SSE - SOFITER SYSTEM ENGINEERING S.P.A

COMPANY PROFILE

Engineering services in the field of Military and Civilian Aerospace Systems

2019

OFFICES

SSE - SOFITER SYSTEM ENGINEERING S.P.A

Sole member company - Share Capital € 50.000,00 fully paid-up
C.F. 03642500015 - P.IVA 05252870018 - N. REA 679744 - R.I. Torino

TORINO

Administrative, operational and registered office, Corso Francia n. 35 - 10138 Torino

ROMA

Operational office, Piazza del Popolo n.18 - 00187 Roma

ALBENGA (SV)

Operational office, Via Pacinotti n.47/21 - 17031 Albenga (SV)

MILANO

Operational office, Via Roberto Lepetit 8/10 - 20124 Milano (MI)

CONTACTS

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/company/sofiter-system-engineering-s-p-a-/

www.ssespa.it

COMPANY PROFILE

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COMPANY

COMPANY

SSE - SOFITER SYSTEM ENGINEERING S.p.A. established in Turin in 1980 and has been operating for almost 40 years in the sector of consulting and services for the engineering of the life cycle of aerospace, civilian and military products. The company is currently involved in more than 30 military and civilian projects.

The SSE S.p.a. holds a majority stake in **Pro S3 S.r.l.** company with consolidated experience, gained nationally and internationally, in the development of Air Pilot Systems for search and rescue, aero-mapping and precision agriculture.

MISSION

Thanks to the wide experience gained over the years, we are able to develop end-to-end projects, from the feasibility studies to support the use of the product, both by the customers and directly in our premises.

FACILITIES

The head office in Turin is expressly equipped with areas for classified activities and security areas.
SSE (Turin office) has a quality management system certified in compliance to the regulations UNI EN 9001: 2015 e EN 9100 : 2018.

SSE is present in Rome, Milan and Albenga, too other branches are settled near the customers, both in the headquarters of TAS-I Turin and Leonardo S.p.A. in Turin.

STAFF

More than 140 experienced analysts in testing activities, designers, programmers, systems analysts, lab and fly test technicians.

MAIN CUSTOMERS

Thales Alenia Space Italia S.p.A., Leonardo S.p.A. “Aircraft Division” (ex Alenia-Aermacchi), Piaggio Aerospace, Altec, Telespazio, Fusion For Energy.

QUALITY SYSTEM

In line with its own aims to continuously improve the service quality, **SSE – Sofiter System Engineering** (Turin branch office) has a **Quality Management System** certified in compliance with:

ISO 9001:2015 and EN 9100:2018

This certification has been released on the 2013-03-22 by DNV GL Business Assicurance Italia srl. On 2018-08-17 the purpose of the certificate has been modified and it is valid for the following products and services:

- Design, development and testing of avionics systems (including software and system integration)
- Structural design and on-board systems installation
- Thermal analysis services in the aerospace field
- Avionic Material Management Services
- Configuration Management Services on avionics and energy systems
- Project Management Services

CERTIFICAZIONE DI SISTEMA QUALITÀ
DNV·GL
AS/EN/JISQ 9100

AREAS OF INTERVENTION

AVIONICS

- MISSION SYSTEMS
- LABORATORIES
- FLIGHT SIMULATOR, FLIGHT TEST AND OPERATIONS
- LOGISTICS

SPACE

- SPACE AND TRANSPORT INFRASTRUCTURES
- OPTICS AND SCIENCE OBSERVATION
- INTEGRATED NAVIGATION AND COMUNICATIONS
- INTEGRATION AND QUALITY
- TELECOMMUNICATIONS PAYLOAD
- TT&C TRANSPONDER AND GROUND SEGMENT
- SYNTHETIC APERTURE RADAR (SAR)

STRUCTURAL DESIGN

- STRUCTURE DESIGNATION
- PLANT DESIGNATIONS
- STRUCTURAL ANALYSIS

MAIN PROGRAMS

AVIONICS

Efa
Tornado
C27J
G222
AM-X
ASTA
M346
UAV (Sky-X, Neuron)
ATR
Meltem

SPACE

NODO
Herschel-Planck e
Sicral (satellite)
Galileo (satellite system)
CEV
BepiColombo
Exomars
Cosmo
GOCE
MSP/Columbus
ATV
IXV
Mars Next
STEPS
AMOS
COTS
Sentinel
Solar
Orbiter
Kompsat-5
Carmes
Wages
Arpa
Koreasat-5
Yahsat
Athena Fidus

STRUCTURAL DESIGN

M346
M311
MB339
B787
A380
A318
RRJ
PW 4168 NACELLES
CF34 NACELLES
C27J
G222
P180

AVIONICS SERVICES

SYSTEM DESIGN

SYSTEM / EQUIPMENT ENGINEERING

SYSTEM INTEGRATION

TRAINING/ SIMULATION

CERTIFICATION AND ENVIRONMENTAL QUALIFICATION OF SYSTEM/ EQUIPMENT IN FLIGHT / ON GROUND

FLIGHT OPERATION AND TEST

LOGISTICS ENGINEERING

IN-SERVICE RMT

AVIONICS SERVICES

1. SYSTEM DESIGN

- Aircraft/mission requirements analysis
- Design documentation preparation and/or updating
- Cooperation with the System/Equipment Engineering team
- “Problem Report” analysis to identify possible design deficiencies/problems and related changes, raised during the Integration activity
- Evaluation of requests of new functional requirements implementation and related impacts
- Configuration Control support
- Qualification activity support
- System Design activity support through models/simulations

2. SYSTEM / EQUIPMENT ENGINEERING

- Preparation of the Technical Specifications and ICD for Equipment
- Technical Offer Evaluation
- Status analysis of the qualification/equipment system and preparation of related reports
- Preparation and participation to meetings with Equipment Suppliers (Progress / Design Review)
- Input for the electric scheme/diagram definition and support to the definition of the installation requirements on A/C
- Integration activity support
- Requirements definition, testing procedures evaluation and test report for the Environmental and EMC Qualification.

3. SYSTEM INTEGRATION

- Equipment, Subsystem, System design requirements evaluation
- Production and performance of Procedures Test
- Processing and control of PR (Problem Report) configuration related to possible problems, malfunctioning found during the testing
- PR analysis/investigation
- Facility maintenance
- At level of: Equipment (Bench, Subsystem/System (RIG), Aircraft (On-Ground), Aircraft (Flight Test)

4. TRAINING/SIMULATIONS

- System Engineering (fighter and tactical transport aircraft) in the areas:
  - » General System – Flight Control, A/C Performances & Motion Cue System
  - » Avionics (Helmet Mounted Display inc.), Armamento Laser Designator Pod inc.) & Mission Systems
- Team Leading in the areas: System Engineering, software integration & Acceptance
- Technical Support to the offices for the production of the aircraft & pilots documentation
- Support to Air Forces during the emergences training phase.
- Engineering Test
- Technical support simulator activity
- Evaluation of pilot procedures

5. CERTIFICATION AND ENVIRONMENTAL QUALIFICATION OF SYSTEM/ EQUIPMENT IN FLIGHT / ON GROUND

5.1 ENGINEERING

- Definition of the environmental/electrical design requirements in relation to the flight/ envelope temperature and (functional/operational) life duration of the system/equipment
- Definition of the applicable regulations (Military and Civilian Standards)
- Input for the preparation of the system/equipment Technical Specifications
- Support to design engineering/purchasing department during the negotiation with suppliers/ Customers
- Emission of system/equipment qualification Plan to the Customers
- Customers support for the validation of the Qualification Plan
- Emission of validation report and system/equipment installation through read-across from other operating platforms

AVIONICS SERVICES

5.2 TESTING

- Emission/evaluation of environmental qualification testing procedures (temperature, humidity, vibrations, acceleration and other environmental factors), Electrical Power Supply, taylorized W.R.T. to the environmental design and other applicable regulations
- Emission of requirements and instrument for flight testing activities
- Analysis and emission of the flight testing results Report
- Support to the laboratory testing
- NON-COMPLIANCE Analysis
- Final results analysis
- Emission/Validation of the final test report

5.3 CE MARKING

- CE certification for Aerospace Ground Equipment (AGE)
- Definition of the CE requirements (Electric/Structural/Electromagnetic interference safety)
- Definition of the testing/procedure requirements for the CE marking
- Support to the testing laboratory
- Validation/definition of the limitations arising from the testing
- Support to the laboratory for the final report issue for of the CE marking

6. FLIGHT OPERATION AND TEST

6.1 FLIGHT OPERATION

- Mission planning (test and flights ferry) in continuous radio contact VHF, UHF and HF
- Coordination with civilian and military ATC
- Diplomatic clearances management with the overflight office
- Handling, Hotac, Refuelling, Landing Permission management on the airports of destination
- Emergency and accident management in cooperation with the Flight Safety Officer
- Logistic/operational coordination of Air Show and Demo Tour
- Coordination for flight activity planning
- Coordination handbooks of competence updating
- Activities statistic database management
- Management of the operational procedures of competence
- Company interface for definition and production ground/flight procedures related to unmanned
- Review of flight limitations, procedures and technical handbooks

6.2 FLIGHT TEST

- Experimental testing and certification procedures draft
- Check of the parameters necessary to the correct performance of the flight testing
- Real time systems monitoring during the ground and flight testing
- Post-test data analysis and issue of the related report
- Handbooks preparation and avionic SW to support flight testing
- Creation of tactical and fight simulation sceneries and of the mission database
- Technical support to the aircraft during the off-site activities
- FTI system definition and management

7. LOGISTICS ENGINEERING

Specialist support in the activities of:

- RMT - Reliability Maintainability, Testability
- FMECA - Failure Mode, Effects and Criticality Analysis
- RCM - Reliability Centered Maintenance
- LSA - Logistic Support Analysis
- SA - Safety Analysis
- LSC - Life Support Cost. Realizzazione di manualistica tecnica

HTML – SGML, for electronic devices and test electronic devices, in compliance with the regulation in use in the Italian Armed Forces and in civilian transportation

AVIONICS SERVICES

8. IN-SERVICE RMT

- Contribution to the production and update of an In-Service Database with defectiveness of all the equipment
- Emission and further update of reliability analysis to support the In-Service Weapon System Failure Review Board (IS-WSFRB)
- Performance of Root Cause Analysis, Failure Review Board and definition of the related Business Cases
- Fault Isolation procedure analysis
- Support to the update of the diagnostic and test procedures related to the interested Systems
- Check of achievement of the contract Reliability requirements in terms of MTBF
- Harmonization and integration of the In-Service Data Analysis activities with the FRACAS activities

SPACE SERVICES

SPACE SERVICES

1. DESIGN AND TEST OF RADIO FREQUENCY SYSTEMS

1.1 REQUIREMENTS DEFINITIONS

- Upper level system requirements analysis and definition of the RF system requirements (functionality, algorithms, HW architectures, performance, interfaces)
- Analysis and simulations for the design of architectures and algorithms and for the performance evaluation

1.2 PROJECT MANAGEMENT

- Negotiation of the specifications with suppliers and customers within the technical, time and budget duties
- Evaluation of the technical offers of the suppliers
- Progress and review meeting with customers and suppliers (PDR, CDR, TRR, TRB, DRB, etc)
- Evaluation of deviations from the specification during the design (RFD)
- Test procedures and measurable parameters agreement
- Evaluation of the out of specifications and acceptance of the unit at test level (RFW)
- Acceptance and delivery of the units (TRB/DRB)

1.3 SYSTEM PERFORMANCE ANALYSIS

- Diagram of the RF power levels (EIRP and G/T Performance, check of the signal levels within the input dynamic ranges of each active unit)
- In-band/out-of-band performances (Analysis of gain flatness and group delay, evaluations of the mismatch effects, analysis of the out-of-band rejection)
- Self/inter-compatibility (Analysis of the spurious product of mixing and propagation, analysis of the passive intermodulation products, inter-compatibility among different payload systems or between payload and TCR)
- Linearity (Analysis of the active components non-linearity effects, NPR, conversion and AM/PM transfer analysis)

1.4 VALIDATION OF RF SYSTEM FUNCTIONALITY AND PERFORMANCE

- Definition and optimization of the test matrix
- Translation of the system RF specifications in measurable parameters
- Preparation of the predictions of the expected values and of the acceptance criteria
- Definition of the test procedures
- Configuration and calibration of the measuring instruments and EGSE
- Definition of the sequence of tests and/or possible investigation procedures
- Check of the consistency of the value measured with the prediction during the different steps of the test (IFT, PreTVAC, TVAC, FFT e CATR)
- Evaluation of possible resort to investigation
- Earth-Satellite link TT&C test
- Preparation of the review of acceptance and delivery to the client

1.5 DOCUMENTATION

- Emission and maintenance of the documentation related to the aforementioned activities (requirements specifications, interfaces control documents, handbooks, project description, technical notes, test and report specifications, etc.)

2. RF RECEIVER AND TRANSMITTER DESIGN AND TESTS

2.1 DESIGN
- System requirements analysis
- Design and dimensioning of the RF receivers and transmitters architectures
- Analysis and dimensioning of analogic electronic devices, analogic receiving and transmitting chains

2.2 TEST
- Integration test at module and unit level
- Support to system tests

2.3 PROJECT MANAGEMENT
- Management and monitoring of RF electronic planning
- Progress e review meeting with clients

2.4 R&D AND PROPOSALS
- Realization of feasibility studies and technical proposals

2.5 DOCUMENTATION
- Emission and maintenance of the documentation related to the aforementioned activities (Specifications, interface documents, handbooks, design descriptions, technical notes, test plan and report, etc.)

SPACE SERVICES

3. SPACE AND TRANSPORT INFRASTRUCTURES

- Mechanical systems
  - » Analysis and design
  - » Dynamics and loads
  - » Break dynamic and mechanical check
  - » Microgravity and vibro-acustic
- Thermal systems
  - » Thermal analysis
  - » Passive thermal design
  - » Fluid-dynamic thermal design
- System management and methodologies
  - » Physical and ergonomic architecture
  - » Modelling and design
- Functional systems and operations
  - » Aeromechanics and propulsion
  - » Space environment and habitat
  - » Product and mission support
- Advance projects
  - » Solutions of space transportation and nanotechnologies
  - » Space and exploration infrastructures solutions
  - » Entry vehicle solutions
- Cooperative engineering systems
  - » Virtual reality laboratories for design and development of complex systems, integration and training

4. OPTICAL OBSERVATION AND SCIENCE

- Avionics and software
  - » Control command and data handling
  - » Stabilization control and navigation guide and control
  - » Software
- Thermomechanical and optics
  - » Mechanical and thermal engineering
  - » Optics and Metrology
- Electric systems, power and cabling
- Advanced projects and studies
  - » System studies
  - » Technological studies
  - » Optical observation studies

5. ELECTRONIC COMPETENCE

- Antennas
  - » Radio-frequency design
  - » Thermo-mechanical design
  - » Electrical test ·Environmental and mechanical tests
  - » Radio-frequency and laboratory products
- Product technologies and engineering
  - » Product industrialization and configuration
  - » Microelectronic and precision technologies
    - » Substratum production
  - » Thermomechanical analysis and design
- Scientific equipment
  - » Integration technologies and equipment tests
- Production
  - » Hybrid products
  - » Electronic products
  - » Metrology and calibration
- Parts and planning
  - » Logistics and planning
    - » Mechanical parts/materials
    - » Electric parts
  - » Warehouses

6. QUALITY AND INTEGRATION

- Quality control
- Mechanical and environmental tests, MGSE definition and operations
- Electrical and functional tests
- Radio-frequency tests
- EGSE definition and operations
- Instruments and environments tests
  - » Mechanical
  - » Thermals
  - » EMC
- Integration quality assurance
- Product quality assurance
- Sw quality assurance
- RAMS

SPACE SERVICES

SERVICES FOR THE STRUCTURAL DESIGN

STRUCTURAL DESIGN | **PLANT INSTALLATION DESIGN** | **STRUCTURAL ANALYSIS**

1. STRUCTURAL DESIGN

- Primary and secondary structures
  - » Feasibility studies
  - » Development activity
    - » 3D design
    - » 2D design
    - » Part list
  - » Use of conventional and composed material
  - » Static/strain tests preparation
- Configuration and loads management
  - » Configuration data upload in the Db of reference
  - » Mass allocation to the single items

2. PLANT INSTALLATION DESIGN

- Electro-avionic plants
- Fluid plants
- Pneumatic plants
  - » Feasibility studies
  - » Development activity
    - » 3D design
    - » 2D design
    - » Part list
- Configuration and loads management
  - » Configuration data upload in the Db of reference
  - » Mass allocation to the single items

3. STRUCTURAL ANALYSIS

- FE Modelling
- Statics
  - » Dimensioning and structural analysis
  - » Stress notes issue
  - » Certification report issue
  - » Strain/damage Tolerance
  - » Analysis and dimensioning
  - » Issue of related documentation
- Dynamic analysis
  - » Shock
  - » RANDOM
  - » Modals
- Thermal analysis
- SRM preparation
- Static/strain tests preparation
- Rams

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