publications, IPL and Illustrations, Handbooks, etc. In accordance with ASD2000M and ASD1000D standards.
- Extensive experience in Manufacturing Engineering.
- Concurrent Engineering to speed up development time.

PROACTIVITY

GSE for repairing the leading edge of the EFA front wing. Designed and manufactured by RAMEM for BAES.
Supply of Ground Support Equipment (GSE/AGE) and Tooling

- Lifting slings and handling equipment with CE marking
- Stands
- Frames
- Platforms
- Trolleys
- Benches
- Protections
- Extractors
- Tools (pneumatic, hydraulic, …)\(^{(2)}\)
- Templates (drilling, fixing, …)
- Turnkey equipment
- Specialised parts

TRUST
DESIGN & MANUFACTURE:

1. Multipurpose platform for Eurofighter

2. Pneumatic tester for A320/340 AIRBUS
GSE, AGE & ENGINE TOOLING
Supply of Ground Support Equipment (GSE/AGE) and Tooling

- Transport and handling equipment
- Lifting slings with CE marking
- Bench test equipment
- Balancing tools
- Extractors
- Special wrenches
- Turnkey tools
- Gauges

From the 70s to date, thousands of tools have been manufactured for P&W, RR, GE, ALLISON, LYCOMING, SNECMA, CFM, GARRET, EUROJET, MTU, TURBOMECA, ITP and EUROPROP.
> FLIGHT PARTS for AIRCRAFT and ENGINES
MANUFACTURE & REWORKS:

Supply of flight parts for ENGINES:

- **Rakes** for instrumentation:
  - Manufactured in specials alloys: Inconel, Nimonic, Titanium, Haynes, Jethete, Stainless Steel, etc.
  - Machined by EDM, Wire-EDM and Hole drilling EDM.
  - Hybrid manufacturing: laser sintering and finishing by precision machining.

- **Reworks:**
  - Nozzle Guide Vanes (NGV), rotor cases, intermediate cases, turbine disks, nozzles, IBR & vane ring boosters, etc.

- **Machinings and reworks for flight part maintenance:**
  - Oil sump cover, seal labyrinth, nozzle second stage, rear diffuser, etc.

Supply of flight parts for AIRCRAFTS:

- **Manufacture:**
  - Brackets
  - Plates
  - Bushings
  - Supports
  - Shafts

- **Assembly of parts and components.**
> CAPABILITIES
HUMAN and TECHNICAL RESOURCES:

Highly qualified engineers, doctors, graduates and technicians make up a multidisciplinary workforce of 40 people.

We have the latest hardware resources that provide us to meet customer’s requirements with absolute flexibility.

- **Design and mechanical analysis:** CAD-CAE.
- **Documentation:** DRL’s, IPL’s (ASD1000D), Technical Publications (ASD2000M), Data Cards, Handbooks, First Article Inspection, CE Certification and NATO Cataloguing.
- **Machining:** CAD-CAM, lathing, turning, milling, grinding and electro discharge machining (sinker-EDM, wire-EDM and hole drilling EDM).
- **Welding:** TIG, MIG-MAG and laser.
- **Assembly.**
- **Dimensional control, inspection, proofs and testing.**

A computerised production management & quality system (a near-paperless Factory 4.0) speeds up delivery times and ensures traceability during the whole life-cycle of the products.
RAMEM carries out an exhaustive control of its work, issuing certificates of: Materials, Inspection, Traceability, Calibration, Compliance and CE Marking.

Resources within the calibration room with guaranteed traceability:

- 3D Coordinate Measuring Machine (CMM)
- FARO Gage portable CMM
- Optical measuring machine
- Optical microscope
- Roughness testers
- Durometers
- Gauge blocks
- Inspection surface plates
- Laser marking machine
- Precision scales
- Load cells
- Oscilloscope
- Multimeters
- Electrometers
- Pressure, vacuum, temperature and flow rate sensors
- Calibration software
- DMA & CPC analysers
QUALITY ASSURANCE

- Quality Certifications: UNE-EN 9100 and UNE-EN ISO 9001.
- Registered in OASIS International Aerospace Quality Group.
- RAMEM establishes **Industrial Security** and **Confidentiality** agreements with its customers and has a Security Control Point.
- RAMEM has implemented **Environmental Management Systems** and ‘**Health and Safety at Work**’ Systems.

CERTIFICATIONS FOR SPECIAL PROCESSES

**ENAC** Accredited Entities (Welding and Joining Technologies):
- Welded Construction Inspectors as per UNE standards
- Approved Welding Procedures
- Certified Welders
- European Adhesive Bonding Specialist

**AEND** (Spanish Association of Non-Destructive Testing):
- Liquid Penetrant Inspection
- Visual Inspection

**ROLLS-ROYCE** and **ITP**:
- Electro Discharge Machining (sinker-EDM & wire-EDM)
- TIG & Laser Welding
- Abrasive Blasting
- Laser Marking

**NATO** (Central Organisation for the Defence Cataloguing Service and National Cataloguing Service):
- Cataloguing and verification of articles, assignation of NATO Stock Number (NSN)
RESEARCH

The R&D department, through its European trademark IONER www.ioner.eu, generates in-house technology with international patents, scientific publications, conferences and congresses.

RAMEM participates in the most important national and European projects with recognised research centres and universities.

KNOW HOW

RAMEM can demonstrate its knowledge of more than five decades in its Technical Documents:

- Machining of titanium alloys
- Machining of nickel based alloys
- Machining of stainless steels
- Machining of ceramics
- Machining of technical polymers
- Electro discharge machining (EDM)
- Welding processes
- Adhesive application
- Inspection operations
- Liquid Penetrant Inspection
- Visual Inspection
- Mechanical Testing, Load tests
- Cleaning and handling of vacuum components
- Hybrid manufacture by laser sintering and precision machining
RAMEM and its technology partners have been investigating since 2008 the scope of the hybrid manufacture in areas such as Aeronautics and Space, combining additive manufacturing by laser sintering with precision machining. This particular process supports special materials such as titanium, Inconel, stainless steel or aluminum and allows RAMEM to participate in European initiatives such as CLEAN-SKY.

The extensive experience and results already achieved in scientific applications, energy and top-level competition, endorse the incorporation of the additive manufacturing in traditional areas of manufacturing, such as aeronautical instrumentation (rakes), fan wheels or structural components of satellites.

ADITIVE MANUFACTURING (+high accuracy machining)

Monolithic prototype with 12 tubes and internal ducts of Ø0,5 mm
Find more information about our services on the website www.ramem.com and in our brochures: TURNKEY SOLUTIONS and SPACE.
A company dedicated to the development and supply of onboard electro-mechanical equipment throughout the whole life-cycle of the product.

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