



20
Years
Flying
High

hegan



basque aerospace cluster

Annual Report
Urteko Txostena
Informe Anual

2017

HEGAN is :



Associated member of



Advisor of



Registered at



Member of



Member of



Honorary member of



Collaborator member of



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Once again this year, I am delighted to present the annual report for this Basque aeronautics and space cluster association, over which I am honored to preside, especially in the year of our 20th anniversary.

Lots of things have happened since 1997... all of them good. We have grown, in terms of the number of members, the number of jobs and turnover; we are involved with the biggest international programs, clients, and projects; we have consolidated a first-class ecosystem that covers practically the whole of the Basque aerospace sector... In short, during these 20 years, the Basque Country has seen the emergence and consolidation of a thriving industrial sector.

In specific terms, in 2017, the sector remained resilient in the face of the volatile and complex climate that has characterized recent years, taking the combined turnover of HEGAN members to €2.43 billion, and the total number of people employed to 14,457. These figures represent growth of 7.9% and 6.2%, respectively, from the previous year and refer to the total for all HEGAN members generated at plants throughout the world.

These two metrics—turnover and employment—together with R&D investment of over €200 million in 2017, have allowed the sector to drive the creation of wealth, technology and highly skilled jobs. This must be supported and taken into account in country-wide decisions, acknowledging its added value and the key role it plays in achieving progress and developing a more competitive economy.

All this reflects the increase in the number of planes delivered in 2017, with 1,481 units between the two large manufacturers, Airbus and Boeing, an increase of 45 aircraft from the previous year. Rising international air passenger traffic means this trend looks set to continue in the coming years. According to statistics from the International Air Transport Association (IATA), growth over the last year was 7.6% and an annual rate of 5% is forecast for the coming years.

In the next few years, the Basque aerospace industry needs to lay the foundations for remaining competitive and ensuring the long-term position of its companies in the market. The key challenge for this and subsequent years, in addition to retaining and attracting talent, lies in improving efficiency to boost our competitiveness.

The pages that follow give a snapshot of the sector in 2017. It shows the full capacity and potential of HEGAN's 64 members (56 companies, 4 technology institutes, and 4 universities) and reaffirms our conviction that the cluster is an example of quality work, professionalism, seriousness, and reliability.

I truly believe that in another 20 years, the snapshot will show that the path shared by so many people, and on which we first set out in 1997, will be something we can all be proud of.



Jorge UNDA MALCORRA
President

Elkartearen hogeigarren urteurrena ospatzen dugun honetan, atsegin handiz natorkizue aurten ere aeronautika eta espazioaren sektoreko Euskadiko klusterraren urteko txostena aurkeztera; ohore handia da niretzat klusterraren lehendakari izatea.

1997. urte hartatik, gauza asko gertatu dira, onak guztiak ere. Hazi egin gara: bazkide kopurua hazi egin da, bai eta enplegua eta fakturazioa ere; programa, bezero eta proiektu garrantzitsuenetan geure lekua hartu dugu oro har; Euskadiko aeronautika eta espazioaren sektore ia guztia aglutinatzen duen lehen mailako ekosistema bat finkatu dugu... Hitz batean, industria-sektore boteretsu bat sortzen eta finkatzen ikusi du Euskadik 20 urte hauetan.

Zehazki, 2017an, azken urte hauetan bizitzen ari garen testuinguruko faktore aldakor eta konplexuen aurrean sektoreak erresilientzia handia izaten jarraitzen duela egiaztatu dugu berriro, handitu egin baitira bai enplegua eta bai fakturazioa HEGANeko bazkide guztiak osatzen duten multzoan: 2.425 milioi euroko fakturaziora iritsi gara, eta 14.457 langile izatera. Aurreko urtekoarekin alderatuta, % 7,9 eta % 6,2 hazi dira hurrenez hurren; HEGANeko bazkide guztiak munduan zehar dituzten instalazioei dagozkie zifra horiek.

Bai magnitude horiei, fakturazioari eta enpleguari, eta I + G arloan egindako inbertsioari esker (200 milioi eurotik gorakoa izan zen 2017an), aberastasunaren eta kualifikazio altuko teknologia eta enpleguaren hazkunderako motor izan da sektorea; zaindu egin behar da hori, eta kontuan hartu behar da *Herrialdean* hartzen diren erabakietan, aktibo bat gehiago baita, ekonomiaren lehiakortasunaren aurrerapenean eta garapenean oinarri-oinarrizkoa dena, hain zuzen.

2017an entregatu ziren hegazkinen kopuruaren hazkunderaren isla da hori guztia, 1.481 hegazkin entregatu baitzituzten guztira Airbus eta Boeing fabrikatzaile handiek, iaz baino 45 hegazkin gehiago, hain zuzen. Hurrengo urteetan bilakaera horrek jarraitu egingo duela aurreikusten da, bidaiarientzako aire-garraioa goraka doalako munduan: % 7,6 egin zuen gora iaz, Nazioarteko Aire Garraioko Elkartearen (IATA) arabera; eta hurrengo urteetan, urtero % 5 egingo duela aurreikusten da.

Prestatu egin behar du bere etorkizuna urte horietarako Euskadiko aeronautika eta espazioaren industriak, lehiakortasunari eusteko eta epe luzera merkatuan enpresek duten lekua ziurtatzeko. Urte honetako eta datozen urteetako erronka nagusia, talentuari eusteaz eta hori erakartzeaz gain, gure lehiakortasuna garatzeko gaitasuna sustatzera bideratutako eraginkortasuna hobetzea izango da.

Hurrengo orrietan, sektorearen 2017ko argazkia ikustera gonbidatzen zaituztet. Argazki horretan, gaur egun HEGAN osatzen duten 64 kideen (56 enpresa, 4 erakunde teknologiko eta 4 unibertsitate) gaitasun eta potentzialtasun guztiak ikus daitezke, eta garbi erakusten du zergatik uste dugun gure klusterra ondo egindako lanaren, profesionaltasunaren, seriotasunaren eta konfiantzaren eredu dela.

Uste osoa dut 1997tik hainbat eta hainbat pertsonak partekatu eta egin dugun bide horrek hemendik 20 urtera izango duen argazkiak ere harro sentiaraziko gaituela guztiok.

Jorge UNDA MALCORRA

Lehendakaria

Un año más, me complace enormemente volver a presentar la memoria anual de esta asociación cluster del sector aeronáutico y espacial de Euskadi, la cual me honro en presidir; y especialmente en el año que celebramos su vigésimo aniversario.

Desde aquel 1997 han ocurrido muchas cosas... todas buenas. Hemos crecido: en número de Socios, en empleo, en facturación; nos hemos posicionado globalmente en los programas, clientes y proyectos más importantes; hemos afianzado un ecosistema de primer nivel que aglutina prácticamente a todo el sector aeronáutico y espacial vasco... En definitiva, en estos 20 años, el País Vasco ha visto surgir y consolidarse un pujante sector industrial.

En concreto, en 2017, volvemos a comprobar que el sector sigue manteniendo una gran resiliencia frente a los factores volátiles y complejos del entorno que estos últimos años estamos viviendo, habiendo aumentado el empleo y la facturación del conjunto de todos los socios de HEGAN: la facturación hasta alcanzar los 2.425 millones de euros y el empleo hasta las 14.457 personas empleadas. Los crecimientos respecto al año pasado han sido 7,9% y 6,2% respectivamente y corresponden al total de los socios de HEGAN generado en todas sus instalaciones alrededor del mundo.

Ambas magnitudes, facturación y empleo, sumadas a la inversión en I+D, que superó en 2017 los 200 millones de euros, hacen de este sector un motor de crecimiento de riqueza, de tecnología y de empleo de alta cualificación al que hay que cuidar y tener presente en las decisiones de *País* ya que se trata de un activo más, clave en el progreso y desarrollo de la competitividad de una economía.

Todo ello es reflejo del crecimiento de la entrega de aviones registrada en 2017, con 1.481 aparatos entre los dos grandes fabricantes Airbus y Boeing, 45 aeronaves más que en el año anterior. Esta evolución se prevé que continúe en los próximos años motivado por el alza del tráfico aéreo mundial de pasajeros: un 7,6% el pasado año, según la Asociación Internacional del Tráfico Aéreo – IATA y una previsión de un 5% anual en los próximos años.

Será para esos próximos años, en donde la industria aeroespacial vasca debe preparar el futuro para mantener la competitividad y asegurar la posición de las empresas en el mercado a largo plazo. Parece que el reto clave de este año y los siguientes, además de la retención y atracción de talento, sea la mejora de la eficiencia orientada al aumento de capacidad para el desarrollo de nuestra competitividad.

En las próximas páginas os invito a ver la foto del sector en 2017. En esta foto se pueden observar todas las capacidades y potencialidades de los actualmente 64 miembros de HEGAN (56 empresas, 4 entidades tecnológicas y 4 universidades) y confirmar por qué creemos que nuestro cluster es ejemplo de buen hacer, profesionalidad, seriedad y confianza.

Estoy convencido que la foto en otros 20 años mostrará que el camino compartido entre tantas personas, y recorrido desde 1997, será motivo de orgullo para todos.

Jorge UNDA MALCORRA

Presidente

2.1 The Cluster Association

HEGAN is a private, non-profit association that brings together the Basque Aeronautics and Space sector, created with the mission of representing and revitalising the sector, to facilitate its competitiveness in the short, medium and long-term through cooperation and innovation between companies and other agents, responding cooperatively to its strategic challenges.



Mission & Governance

Working Groups and Committees

Until 2016 we were working in temporary and flexible work-groups dedicated to a number of specific activities. These WGs are created and dissolved according to the wishes of the associate Members and in accordance with their specific needs at each moment in time. Although we maintain this mechanics if necessary, in 2017 we activated four committees that we intend to be permanent because of their importance in the development of the Cluster Value Chain: *Innovation, Internationalization, Talent* and *Supply Chain*.

HEGAN's Team

The members of the Association's permanent team are as follows:

- Mentxu DÍAZ, Administration
- Martín FDEZ. LOIZAGA, Deputy Director
- Ana RODRÍGUEZ, Head of Operations
- Ana VILLATE, Director

General Assembly

This is the highest-ranking body of the Association. It is made up of all member companies and is the forum through which they can express their wishes.

Board of Directors

This is the collegiate administration and management body. Its current members, appointed by the General Assembly, are:

Carlos ALZOLA -Chairman-, ITP AERO
Xabier BERASATEGI -Vice-Chairman-, GRUPO TTT
Jorge UNDA -Secretary-, SENER
Álvaro FDEZ. BARAGAÑO, ACITURRI
Iñaki LÓPEZ GANDÁSEGUI, AERNNOVA
Karlos BALSATEGUI, ARATZ
Jon PARDO, BURDINBERRI
Ignacio EIRIZ GERVÁS, CTA
Aitor KINTANA, DT KINTANA
Ana SANTIAGO, SISTEPLANT
Iñaki TELLECHEA, SPRI / BASQUE GOVERNMENT
Ana VILLATE, HEGAN

Executive Committee

This committee, by delegation of the Board of Directors, is the body responsible for the strategic monitoring of the activities performed by the Cluster Association. It meets regularly and its current members are as follows:

Plácido MÁRQUEZ -Chairman-, ITP AERO
Álvaro FDEZ. BARAGAÑO, ACITURRI
Javier FDEZ. DE RETANA, AERNNOVA
Karlos BALSATEGUI, ARATZ
Jon PARDO, BURDINBERRI
Ignacio EIRIZ GERVÁS, CTA
Aitor KINTANA, DT KINTANA
Xabier BERASATEGI, GRUPO TTT
Javier VIÑALS, SENER
Ana SANTIAGO, SISTEPLANT
Susana LARREA, SPRI / BASQUE GOVERNMENT
Ana VILLATE, Director of HEGAN
Martín FDEZ. LOIZAGA, Deputy Director of HEGAN

.2.2 The Cluster Association Organization

Yearly, our efforts are been made to revitalise groups of companies with shared interests in both areas of technological development and those of non-technological development and internationalisation. This is always with the aim of supporting **improved competitiveness through cooperation**.

Further, and as we indicated last year in this section, HEGAN's team was responsible for the generation of the 2017-2020 Strategic Plan (PE1720) that gives us the shared path for the next 4 years. In November 2017 we publicly did present the Plan that is summarized in 4 **Strategic Challenges**:

#1 Reinforce the Value Chain #2 People Development #3 Internationalization #4 Communication



Our **Value Proposal** (the value that we bring to the Members) is:

international projection Generator - Capacity of interlocation - results-oriented groups Facilitator - common strategies Engine - key information Source

Based on these **team assets**:

- ✓ FLEXIBLE, working in networks
- ✓ COMMITTED to the sector and our mission
- ✓ The "HOUSE OF ALL" generating a sense of belonging
- ✓ TALENT AND EXPERIENCE accumulated in the team
- ✓ AN OWN WAY OF WORKING with spaces of trust
- ✓ NEUTRALITY
- ✓ CONVENE CAPACITY
- ✓ Internationally CONSOLIDATED ROLE

3.1 The Cluster Members

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.3.1 The Cluster Members

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3.1 The Cluster Members

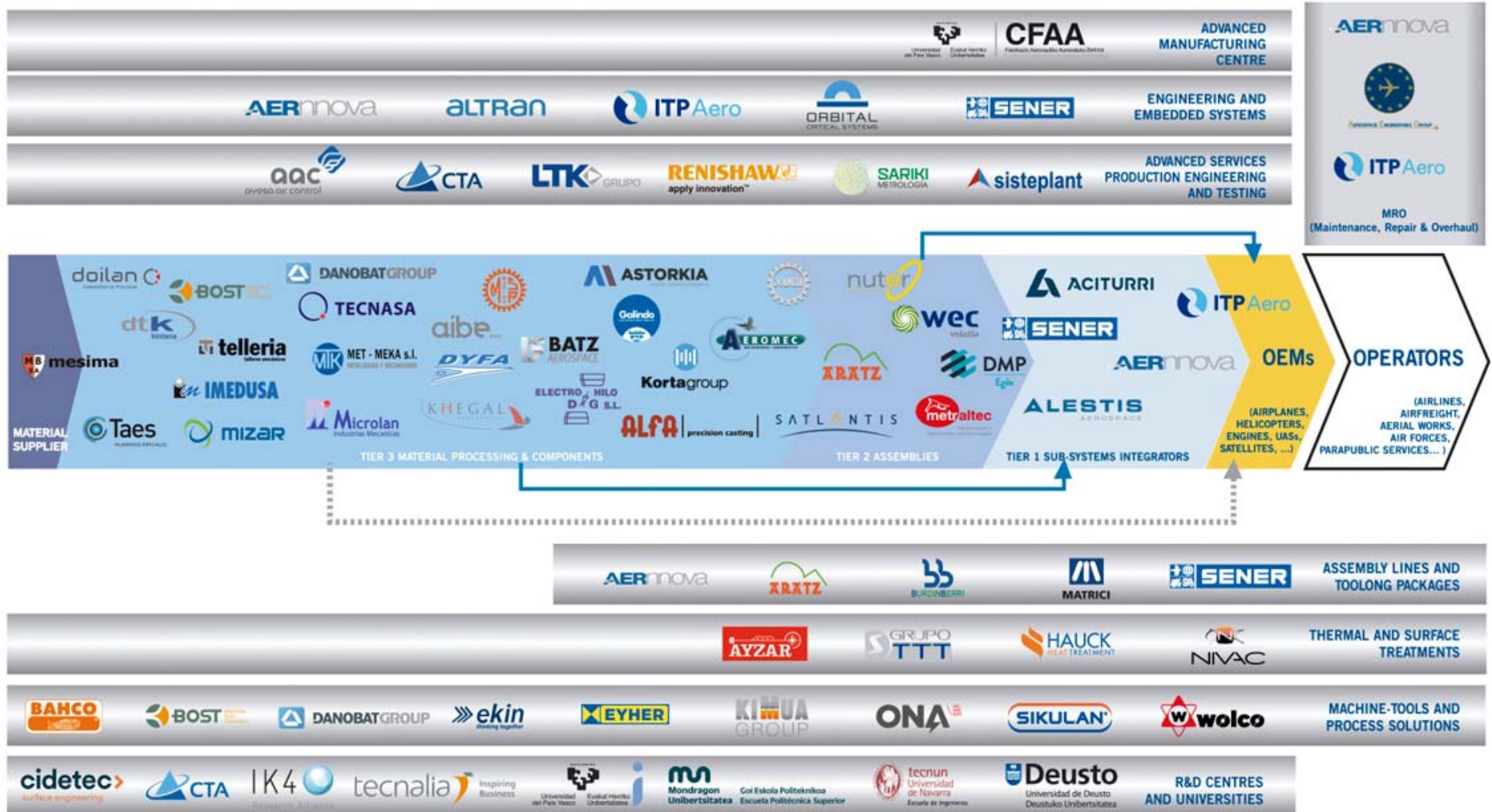
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> Industry

> R&D. Org

> Universities

3.2 The Cluster Members Value Chain



.3.3 The Cluster Members Activities 2017

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- 3.3.2 Engines
- 3.3.3 Systems & Equipment
- 3.3.4 Space
- 3.3.5 MRO
- 3.3.6 R&D Projects



.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
ACITURRI			
VTP Dorsal Fin & HTP Torsion box	AIRBUS OPERATIONS	AIRBUS	A320
Leading edge panels and LEX of HTP	AIRBUS OPERATIONS	AIRBUS	A320
Leading edge of HTP assembly	AIRBUS DS	AIRBUS	A330
Passenger door structural assembly	ALESTIS	AIRBUS	A330
CFRP Spar Outboard Aileron	AIRBUS OPERATIONS	AIRBUS	A330
VTP & Internal structure of S19	AIRBUS OPERATIONS	AIRBUS	A350 XWB
Outboard FLAP CFRP parts	FOKKER-GKN	AIRBUS	A350 XWB
Belly Fairing (Zones 0,1, 2 , 3.1, 3.2, 3.3 y 4)	AIRBUS DS	AIRBUS	A380
HTP Ribs	AIRBUS OPERATIONS	AIRBUS	A380
Rudder & Elevators	AIRBUS OPERATIONS	AIRBUS	A380
S19.1 CFRP Omegas	AIRBUS OPERATIONS	AIRBUS	A380
S19.1 Ducts & Housing	AIRBUS OPERATIONS	AIRBUS	A380
Auxiliary Fin & HTP Box Extension	AIRBUS OPERATIONS	AIRBUS	BELUGA XL
Ventral Fin	AIRBUS OPERATIONS	AIRBUS	BELUGA XL
Sponsons	DAHER-SOCATA	AIRBUS DS	A400M
Rudder CFRP Spar	AIRBUS FRANCE	AIRBUS DS	A400M
Flap and Vanes	AIRBUS GERMANY	AIRBUS DS	A400M
Central Box: structural assembly and equipment & Tip wings integration	AIRBUS DS	AIRBUS DS	CN235, C295
Sponsons and VT	FOKKER	AIRBUS HELICOPTERS	NH90
Rudder Components & Subassembly	AIRBUS DS	BOEING	737
Passenger door surround	BOEING	BOEING	787
KJ Beams CFRP Parts cargo floor	BOEING	BOEING	787
Elevators and HTP	AIRBUS DS	DASSAULT	FALCON 7X
Ailerons	FOKKER	DASSAULT	FALCON 7X
Wing to Fuselage Fairing	EMBRAER	EMBRAER	KC-390
Composite components	AIRBUS DS	EUROFIGHTER	TYPHOON

.3.3.1 Aerostructures



General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
AERNNOVA			
Elevators Assy /Main Landing Gear Doors Assy / Horizontal Stab. Spars / Fus. Section 18 Covers / Interior "dado" panels	AIRBUS	AIRBUS	A320
Elevator Components / Karman Fairings. Design Maintenance and Manufacturing of Main Landing Gear Doors Assy	AIRBUS	AIRBUS	A330/A340
Conceptual and detailed design and manufacture of HTP horizontal stabiliser fixed parts and Elevators - Risk Partner	AIRBUS	AIRBUS	A350 XWB
Build to print Rudder	AIRBUS	AIRBUS	A350 XWB
Build to Print Passenger Doors	AIRBUS	AIRBUS	A350 XWB
Build to Print Air Inlet	AIRBUS	AIRBUS	A350 XWB
Conceptual and detailed design and manufacture of MLG Pressure bulkhead	STELIA AEROSPACE	AIRBUS	A350 XWB
Horizontal Stabilizer: Design and Manufacturing of Leading Edges, Trailing Edges and Box Joint.	AIRBUS	AIRBUS	A380
Rear Fuselage - Section 19: Design & manufacturing of Internal Metallic Structure, including attachment fittings to Vertical Stabilizer	AIRBUS	AIRBUS	A380
Stiffeners and angle bars S19.1 / trailing edge covers HTTP (composite)	AIRBUS	AIRBUS	A380
Skin Panels Assembly S-19 (Built to Print)	AIRBUS	AIRBUS	A380
Rear Fuselage	AIRBUS	AIRBUS	BELUGA XL
Build to print Fuselage	AGUSTAWESTLAND	AIRBUS HELICOPTERS	NH90
Upper structure manufacture.	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	EC 225 /725 Super Puma
Lower structure manufacture. Tail cone (composite)	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	EC 225 /725 Super Puma
Rear fuselage (composite)	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	TIGRE
Manufacturing of complete Tail section (vertical and horizontal stabilisers) and elevators	BOMBARDIER	BOMBARDIER	CRJ700/900/1000
Conceptual Design & Manufacture of Central Wing Box (composite)	BOMBARDIER	BOMBARDIER	CSeries

.3.3.1 Aerostructures



General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
AERNNOVA			
Design & manufacture of Tail Cone (composite)	BOMBARDIER	BOMBARDIER	CSeries
Design and manufacture of complete Tail section (vertical and horizontal stabilizers), rudder and elevators - Risk Partner	EMBRAER	EMBRAER	EMB 170/175/190/195/LINEAGE 1000
Design and manufacture of rear fuselage - Risk Partner	EMBRAER	EMBRAER	EMB 170/175/190/195/LINEAGE 1000
Design and manufacture of complete wings-Risk Partner	EMBRAER	EMBRAER	ERJ135/140/145
Design and manufacture of nacelles - Risk Partner	EMBRAER	EMBRAER	ERJ135/140/145
Design and manufacture of wing to fuselage fairings -Risk Sharing Partner- Partially Transferred to Embraer	EMBRAER	EMBRAER	ERJ135/140/145
Design and manufacture of complete wings - Risk Partner	EMBRAER	EMBRAER	LEGACY Family
Design and manufacture of nacelles -Risk Partner	EMBRAER	EMBRAER	LEGACY Family
Design and manufacture of wing to fuselage fairings -Risk Partner- Partially Transferred to Embraer	EMBRAER	EMBRAER	LEGACY Family
Design and manufacture of rear fuselage - Risk Partner	EMBRAER	EMBRAER	LINEAGE 1000
Design and Manufacturing of Flaps, Ailerons and Rudder	EMBRAER	EMBRAER	KC-390
Design of Rear Fuselage, Pylon, Cargo Ramp and Upper Door	EMBRAER	EMBRAER	KC-390
Design of Wing Box	EMBRAER	EMBRAER	KC-390
Design and Manufacturing of Horizontal & Vertical stabilizer	EMBRAER	EMBRAER	E-jets E2
Design of Cockpit	EMBRAER	EMBRAER	E-jets E2
Wing covers, housings and conduits (composite)	AIRBUS DS	EUROFIGHTER	TYPHOON
Design and manufacture of the equipped transition section and tail cone - Risk Partner	SIKORSKY	SIKORSKY	S-92 / H-92
Design and manufacture of the HS - Risk Partner	SIKORSKY	SIKORSKY	S-92 / H-92
Design and manufacture of the main rotor pylon, fairings and engine cowlings - Risk Partner	SIKORSKY	SIKORSKY	S-92 / H-92

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
AEROMECA			
Pilon Rib	Several	AIRBUS	A320
Wing ribs structure	Several	AIRBUS	A350XWB
Structural door components.	Several	BOEING	787
Door structural components	Several	EMBRAER	170/175/190/195
AIBE			
Precision machining of components	MTORRES	Several	Miscellaneous
ALFA PRECISION CASTING			
Secondary structure components	TAI	AIRBUS	A320ceo
Secondary structure components	AIRBUS	AIRBUS	A320neo/ceo / A330
Secondary structure components	AIRBUS DS	AIRBUS DS	C235,C295, EUROFIGHTER TYPHOON
ALESTIS			
BBAH HTP & VTP	ACITURRI	AIRBUS	A320 & A320neo
TIP's HTP	AIRBUS	AIRBUS	A320 & A320neo
TTP's	AERNNOVA	AIRBUS	A320 & A320neo
TIP's HTP	AIRBUS DS	AIRBUS	A330
PAX Door	AIRBUS	AIRBUS	A330
Ribs HTP	AIRBUS	AIRBUS	A330
PAX Door	AIRBUS	AIRBUS	A330neo
Ribs HTP	AIRBUS	AIRBUS	A330neo
Belly Fairing - Risk Partner	AIRBUS	AIRBUS	A350 XWB
S19.1 - Risk Partner	AIRBUS	AIRBUS	A350 XWB
MLGD / S19.1 / Rear Fairing	AIRBUS	AIRBUS	A380
Belly Fairing (Structure)	AIRBUS DS	AIRBUS	A380
Assembly tasks	AIRBUS DS	AIRBUS DS	A330MRTT
Elevator	AIRBUS DS	AIRBUS DS	A400M
Cowlings	AIRBUS DS	AIRBUS DS	A400M
Rear fuselage	AIRBUS DS	AIRBUS DS	CN235, C295
HTP / VTP	AIRBUS DS	AIRBUS DS	CN235, C295
Tips & Strakelet	BOEING	BOEING	737

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
Aileron	AIRBUS DS	BOEING	777
Flaperon	AIRBUS DS	BOEING	777
Winglet & Wingstub	EMBRAER	EMBRAER	190/195
Central Fuselage	EMBRAER	EMBRAER	LEGACY450/500
Empennage & Wings	EMBRAER	EMBRAER	LEGACY450/500
Composite parts	EMBRAER	EMBRAER	LEGACY450/500
ALTRAN			
Design, stress, tests and materials/process, industrial operations, quality assurance	AIRBUS	AIRBUS	A350XWB/320/330MRTT/380
Design, stress, tests and materials/process, industrial operations, quality assurance	AERNNNOVA	AIRBUS	A350XWB
Design, stress, tests and materials/process, industrial operations, quality assurance	ALESTIS	AIRBUS	A350XWB/380
Design, stress, tests and materials/process, industrial operations, quality assurance	AIRBUS DS	AIRBUS DS	A400M/C295
ARATZ			
Composite Tooling	AIRBUS	AIRBUS	A350 XWB
Lay Up Tooling	AIRBUS	AIRBUS	A350 XWB
Assembly tooling	AIRBUS	AIRBUS	AIRBUS families
Assembly tooling	DASSAULT	DASSAULT	Falcon family
Composite Tooling	DASSAULT	DASSAULT	Falcon family
Composite Tooling	BOMBARDIER	BOMBARDIER	Cseries CS100
ASTORKIA			
Structural components	AERNNNOVA	AIRBUS	AIRBUS families
Structural components	Several	BOEING	747 / 787
Structural components	AERNNNOVA	BOMBARDIER	CRJ700/900
Structural components	AERNNNOVA	EMBRAER	EMBRAER families
AYESA AIR CONTROL			
Process optimization techniques, Industry 4.0 solutions and Digital Factory technologies	AIRBUS DS	AIRBUS DS	A400M, C295/CN235, A330MRTT
AYZAR			
Heat treatments	ACITURRI	AIRBUS	AIRBUS families
Heat treatments	BURDINBERRI	AIRBUS	AIRBUS families

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
BAHCO			
Designs and manufacturing of specialised hand tools (Tool Storages, Torque Tools, Sockets and Accessories) for Aircraft Manufacturing	SAAB AEROSPACE	Several	Miscellaneous
Designs and manufacturing of specialised hand tools (Tool Storages, Torque Tools, Sockets and Accessories) for Aircraft Manufacturing	AIRBUS HELICOPTERS	Several	Miscellaneous
Designs and manufacturing of specialised hand tools (Tool Storages, Torque Tools, Sockets and Accessories) for Aircraft Manufacturing	PATRIA	Several	Miscellaneous
BURDINBERRI			
A320 Neo Engine Cover Fan Cowl Curing Tools	REDUCTIA AEROSPACE	AIRBUS	A320neo
A320 Neo Engine Cover Rotary Lay-up Tools	AIRBUS	AIRBUS	A320neo
HTP leading edge curing tools	ACITURRI	AIRBUS	A320neo
RTM tooling P2 Test tools	ACITURRI	AIRBUS	A320neo
TOOLING PAX 1 Premium Aerotec	REDUCTIA AEROSPACE	AIRBUS	A350 XWB
Curing Barrel S19 v1000 #3	REDUCTIA AEROSPACE	AIRBUS	A350 XWB
S19.1 Front firewall cocuring tool	ALESTIS	AIRBUS	A350 XWB
V1000 Belly Fairing Curing Tools	ALESTIS	AIRBUS	A350 XWB
S19.1 Rotary Lay-up Tool	ALESTIS	AIRBUS	A350 XWB
Wing tip assembly jig	AERNNOVA	AIRBUS	A350 XWB
Trimming tools	AERNNOVA	AIRBUS	BELUGA XL
Curing tools	AIRBUS	AIRBUS DS	C295
Curing tools	AERNNOVA	EMBRAER	KC390
Bulkhead assembly jig	AERNNOVA	EMBRAER	E2
Airmeter	AERNNOVA	Several	Miscellaneous
CIDETEC			
Surface preparation	AERNNOVA	AIRBUS	AIRBUS families
Reprocessability, Repairability and Recyclability of composites	SOFITEC COMPOSITES	AIRBUS	AIRBUS families

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
CTA			
Drop test on fuel tank	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	AS350
Bird strike on rotor blade	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	H160
Rotor blade test	DAHER	AIRBUS HELICOPTERS	Miscellaneous
Fire certification tests of interior materials	BOEING R&T EUROPE	BOEING	Airlines
E2 Horizontal Stabilizer Fatigue Test	AERNNOVA	EMBRAER	E-Jets E2
E2 Flap Supports Structural Test	ASCO INDUSTRIES	EMBRAER	E-Jets E2
Flap inboard test	AERNNOVA	EMBRAER	KC-390
Aileron & Rudder tests	AERNNOVA	EMBRAER	KC-390
Fire certification tests of interior materials	AIR NOSTRUM LAM	Several	Airliners
Fire certification tests of interior materials	DIEHL AEROSPACE	Several	Airliners
Fire certification tests of interior materials	IACOBUCCI HF AEROSPACE	Several	Airliners
Fire certification tests of interior materials	HUTCHINSON-CR	Several	Airliners
Fire certification tests of interior materials	COMPOSITE INDUSTRIES	Several	Airliners
Fire certification tests of interior materials	PMV INDUSTRIES	Several	Airliners
Fire certification tests of interior materials	JCB AERO	Several	Airliners
Fire certification tests of interior materials	INDUSTRIAL NEO- TEX	Several	Airliners
Fire certification tests of interior materials	PINTA INSULATION	Several	Airliners
Fire certification tests of interior materials	VELCRO EUROPE	Several	Airliners
Fire certification tests of interior materials	ROMTEX ANJOU AERONAUTIQUE	Several	Airliners
Fire certification tests of interior materials	SN CENTRAIR	Several	Airliners
Fire certification tests of interior materials	DESSO	Several	Airliners

.3.3.1 Aerostructures



General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
DT KINTANA			
Landing gear trap	AERNNOVA	AIRBUS	A320
Stabilizer	AERNNOVA	AIRBUS	A350 XWB
DYFA			
Machining of components	ACITURRI	AIRBUS	A320/330/400M
Tooling for Aeronautical manufacturing	AIRBUS	AIRBUS	A350XWB
Tooling for aeronautical Assembly	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS	NH90
Tooling for aeronautical Assembly	AIRBUS	DASSAULT	Falcon 7X
Machining of Composite (Carbon fiber / Fiberglass) & Metallic components	AERNNOVA	EMBRAER	ERJ170/190, KC-390
Machining of Composite (Carbon fiber / Fiberglass) & Metallic components	Several	Several	Miscellaneous
EYHER			
Work in-heights plarforms for the S17 manufacturing	ACTEMIUM	AIRBUS	A32X family
GRUPO TTT			
Heat and surface treatments	SONACA	AIRBUS	AIRBUS families
Heat and surface treatments	AERNNOVA	AIRBUS	AIRBUS families
Heat and surface treatments	ALESTIS	AIRBUS	A400M/380
Heat and surface Treatments	AIRBUS DS	AIRBUS DS	AIRBUS DS families
Heat and surface treatments	AERNNOVA	AIRBUS HELICOPTERS	AIRBUS HELICOPTERS families
Heat and surface treatments	AERNNOVA	BELL	Bell 505
Heat and surface treatments	BHR Helicopter	BHR Helicopter	F360/290
Heat and surface treatments	Several	BOEING	737 / 777 / 787
Heat and surface treatments	Several	BOMBARDIER	BOMBARDIER families
Heat and Surface treatments	SONACA	DASSAULT	FALCON family
Heat and surface treatments	AERNNOVA	EMBRAER	EMBRAER families
Heat and surface treatments	Several	EMBRAER	KC-390

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
Heat and surface treatments	AERNNOVA	MRAS-GE	Miscellaneous
Heat and surface treatments	SKF	Several	Miscellaneous
Heat and surface treatments	PARKER	Several	Miscellaneous
Heat and surface treatments	AERNNOVA	SIKORSKY	S-92
HAUCK HEAT TREATMENTS			
Heat treatments	CESA	AIRBUS	AIRBUS families
Heat treatments	ACITURRI	AIRBUS	AIRBUS families
Heat treatments	AIRBUS DS	AIRBUS DS	AIRBUS DS families
Heat treatments	EMBRAER	EMBRAER	KC-390
Heat treatments	AERNNOVA	FOKKER	Miscellaneous
Heat treatments	AERNNOVA	SIKORSKY	S-92
Heat treatments	CESA	SIKORSKY	S-92
INDUSTRIAS METALÚRGICAS GALINDO			
Tooling manufacturing	INESPASA	AIRBUS	A350 XWB
Tooling manufacturing	ALESTIS	AIRBUS	A350 XWB
Tooling manufacturing	AERNNOVA	AIRBUS	A380
Tooling manufacturing	ACITURRI	AIRBUS	Miscellaneous
Tooling manufacturing	ALESTIS	BOEING	787
Tooling manufacturing	AERNNOVA	EMBRAER	E-JET family
Tooling manufacturing	CTA	Several	Miscellaneous
KHEGAL AERONÁUTICA			
Elementary components Machining	Several	AIRBUS	AIRBUS Families
Fuselage Holders for assembly line and Tooling for test bench	Several	AIRBUS	AIRBUS Families
Fuselage Holders for assembly line	Several	AIRBUS DS	A400M

.3.3.1 Aerostructures



General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
Elementary components Machining	Several	ATR	42/72
Elementary components Machining	AERNNNOVA	BOMBARDIER	CSeries Family
Elementary components Machining	Several	DASSAULT	Falcon Family
LTK GRUPO			
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	AIRBUS	AIRBUS	AIRBUS families
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	AIRBUS DS	AIRBUS DS	A330MRTT
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	AIRBUS DS	AIRBUS DS	A400M
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	AIRBUS DS	AIRBUS DS	CN235, C295
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	ALESTIS	BOEING	787
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	ALESTIS	EMBRAER	AIRBUS families
Special Aerospace Logistics: Transport, Stock, Handling, Quality control...	ALESTIS	EMBRAER	E-JET family
MATRICI			
Tooling for carbonfiber and metallic parts	AIRBUS OPERATIONS	AIRBUS	AIRBUS families
Tooling for carbonfiber and metallic parts	AIRBUS DS	AIRBUS DS	AIRBUS DS families
MESIMA			
Materials management and supply	AIRBUS DS	AIRBUS DS	AIRBUS DS families
METRALTEC			
Manufacture and assembly of elements (Sheet metal working, machining, heat and surface treatments, painting)	AERNNNOVA	AIRBUS	A320
Manufacture and assembly of elements (Sheet metal working, machining, heat and surface treatments, painting)	ACATEC	AIRBUS	A320
Manufacture and assembly of elements (Sheet metal working, machining, heat and surface treatments, painting)	AERNNNOVA	AIRBUS	A380
Manufacture of elementary parts (machining)	KHEGAL AERONÁUTICA	AIRBUS	A380
Manufacture of elementary parts (sheet metal)	ALESTIS	AIRBUS	A350XWB
Manufacture of elementary parts and assembly (sheet metal, machining, heat and surface treatments, painting)	AERNNNOVA	BOMBARDIER	CRJ family, CSERIES

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	AERNNNOVA	EMBRAER	EMBRAER families
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	OGMA	EMBRAER	KC-390
Manufacture of elementary parts (sheet metal, machining, heat treatment, surface treatment, painting)	AERNNNOVA	EUROFIGHTER	TYPHOON
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	AERNNNOVA	SIKORSKY	S-92
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	MTORRES	Several	Miscellaneous
MICROLAN			
Precision Machining of components, Turning and Milling	Several	Several	Miscellaneous
NOVALTI			
Belly Fairing components	Several	AIRBUS	A320neo
Belly Fairing components	Several	AIRBUS	A350XWB
Landing gear trap	AIRBUS	AIRBUS	A380
Structural components	Several	EMBRAER	KC-390
NUTER			
Structural components	AERNNNOVA	AIRBUS	A380
Components	AERNNNOVA	BOMBARDIER	CRJ family
Structural components	AERNNNOVA	EMBRAER	ERJ family / E-JET family
Structural components	AERNNNOVA	SIRKOSKY	S-92
RENISHAW			
Interferometric Laser and Optical Encoders for measuring positional data: wing-panel assembly machines	Several	AIRBUS	A380

.3.3.1 Aerostructures

General Description of the Product/service	DIRECT CLIENT	OEM	MODEL
SENER			
Surface protection stations	AIRBUS	AIRBUS	A320/330/350XWB
Nacelles demoulding systems	AIRBUS	AIRBUS	A32X family
HTP assembly line	AIRBUS	AIRBUS	A330
Engineering, Procurement and Construction (EPC) of a new pulse motion line for the manufacture of the HTPs	AIRBUS	AIRBUS	A330 neo
Design, construction, installation, transport and start up of the system in which the carbon fibre laminates of the wing stringer positioning line are generated	ARITEX	AIRBUS	A350 XWB
Floor grid assembly stations	PAG	AIRBUS	A350 XWB
Design and production of HTP assembly stations 70 and 71	THYSSEN GERMANY	AIRBUS	A350 XWB
Four access platforms for drilling the upper and lower shells of section S19	AIRBUS	AIRBUS	A380
Wing equipment station elevators	BOMBARIDER	BOMBARDIER	CSeries familiy
Handling system for big mobile aircraft parts	EMBRAER	EMBRAER	KC-390
SISTEPLANT			
Manufacturing Execution System implementation - New features	ALESTIS	AIRBUS	A350XWB
Process optimization through Value Stream Mapping	ACITURRI	Several	Miscellaneous
TAES			
Components Deep precision Drilling	MEUPE	Several	Miscellaneous
Components Deep precision Drilling	AEROTECNIC	Several	Miscellaneous
Components Deep precision Drilling	ACATEC	Several	Miscellaneous

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
ACITURRI				
Fun Hub Frames	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP 1A/1B	AIRBUS A320neo / BOEING 737 MAX
Hub Compressor	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP 1A	AIRBUS A320neo
Brackets	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP 1A/1B	AIRBUS A320neo / BOEING 737 MAX
Lugs and Shrouds	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP 1B	BOEING 737 MAX
Belts	SAFRAN OIL SYSTEMS	CFM INTERNATIONAL	LEAP 1A/1B, GTF	AIRBUS A320neo / BOEING 737 MAX
Lugs and vanes	ITP AERO	EPI	TP400	AIRBUS A400M
Mounting Rings, Thermals and fittings	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Components	WEC	EUROJET	EJ200	EUROFIGHTER TYPHOON
Housings	ITP AERO	GENERAL ELECTRIC	F414	BOEING F/A-18E/F
Struts	ITP AERO	GENERAL ELECTRIC	GE90-115	BOEING 777
Hubs	ITP AERO	PRATT&WHITNEY	Several	Miscellaneous
Housings	ITP AERO	ROLLS-ROYCE	TRENT 700	AIRBUS A330
Housings	ITP AERO	ROLLS-ROYCE	TRENT 500	AIRBUS A340
Lugs and vanes	ITP AERO	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
Lugs and vanes	ITP AERO	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Lugs and vanes & T.Match	ITP AERO	ROLLS-ROYCE	TRENT 1000	BOEING 787
Hubs	ITP AERO	ROLLS-ROYCE	TRENT 1000	BOEING 787/737
Hubs	ITP AERO	ROLLS-ROYCE	TRENT 7000	AIRBUS 330neo
End Fittings	SL ENGINEERING	ROLLS-ROYCE	Several	Miscellaneous
Rings	ROLLS-ROYCE	ROLLS-ROYCE	Several	Miscellaneous

3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
AEROMECA				
Support ring	Miscellaneous	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
Engine TBH	Miscellaneous	EPI	TP400	A400M
LPT rings	Miscellaneous	EUROJET	EJ200	EUROFIGHTER TYPHOON
Engine exhaust Zone.	Miscellaneous	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
Engine exhaust zone	Miscellaneous	SAFRAN AIRCRAFT ENGINES	SILVERCREST	CESSNA Citation / DASSAUL FALCON 5X
Engine TBH	Miscellaneous	ROLLS-ROYCE	TRENT 900	A380
Turbine casing & Thermal	Miscellaneous	Several	Several	Miscellaneous
AIBE				
Design and manufacture of clamping systems and fixtures for machining processes and special machines	ITP AERO	GENERAL ELECTRIC	GE90	BOEING 777
Design and manufacture of clamping systems and fixtures for machining processes and special machines	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
ARATZ				
Machined parts	ITP AERO	ROLLS-ROYCE	TRENT 700	AIRBUS A330
Machined parts	ITP AERO	ROLLS-ROYCE	TRENT 900	AIRBUS A380
ASTORKIA				
Engine components	ITP AERO	EPI	TP400	AIRBUS A400M
Engine components	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
Engine components	ITP AERO	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
BATZ				
Hot formed panels for special alloys	ITP AERO	EPI	TP400	A400M
Hot formed panels for special alloys	WEC	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Hot formed panels for special alloys	WEC	ROLLS-ROYCE	TRENT 1000	BOEING 787

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
Hot formed panels for special alloys	SALLEN	ROLLS-ROYCE	TRENT 1000	BOEING 787
Hot formed panels for special alloys	WEC	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
Aerodynamic Technology Acquisition Rig Programme	ITP AERO	Several	Several	Miscellaneous
Vertical grinding Machine-Tools for aeroengine manufacturing	GENERAL ELECTRIC	Several	Several	Miscellaneous
CTA				
Aerodynamic Technology Acquisition Rig Programme	ITP AERO	Several	Several	Miscellaneous
DANOBAT				
Vertical grinding Machine-Tools for aeroengine manufacturing	GENERAL ELECTRIC	Several	Several	Miscellaneous
DMP				
Carter parts	PCB	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
Carter parts	PCB	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
Thrust struts	Miscellaneous	EA	GP7200	AIRBUS A380
Main shaft Ge90	AUBERT&DUVAL	GENERAL ELECTRIC	GE90	BOEING 777
Thrust struts	Miscellaneous	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Main transmission gears	SAFRAN HELICOPTER ENGINES	SAFRAN HELICOPTER ENGINES	ALL RANGE	Miscellaneous
Accessory transmission gears	SAFRAN HELICOPTER ENGINES	SAFRAN HELICOPTER ENGINES	ALL RANGE	Miscellaneous
Transmission shafts Curvic-Coupling	SAFRAN HELICOPTER ENGINES	SAFRAN HELICOPTER ENGINES	ARRIEL / MAKILA	AIRBUS HELICOPTERS DAUPHIN / SUPERPUMA

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
Transmission shafts Curvic-Coupling	SAFRAN HELICOPTER ENGINES	SAFRAN HELICOPTER ENGINES	ARRIUS	AIRBUS HELICOPTERS EC135
Shaft	ITP AERO	SAFRAN HELICOPTER ENGINES	MTR390	AIRBUS HELICOPTERS TIGRE
Thrust struts	Miscellaneous	POWERJET	SaM146	SSJ100
ELECTROHILO				
Inner vanes stubs machining (spark erosion) and Vanes edge cutting (wire)	ITP AERO	EPI	TP400	AIRBUS A400M
TEC segmentation	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Strut manufacture	ITP AERO	MTRI	MTR390-E	AIRBUS HELICOPTERS TIGRE
Edging of VANES and BCVs	ITP AERO	ROLLS-ROYCE	TRENT 1000	BOEING 787
HUB drill, Separation Top Core Vane, Vanes erosion	ITP AERO	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Edging of VANES and BCVs	ITP AERO	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
EKIN				
Broaching Tools for the manufacture of Fir Tree turbine discs	ITP AERO	Several	ALL RANGE	Miscellaneous
GRUPO TTT				
Heat and Surface treatments	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Heat and surface treatments	ITP AERO	ROLLS-ROYCE	Several	Miscellaneous
Heat and surface treatments	SAFRAN TRANSMISSION SYSTEMS	Several	Several	Miscellaneous
Heat and surface treatments	SAFRAN AIRCRAFT ENGINES	SAFRAN AIRCRAFT ENGINES	Several	Miscellaneous
Heat and surface treatments	Miscellaneous	SAFRAN HELICOPTER ENGINES	Several	Miscellaneous

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
IMEDUSA				
BRACKETS	WEC	EPI	TP400	AIRBUS A400M
BRACKETS	WEC	EUROJET	EJ200	EUROFIGHTER TYPHOON
BRACKETS	WEC	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
INDUSTRIAS METALÚRGICAS GALINDO				
Design of Cutting Tools	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
Manufacturing of Tooling for LPT Components (inter stage seals)	ITP AERO	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
Manufacturing of Tooling for turbine shafts and static components	ITP AERO	Several	Several	Miscellaneous
Design of Cutting Tools	ITP AERO	Several	Several	Miscellaneous
Design of Cutting Tools	MECACHROME	Several	Several	Miscellaneous
ITP AERO				
Lost wax casting super alloys for Turbine	SNECMA	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
Lost wax casting super alloys for Turbine	MTU	EA	GP7000	AIRBUS A380
Design and manufacture of low pressure turbine (LPT) - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Design and manufacture of the Front Frame and Exhaust System - Member of the EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Manufacture of Externals - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Final assembly of engine - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
IMEDUSA				
BRACKETS	WEC	EPI	TP400	AIRBUS A400M
BRACKETS	WEC	EUROJET	EJ200	EUROFIGHTER TYPHOON
BRACKETS	WEC	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
INDUSTRIAS METALÚRGICAS GALINDO				
Design of Cutting Tools	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
Manufacturing of Tooling for LPT Components (inter stage seals)	ITP AERO	ROLLS-ROYCE	TRENT XWB	AIRBUS A350XWB
Manufacturing of Tooling for turbine shafts and static components	ITP AERO	Several	Several	Miscellaneous
Design of Cutting Tools	ITP AERO	Several	Several	Miscellaneous
Design of Cutting Tools	MECACHROME	Several	Several	Miscellaneous
ITP AERO				
Lost wax casting super alloys for Turbine	SNECMA	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
Lost wax casting super alloys for Turbine	MTU	EA	GP7000	AIRBUS A380
Design and manufacture of low pressure turbine (LPT) - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Design and manufacture of the Front Frame and Exhaust System - Member of the EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Manufacture of Externals - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M
Final assembly of engine - Member of EPI Consortium	AIRBUS DS	EPI	TP400	AIRBUS A400M

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
Lost wax casting super alloys for intermediate pressure turbine	ROLLS-ROYCE	EPI	TP400	AIRBUS A400M
Lost wax casting super alloys for the LPT	ROLLS-ROYCE	EPI	TP400	AIRBUS A400M
Design and manufacture of the Diffuser cones and By-Pass Module - Member of the EUROJET Consortium	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Design and manufacture of the post burner duct and variable nozzle - Member of the EUROJET Consortium	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Manufacture of Externals - Member of the EUROJET Consortium	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Final assembly of the engine - Member of the EUROJET Consortium	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Lost wax casting super alloys - nozzle	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Lost wax casting super alloys - low pressure turbine	NETMA	EUROJET	EJ200	EUROFIGHTER TYPHOON
Components	GENERAL ELECTRIC	GENERAL ELECTRIC	CF34-10	EMBRAER 190/LINEAGE 1000
Manufacture of rear turbine structure	GENERAL ELECTRIC	GENERAL ELECTRIC	GE90-115	BOEING 777
Structural components	HONEYWELL	HONEYWELL	HTF7000	BOMBARDIER CHALLENGER 300
Design and manufacture of three LPT - Member of the MTRI Consortium	AIRBUS HELICOPTERS	MTRI	MTR390-E	AIRBUS HELICOPTERS TIGRE
Final assembly of the engine - Member of the MTRI Consortium	AIRBUS HELICOPTERS	MTRI	MTR390-E	AIRBUS HELICOPTERS TIGRE
Lost wax casting super alloys - low pressure turbine	AIRBUS HELICOPTERS	MTRI	MTR390-E	AIRBUS HELICOPTERS TIGRE

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
Lost wax casting super alloys for Turbine Modules manufacturing	SNECMA	POWERJET	SaM146	SUKHOI SUPERJET 100
Components manufacturing	PRATT & WHITNEY CANADA	PRATT & WHITNEY	PW1000G	Cseries/MRJ90/MS-21/A320neo
Parts of external equipment of engine	ROLLS-ROYCE	ROLLS-ROYCE	PW535E	EMBRAER PHENOM 300
Design and validation of the ROLL POST	ROLLS-ROYCE	ROLLS-ROYCE	BR725	GULFSTREAM G650
Design and manufacture of low pressure turbine (LPT) - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	F136	LOCKHEED MARTIN F-35
Design and manufacture of Rear Frame - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 1000	BOEING 787
Lost wax casting super alloys for the LPT	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 1000	BOEING 787
Lost wax casting super alloys for the intermediate pressure turbine	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 1000	BOEING 787
Design and manufacture of low pressure turbine (LPT) - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 500	AIRBUS A340
Design and manufacture of the Rear Frame - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 500	AIRBUS A340
Lost wax casting super alloys for the LPT	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 500	AIRBUS A340
Assembly of the LPT and component manufacture	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 700	AIRBUS A330
Lost wax casting super alloys for the intermediate pressure turbine	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 700	AIRBUS A330
Design and manufacture of the low pressure turbine (LPT) - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Design and manufacture of the Rear Frame - Risk Partner	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Lost wax casting super alloys for the LPT	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Lost wax casting super alloys for the intermediate pressure turbine	ROLLS-ROYCE	ROLLS-ROYCE	TRENT 900	AIRBUS A380

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
KHEGAL AERONÁUTICA				
Injection elementary components Machining	AD Group	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
MATRICI				
Metallic Forming Components	LAUAK	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
Tooling for metallic parts	ITP AERO	ROLLS-ROYCE	TRENT 900	AIRBUS A380
Metallic Forming Components	ITP AERO	ROLLS-ROYCE	TRENT 900	AIRBUS A380
MESIMA				
Materials management and supply	ITP AERO	ROLLS-ROYCE	Several	Miscellaneous
Materials management and supply	WEC	Several	Several	Miscellaneous
NIVAC				
Thermal and surface treatments	Miscellaneous	Several	Several	Miscellaneous
NOVALTI				
Components for LPT	ITP AERO	EPI	TP400	AIRBUS A400M
Components	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Engine components	ITP AERO	MTRI	MTR390-E	AIRBUS HELICOPTERS TIGRE
Components for the LPT	ITP AERO	ROLLS-ROYCE	Trent 1000	BOEING 787
Components for the LPT	ITP AERO	ROLLS-ROYCE	Trent XWB	AIRBUS A350XWB
NUTER				
Fittings	ITP AERO	EPI	TP400	AIRBUS A400M
Fittings	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Fittings	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
Airfoils & Small Parts	ITP AERO	PRATT & WHITNEY	Several	Miscellaneous

3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
ONA ELECTROEROSIÓN				
Die-Sinking EDM machine	Paradigm Precision	GENERAL ELECTRIC	GE90	Boeing 777
Wire EDM machine	SAFRAN AIRCRAFT ENGINES	SAFRAN AIRCRAFT ENGINES	Several	Miscellaneous
Die-Sinking EDM machine + turnkey	AVIC CHINA	ROLLS-ROYCE	TRENT 1000	Boeing 787
RENI SHAW				
Measurement data for the production and repair of blades and bladed disks: Blade tip refurbishment, in-process blade measurement and root blending of bladed disks. Contact and non-contact tool setting systems to detect and adjust to the condition or wear of cutting tools.	Miscellaneous	Several	Several	Miscellaneous
Precision sensors for fast, accurate acquisition of component dimensions and surface data. They include blade-specific software applications.	Miscellaneous	Several	Several	Miscellaneous
Component set up, tool setting and in-cycle gauging and first off component inspection for accurate machining processes.	Miscellaneous	Several	Several	Miscellaneous
Precise and rapid gauging of complex parts, tracking trends in machining and enabling automatic process adjustments to account for changing variables like thermal drift.	NUTER	Several	Several	Miscellaneous
SARIKI METROLOGÍA				
Measurement Equipment and Consultancy-supply, maintenance, training and software programming	ITP AERO	Several	Several	Miscellaneous
SISTEPLANT				
New plant lay out and process design	PRECICAST	Several	Several	Miscellaneous
TAES				
Components Deep precision Drilling	DMP	Several	Several	Miscellaneous
Components Deep precision Drilling	ACITURRI	Several	Several	Miscellaneous

.3.3.2 Engines

General Description of the Product/service	DIRECT CLIENT	OEM	ENGINE MODEL	PLATFORMS
TECNASA				
Silicone Grommets	ITP AERO	Several	Several	Miscellaneous
WEC				
Parts of external equipment of engine	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	CFM56	AIRBUS A320 / BOEING 737
Parts of external equipment of engine	SAFRAN AIRCRAFT ENGINES	CFM INTERNATIONAL	LEAP	AIRBUS A320neo / BOEING 737MAX
Parts of external equipment of engine	ITP AERO	EPI	TP400	AIRBUS A400M
Structural parts	ITP AERO	EPI	TP400	AIRBUS A400M
Exhaust nozzle parts	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
TEC parts	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Parts of external equipment of engine	ITP AERO	EUROJET	EJ200	EUROFIGHTER TYPHOON
Parts of external equipment of engine	SAFRAN AIRCRAFT ENGINES	GENERAL ELECTRIC	GE90-115k	BOEING 777
Rings, annular components, combustion chamber components	HONEYWELL	HONEYWELL	Several	Miscellaneous
Parts of external equipment of engine	ITP AERO	PRATT & WHITNEY	PW 814	GULFSTREAM G500
TEC Front Cases	GKN Aerospace Engine Systems	ROLLS-ROYCE	Several	Miscellaneous
Structural parts	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
Parts of external equipment of engine	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
Dynamic seals components	ITP AERO	ROLLS-ROYCE	TRENT family	Miscellaneous
Parts for engine cooling devices	SAFRAN AIRCRAFT ENGINES	SAFRAN AIRCRAFT ENGINES	SILVERCREST	CESSNA Citation / DASSAUL FALCON 5X
WOLCO				
Special Cutting Tools for Aerospace manufacturing	ITP AERO	Several	Several	Miscellaneous

.3.3.3 Systems & Equipment



General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
ACITURRI			
Auxiliary Fuel Tanks	AIRBUS DS	Fuel system components	EUROFIGHTER TYPHOON
Hydraulic Tanks	CESA	Hydraulic system	AIRBUS A380
Equipped elements	RATIER FIGEAC	Turboprop systems	Miscellaneous
AEROMECA			
Nose and main landing gear components	Miscellaneous	Landing Gear	AIRBUS DS C295
Main landing gear components	Miscellaneous	Landing Gear	AIRBUS DS CN235
ALFA PRECISION CASTING			
Conduits- Air Fittings (Lost wax casting superalloys)	IAI	Air conditioning	GULFSTREAM 280
Radar housings (Lost wax casting aluminium)	INDRA	Radars	Miscellaneous
Conduits- Air Fittings (Lost wax casting superalloys)	LIEBHERR AEROSPACE	Air conditioning	AIRBUS A320neo/ceo /BOEING 787 / CSERIES / COMAC / KC395 / EJET / G7000
Optronic equipment housings (Lost wax casting aluminium)	SAFRAN ELECTRONICS	Optronic systems TV-Thermography	Miscellaneous
Optronic equipment housings (Lost wax casting aluminium)	SAFRAN ELECTRONICS	Optronic systems TV-Thermography	Miscellaneous
Optronic equipment housings (Lost wax casting aluminium)	THALES GROUP	Engines-Actuators-Electrical equipments	AIRBUS A320/330/380
Optronic equipment housings (Lost wax casting aluminium)	ZODIAC AEROSPACE	Engines-Actuators-Electrical equipments	AIRBUS A320/330/380
ALTRAN			
Architecture, critical software and hardware development	AIRBUS	ATA30, ATA32, ATA36, ATA39, ATA27, ATA24, ATA21	Miscellaneous
Architecture, critical software and hardware development	AIRBUS DS	ATA30, ATA32, ATA36, ATA39, ATA27, ATA24, ATA22	Miscellaneous
Architecture, critical software and hardware development	BOMBARDIER	ATA32	Miscellaneous

.3.3.3 Systems & Equipment



General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
BOST MACHINE TOOLS			
Machine Tools for aero-components manufacturing	Miscellaneous	Several	Miscellaneous
CIDETEC			
Surface preparation	ALFA PRECISION CASTING	Air Control System	Miscellaneous
Non Destructive Inspection	DMP	Landing gear	Miscellaneous
Non Destructive Inspection	GRUPO TTT	Landing gear	Miscellaneous
CTA			
MLG retraction actuator test	CESA	Landing gear	AIRBUS A350 XWB
Main and Tail Rotor Endurance Tests	INDRA	Rotor	INDRA PELÍCANO
Flow Servovalve tests	ZODIAC AEROSPACE	Servovalve	BOMBARDIER GLOBAL
Flow Servovalve tests	ZODIAC AEROSPACE	Servovalve	MITSUBISHI MRJ
DANOBAT			
Grinding Machine-Tools for Landing Gears	SAFRAN LANDING SYSTEMS	Landing gear	Miscellaneous
DMP			
Main transmission components	AIRBUS HELICOPTERS	Main rotor	AIRBUS HELICOPTERS X6
Landing gear components	CESA	Balancier	AIRBUS HELICOPTERS TIGRE
Actuation systems	CESA	Several	AIRBUS CN235/C295
Flight control & actuation systems	CESA	Several	EUROFIGHTER TYPHOON
Engine actuation systems	CESA	EJ200	EUROFIGHTER TYPHOON
Actuation systems	CESA	Several	SIKORSKY S92

.3.3.3 Systems & Equipment

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Shock Absorber	SAFRAN LANDING SYSTEMS	MLG	AIRBUS A330/A340
Shock Absorber	SAFRAN LANDING SYSTEMS	MLG	AIRBUS A350
Shock Absorber	SAFRAN LANDING SYSTEMS	MLG	BOEING 787
Shock Absorber	SAFRAN LANDING SYSTEMS	NLG	BOEING 787
Slider	SAFRAN LANDING SYSTEMS	NLG	AIRBUS A320
Slider	SAFRAN LANDING SYSTEMS	NLG	ATR 42/72
Rack	SAFRAN LANDING SYSTEMS	NLG	AIRBUS A320
Cylinder & Piston	SAFRAN LANDING SYSTEMS	RETRACTION ACTUATOR MLG	AIRBUS A330
Balancier équipé	SAFRAN LANDING SYSTEMS	Main rotor	AIRBUS HELICOPTERS SUPER PUMA
DOILAN			
Component machining	Miscellaneous	Landing Gear	Miscellaneous
GRUPO TTT			
Heat and surface treatments	BHR Helicopter	Systems	F360, F290
Heat and surface treatments	GOODRICH	Systems	Miscellaneous
Heat and surface treatments	IAI	Systems	Miscellaneous
Heat and surface treatments	SAFRAN LANDING SYSTEMS	Landing Gear	AIRBUS families
Heat and surface treatments	SAFRAN LANDING SYSTEMS	Brakes	AIRBUS families
Heat and surface treatments	SAFRAN TRANSMISSION SYSTEMS	Systems	Miscellaneous
Heat and surface treatments	Miscellaneous	Landing Gear	SIKORSKY

.3.3.3 Systems & Equipment

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
HAUCK HEAT TREATMENTS			
Heat treatments	AIRBUS DS	Several	Miscellaneous
Heat treatments	CESA	Several	Miscellaneous
Heat treatments	DMP	Several	Miscellaneous
Heat treatments	INDRA	Several	Miscellaneous
Heat treatments	SAFRAN LANDING SYSTEMS	Landing Gears	Miscellaneous
Heat treatments	SENER	Several	Miscellaneous
IMEDUSA			
External housings	INDRA	Several	Miscellaneous
INDUSTRIAS METALÚRGICAS GALINDO			
Tooling manufacturing	WEC	Several	Miscellaneous
KHEGAL AERONÁUTICA			
Oil tanks Elementary components Machining	AD Group	Lubrication systems	AIRBUS A350XWB
KORTA			
Ball/Trapezoidal Screws	SENER	Actuators	Miscellaneous
Ball Screws	SOMINEX	Actuators	Miscellaneous
MATRICI			
Tooling for carbonfiber and metallic parts	AIRBUS DS	Several	Miscellaneous
METRALTEC			
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	SENER	Several	Miscellaneous

.3.3.3 Systems & Equipment

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
MICROLAN			
Precision Machining of components, Turning and Milling	Miscellaneous	Several	Miscellaneous
MIZAR ADDITIVE			
3D Pouring moulds	AIRBUS DS	Several	Miscellaneous
Screw-housing	CARBURES	Several	Miscellaneous
Components of the Futuralve project	ITP AERO	Several	Miscellaneous
NUTER			
Components	CESA	AIRBUS	AIRBUS A330/A350XWB
Components	CESA	AIRBUS DS	AIRBUS A400M
ORBITAL CRITICAL SYSTEMS			
MTF, Model and Test System Support	AIRBUS DS	Military Test Facilities	AIRBUS A400M
M-MMS DASS Display Capabilities V&V	AIRBUS DS	Mission Management System (M-MMS)	AIRBUS A400M
M-MMS Tactical Situation System. Design, Development and V&V	AIRBUS DS	Tactical Situation Management (M-MMS)	AIRBUS A400M
Tactical Situation Management System (TSMS), Test System Development	AIRBUS DS	Test System for TSMS	HELIBRAS EC725
Maintenance Simulator Training (MST)	AIRBUS DS	MST	EUROFIGHTER TYPHOON
Flight Control System (FCS), SW, SW/HW Integration and V&V	AIRBUS DS	FCS	EUROFIGHTER TYPHOON
Smart Nozzle. Sensor in Boom for Automatic Air to Air Refuelling.	AIRBUS DS	Boom System	AIRBUS A330-MRTT
System integration test bench and supportability for Ground and Flight test	E2S AIRBUS DS	Air to Air Refuelling System	AIRBUS A330-MRTT

.3.3.3 Systems & Equipment



General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
SW Multifunction Control Display (MFCD) and BOOM Control and Computing System (BCU)	E2S AIRBUS DS	MFCD and BCU	AIRBUS A330-MRTT
M-MMS Communication Management System. Design, Development and V&V	E2S AIRBUS DS	Mission Management System (M-MMS)	AIRBUS A400M
M-MMS Cargo and Aerial Delivery System. Design, Development and V&V	E2S AIRBUS DS	Mission Management System (M-MMS)	AIRBUS A400M
AMU. SW and Firmware design and testing	E2S AIRBUS DS	Audio Management System (AMS)	AIRBUS A400M
Flight Test and Analysis Defence Aided System	E2S AIRBUS DS	DASS	AIRBUS A400M
M-MMS Low Level testing for DO178B certification.	E2S AIRBUS DS	Mission Management System (M-MMS)	AIRBUS A400M
M-MMS, MIDS Display Capabilities. Design, Development and V&V	E2S AIRBUS DS	Mission Management System	AIRBUS A400M
Avionics Flight Test Telemetry	E2S AIRBUS DS	Flight Tests Telemetry	Miscellaneous
Fly-by-Wire FT4B actuators control system	E2S AIRBUS DS	FT4B	AIRBUS DS C295
Automatic Air to Air Refuelling A3R. Platform Software	E2S AIRBUS DS	A3R	AIRBUS A330-MRTT
FITS. Radar System.	E2S AIRBUS DS	FITS	AIRBUS DS C295
MIDS System Integration and V&V	E2S AIRBUS DS	MIDS	AIRBUS A330-MRTT
Tactical Situation Management System (TSMS), Test System Production	EMBRAER	Test System for TSMS	HELIBRAS EC725
STTE MIMETS Bench	INDRA	DASS Test System	AIRBUS DS C295
RENISHAW			
Raman spectroscopy technology for the material make-up of specialist components and the quality of component surface coatings	Miscellaneous	Several	Miscellaneous
SENER			
Production of the Control Section of aerodynamic fins and fixed wings (Air - Air version)	DBD	Control Systems	Defence Systems
Development and qualification of the Control Section of aerodynamic fins (Surface Launch version)	DBD	Control Systems	Ground equipment

.3.3.3 Systems & Equipment

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Technological teammate of GA-ASI for the integration of the Remotely Piloted Aircraft (RPA) system Predator® B in the Spanish Armed Forces	GENERAL ATOMICS	Predator® B	GENERAL ATOMICS RQ-1
Program to extend the life of the Spanish Navy's AB212 helicopters	Head of Logistics Support (JAL) - Spanish Navy	Several	AGUSTA-BELL AB 212
Development, qualification, industrialisation and production of the Control Section of aerodynamic fins	MBDA-UK	Control Systems	Defence Systems
Stabilized Mirror Unit (SMU) of the sight	SAAB Dynamics	RBS 70 NG	Ground equipment
FASS subsystem of drive and control of aerodynamic fins	TAURUS Systems	Control Systems	Defence Systems
Image management unit for two Tactical Recognition systems (ReccLite or Litening Pods)	RAFAEL	IPU 2 / IPU 3	Defence Systems
SISTEPLANT			
Manufacturing Execution System implementation	CESA	Several	Miscellaneous
Lean Manufacturing Training	AIRGROUP	Several	Miscellaneous
Scheduling and quality processes redesign	GRUPO TTT	Several	Miscellaneous
TAES			
Components Deep precision Drilling	METALMEC	Several	Miscellaneous
Components Deep precision Drilling	CESA	Several	Miscellaneous
TECNASA			
Firing Handles	MARTIN-BAKER	Ejection Seats	Defence aircrafts
O-RINGS	MARTIN-BAKER	Ejection Seats	Defence aircrafts
JIGS	MARTIN-BAKER	Ejection Seats	Defence aircrafts
WEC			
Air Bleed equipment parts	HONEYWELL	Air Treatment Management	AIRBUS A320/330, DASSAULT F7X
Air Bleed equipment parts	LIEBHERR	Air Treatment Management	AIRBUS A320/A330/A400M, CSeries
Air Bleed equipment parts	LIEBHERR	Air Treatment Management	AIRBUS A320neo
Air Bleed equipment parts	LIEBHERR	Air Treatment Management	AIRBUS A330neo
Air Bleed equipment parts	LIEBHERR	Air Treatment Management	BOEING 747-8
Air Bleed equipment parts	LIEBHERR	Air Treatment Management	DASSAULT F7X

3.3.4 Space

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
AIBE			
Precision machining of components	SENER	Several	Miscellaneous
ALTRAN			
Structure development/system development/integration/industrial operations	AIRBUS DS	Several	Miscellaneous
Structure development/system development/integration/industrial operations	LEONARDO	Several	Miscellaneous
Structure development/system development/integration/industrial operations	OHL	Several	Miscellaneous
Structure development/system development/integration/industrial operations	RUAG	Several	Miscellaneous
Structure development/system development/integration/industrial operations	THALES	Several	Miscellaneous
ARATZ			
Machined Components	Miscellaneous	Several	Miscellaneous
Components for satellite antennas	Miscellaneous	Several	Miscellaneous
AYESA AIR CONTROL			
Implementation of process optimization techniques, Industry 4.0 solutions and Digital Factory technologies	AIRBUS DS	Satellite solar panel arrays	SKYNET 5
CIDETEC			
Surface preparation	SENER	Satellite	Miscellaneous
Conductive coatings	TRYO Aerospace	Satellite	Miscellaneous
CTA			
Multi-Payload Component Static Tests	AIRBUS DS	Structure	FALCON 9
Antenna	AIRBUS DS	Telecom	Miscellaneous

3.3.4 Space

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Lander impact tests	CRISA	Flight Control	Miscellaneous
Heat pipes system	IBERESPACIO	Thermal Protection System	Miscellaneous
Mechanisms	SENER	Telecom	Miscellaneous
DYFA			
CAD, CAM, Machining and dimensional control panels satellite	Several	Satellites LO049, LO050	Miscellaneous
GRUPO TTT			
Heat and surface treatments	AIRBUS DS	Propulsion systems	ARIANE
Heat and surface treatments	SENER	Systems	Miscellaneous
HAUCK HEAT TREATMENTS			
Heat treatments	AIRBUS DS	Several	Miscellaneous
Heat treatments	INDRA	Several	Miscellaneous
Heat treatments	SENER	Several	Miscellaneous
INDUSTRIAS METALÚRGICAS GALINDO			
Tooling manufacturing	THALES ALENIA SPACE	Collars	CSO SATELLITE
ITP AERO			
Super alloy components for space shuttle engine	SAFRAN AIRCRAFT ENGINES	Shuttle	ARIANE 5
METRALTEC			
Manufacture of elementary parts and assemblies (sheet metal, machining, heat treatments and surface treatments, painting)	SENER	Several	Miscellaneous
MICROLAN			
Precision Machining of components, Turning and Milling	Miscellaneous	Satellites	Miscellaneous

.3.3.4 Space

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
NOVALTI			
On-board components and mechanical systems	ESA	Several	Miscellaneous
On-board components and mechanical systems	THALES ALENIA SPACE	Several	IRIDIUM NEXT GENERATION
On-board components and mechanical systems	THALES ALENIA SPACE	Several	O3B
NUTER			
Components	SENER	Several	GAIA
Components	SENER	Several	METEOSAT THIRD GENERATION
ORBITAL CRITICAL SYSTEMS			
EXOMARS 2018 DM OBC UT	CRISA	EGSE	EXOMARS 2018 DM
VEGA MFU UT	CRISA	EGSE	VEGA Launcher
UVAS FEE	CSIC	UV/UVN FEE System	UVAS CSP SEOSAT
Avionics System SW Demonstrator based on RTEMS	ESA	Avionics System	RTEMS
Requirement Data Base Maintenance	EUMETSAT	Meteorological satellite	METEOSAT THIRD GENERATION
IRCAM System Definition and proto development.	UAH	IR Camera System	JEM-EUSO
Full design and development of Scientific Instrument and launch to Space	UAM	IR Camera System	EUSO-Balloon
RENISHAW			
Metal 3D printing systems	Miscellaneous	Several	Miscellaneous
SENER			
Mechanisms' engineering	ESA	Scientific Mission	ATHENA
Analysis of different alternatives for planetary vehicle landing gear	ESA	Planetary exploration ship -Scientific Mission	AURORA - Mars Sample Return Mission

.3.3.4 Space

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Main system contractor	ESA	MARES system to investigate muscular atrophy caused by weightlessness	COLUMBUS
FixBox for the ISS	ESA	Fixation Box for a vegetal biology experiment to be performed at the ISS	ISS - International Space Station
Complete Guidance, Navigation and Flight control subsystem (GNC)	ESA	Intermediate experimental vehicle for re-entry into atmosphere	IXV
Technical and engineering assistance in the project	ESA	MELISSA project for developing a life-support system for long duration space travel and planetary bases.	MELISSA
Main contractor of the entire program	ESA	Phases C/D and E1	PROBA 3
Mechanism that separates the magnetic disturbance magnetometer of the satellites, as well as the accompanying mobile arm	ESA / AIRBUS DS	Planetary exploration ship -Scientific Mission	BEPICOLOMBO
In-flight demonstration study of all the functions of the mechanism and Guidance, Navigation and Control system (GNC)	ESA / ESTEC	Docking and joining mechanism -Navigation	IBDM (International Berthing and Docking Mechanism)
Radar deployment system	ESA / AIRBUS DS	Observation satellite - Scientific Mission	SENTINEL 1
Calibration mechanism	ESA / AIRBUS DS	Observation satellite - Scientific Mission	SENTINEL 2
Optical instrument: engineering work of systems and optical and thermal-structural design	ESA / AIRBUS DS	Optical instrument - Observation satellite	SEOSAT / INGENIO
Communication antennas sub-system	ESA / AIRBUS DS	Scientific Mission	SOLAR ORBITER
Feedthroughs, doors and mechanism subsystem	ESA / AIRBUS DS	Scientific Mission	SOLAR ORBITER
Instrument Boom	ESA / AIRBUS DS	Scientific Mission	SOLAR ORBITER
Main contractor of the formation flying system	ESA / GMV	Formation flying system	PROBA 3
So-Phi Instrument	ESA / IAA	Scientific Mission	SOLAR ORBITER
Design and verification of a swinging mechanism or FMD (Flip Mirror Device)	ESA / JENA OPTRONIK	Observation satellite -Sentinel 3-	SENTINEL 3
Scan assembly (FCI and IRS SCA) and the Calibration and Obturation Mechanism (FCI and IRS COM)	ESA / Kayser-Threde	Observation satellite	METEOSAT THIRD GENERATION

3.3.4 Space

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Optical Bech (OBA)	ESA / LEONARDO	FLORIS Instrument	FLEX
Attitude and orbit control system, Special Check Out Equipment (AOCS SCOE)	ESA / OHB System	Observation satellite	METEOSAT THIRD GENERATION
Communication antennas sub-system (HGA & MGA)	ESA / THALES ALENIA SPACE	Planetary exploration ship - Scientific Mission	BEPICOLOMBO
Prime contractor for Euclid's AOCS/GNC	ESA / THALES ALENIA SPACE	Scientific Mission	EUCLID
High Gain Antenna Gimbal	ESA / THALES ALENIA SPACE	Scientific Mission	EUCLID
EPD (Energetic and Surathermal PArticle Detector Analyzer) instrument	ESA / UNIVERSIDAD DE ALCALÁ DE HENARES	Scientific Mission	SOLAR ORBITER
Main contractor and responsible for the support structure and of the help system at the exit of the Rover (SES) onto the Martian surface	ESA /THALES ALENIA SPACE	Planetary exploration ship - Scientific Mission	EXOMARS
ALMA Amplitude Calibration Device (ACD)	ESO - European Southern Observatory	Robotic Arm for the ALMA antennas	Atacama Large Millimeter/submillimeter Array (ALMA)
Design and construction of the cells of the secondary (M2) and tertiary (M3) mirrors	ESO - European Southern Observatory	Infrared optical telescope	E-Extreme Large Telescope
Actuator system for the JST telescope's panoramic camera	Institute of Astronomy, Geophysics and Atmospheric Science of Sao Paulo University	JPCam camera actuator system	T250 or JST (Javalambre Survey Telescope)
High gain antenna pointing mechanisms (HGAG) of the Rover	NASA / AIRBUS DS	Planetary exploration ship - Scientific Mission	MARS SCIENCE LABORATORY
Antenna pointing mechanism	NASA M2020 / AIRBUS España	New rover	JPL mission
Electronich system	ROSCOSMOS	Detector	World Space Observatory
TECNALIA			
LPSR-Partial Demonstration of Liquid bi-propellant Rocket Stage Recovery	ESA	Launchers	ARION 2
Harmonic drive gears for space applications	ESA	Mechanism	METEOSAT THIRD GENERATION
ao8318 LHP for solar dynamics energy conversion	ESA	Power	NEOSAT
Citric Acid as a Green Replacement for Steels Passivation	ESA	Spacecraft Structures	REACH
TM TELLERIA			
Tooling for big assemblies	Tooling for big assemblies	Tooling for big assemblies	Tooling for big assemblies
WEC			
Mechanical parts for Vulcain engine	AVIO	Vulcain engine	ARIANE 5

3.3.5 MRO

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
AERNNOVA			
Technical assistance & Sales of spares 24H/365d	AIRBUS	MLGD, HTP, Fuselage, etc	AIRBUS families
Composite & metal structure repairs	AIRBUS	MLGD, Elevators	AIRBUS families
Sales of spares 24H/365d	BEECHCRAFT	wings, flaps, ailerons, etc	BEECHCRAFT families
Composite & metal structure repairs	BOMBARDIER	Tips, fairings, panels, etc	BOMBARDIER Families
Technical assistance & Sales of spares 24H/365d	BOMBARDIER	Empenage, fairings, elevators	BOMBARDIER Families
Composite & Metal structure repairs	EMBRAER	Elevators, Rudders	EMBRAER 170/190
Composite & Metal structure repairs	EMBRAER	Flaps, Ailerons, Wing tips, MLGD, etc	EMBRAER ERJ145/135/Legacy
Technical assistance & Sales of spares 24H/365d	EMBRAER	Structures and mobile surfaces	EMBRAER families
Maintainability, Reliability Analysis	OEM	Several	Miscellaneous
Technical Publications, SRM, AMM, ITEM, SB, etc	OEM	Several	Miscellaneous
Modifications at Final Assembly of OEMs	OEM	Several	Miscellaneous
Design of repairs	OEM & Operators	Several	Miscellaneous
Design of GSEs	OEM & Operators	Several	Miscellaneous
sales of GSEs	OEM & Operators	Several	Miscellaneous
Inspections, special processes and re-qualifications	Operators	Several	Miscellaneous
Technical assistance & Sales of spares 24H/365d	Operators	Several	Miscellaneous
Composite & metal structure repairs and modifications	Operators	Several	Miscellaneous
Composite & Metal structure repairs	SIKORSKY	Doors, cowlings, stabilisers	SIKORSKY S-92/H92
Technical assistance & Sales of spares 24H/365d	SIKORSKY	Doors, cowlings, stabilisers	SIKORSKY S-92/H92

3.3.5 MRO

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
AEROSPACE ENGINEERING GROUP			
Overhaul and repair of electrical components	MRO, Operators, Air Forces, Trading Companies	Electrical systems	A320/A340/737/747/757/767/C212/CN235/C295/MD80/C130/P3/ATR/FOKKER/CRJ/EMBRAER...
Overhaul and repair of hydraulic components	MRO, Operators, Air Forces, Trading Companies	Hydraulic systems	A320/A340/737/747/757/767/C212/CN235/C295/MD80/C130/P3/ATR/FOKKER/CRJ/EMBRAER...
Overhaul and repair of electrical components	MRO, Operators, Air Forces, Trading Companies	Fuel systems	A320/A340/737/747/757/767/C212/CN235/C295/MD80/C130/P3/ATR/FOKKER/CRJ/EMBRAER...
Overhaul and repair of avionics components	MRO, Operators, Air Forces, Trading Companies	Avionics systems	Miscellaneous
BAHCO			
Designs and manufacturing of specialised hand tools (Tool Storages, Torque Tools, Sockets and Accessories) for MRO	MRO Operators	Several	Miscellaneous
Designs and manufacturing of specialised hand tools (Tool Storages, Torque Tools, Sockets and Accessories) for MRO	AIRBUS HELICOPTERS	Several	Miscellaneous
DANOBAT			
Grinding Machine Retrofitting			
GRUPO TTT			
Heat and surface treatments	SAFRAN LANDING SYSTEMS	Several	Miscellaneous
ITP AERO			
Resolving incidents	ROLLS-ROYCE	RR Trent 700	AIRBUS A330
Resolving incidents	ROLLS-ROYCE	RR Trent 500	AIRBUS A340
Resolving incidents	ROLLS-ROYCE	RR BR717	BOEING 717
Full Maintenance, Inspection and Repair of the TPE331 -engine, modules and components- & engine and accessories test	ROYAL AIR FORCE	HONEYWELL TPE331	SHORT TUCANO

3.3.5 MRO

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
Full Maintenance, Inspection and Repair of the PW206 - engine, modules and components- & engine and accessories test	Several	P&W PW206	EUROCOPTER EC135
Full Maintenance, Inspection and Repair of the F404 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	GE F404	BOEING F/A-18
Full Maintenance, Inspection and Repair of the TFE731 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	HONEYWELL TFE731	CASA C101
Full Maintenance, Inspection and Repair of the TPE331 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	HONEYWELL TPE331	CASA C212
Full Maintenance, Inspection and Repair of the ATAR - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	SNECMA ATAR	DASSAULT MIRAGE Families
Full Maintenance, Inspection and Repair of the EJ200 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	EUROJET EJ200	EUROFIGHTER TYPHOON
Full Maintenance, Inspection and Repair of the T56 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	RR T56	LOCKHEED MARTIN C130
Full Maintenance, Inspection and Repair of the T56 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	RR T56	LOCKHEED MARTIN P-3
Full Maintenance, Inspection and Repair of the J85 - engine, modules and components- & engine and accessories test	Spanish Ministry of Defence	GE J85	NORTHROP F-5
ORBITAL CRITICAL SYSTEMS			
Mission Planning and Maintenance Portable platform in Android	E2S AIRBUS DS	Maintenance System	AIRBUS A300/310
Cargo Load DB Manager (Mozart)	E2S AIRBUS DS	Mission Management System	AIRBUS A400M
Fuel Management System platform in Tablets	E2S AIRBUS DS	Maintenance System	AIRBUS A300/310

.3.3.5 MRO

General Description of the Product/service	DIRECT CLIENT	SYSTEM / EQUIPMENT	PLATFORMS
RENISHAW			
Calibrations devices and software for accurate set-up of complex multi-tasking machine tools and CMMs.	ACITURRI	Several	Miscellaneous
SARIKI METROLOGÍA			
Measurement Equipment maintenance, training and software programming	ITP AERO	Several	Miscellaneous

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
ACITURRI		
EWIRA	Manufacturing, assembly and integration of extended wing for a regional aircraft	European - CLEAN SKY 2
SYMBIO-TIC	Symbiotic Human-Robot Collaborative Assembly: Technologies, Innovations and Competitiveness	European - H2020-FoF
COMMUNION	Net-shape joining technology to manufacture 3D multi-materials components based on metal alloys and thermoplastic composites	European - H2020-FoF
COROMA	The main output of COROMA project will be a modular robotic system that will perform multitude of different manufacturing tasks in an autonomous way to adapt to the production requirements. The robot will be capable of performing drilling, trimming, deburring, polishing, sanding, non-destructive inspection and adaptive fixturing operations. Robotized surface finishing.	European - H2020-IND
ESTENEA	Study of low cost and high rates technologies for composite parts	National - CIEN - CDTI
RTM LE	Manufacturing of integrated leading edge in one shot	National - RETOS - MINECO
DECO-MET	Development of more integrated engine components. Advanced machining, integration and joining and surface technologies.	Regional - Castilla y León Calls
DECO-MAC	Composite parts for engines. RTM and complex textiles	Regional - Castilla y León Calls
DECO-FAD	Engine components produced by additive manufacturing. Additive manufacturing technologies for metals	Regional - Castilla y León Calls
ADDITIVE	Development and research of new alloys and industrial components through additive manufacturing for strategic sectors.	Regional - ETORGAI - Basque calls
LIVE-X	Hybrid laminar flow control application in leading edges	Others - AIRBUS
SLSAero	Research in manufacturing processes based on SLS applied to the aeronautical sector	Others
AERNNOVA		
CLEAN SKY 2	Airframe ITD	European - CLEAN SKY 2
CLEANSKY 2	LPA, HLFC HTP and WING	European - CLEAN SKY 2
CLEANSKY 2	LPA, REAREND	European - CLEAN SKY 2

3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
CLEANSKY 2	LPA, THERMOPLASTIC PANELS	European - CLEAN SKY 2
CLEAN SKY	Smart Fixed Wing Aircraft. High accuracy wing assemblies for Natural Laminar Flow	European - CLEAN SKY
FIBEREUSE	Large scale demonstration of new circular economy value-chains based on the reuse of end-of-life fiber reinforced composites.	European - H2020
SUCOHS	Sustainable & Cost efficient High-performance composite Structures	European - H2020
TRANSFON3D	3D printing	European - POCTEFA
AFLONEXT	Maturation of an integrated set of active flow, load and noise control technologies for the next generation of active wing	European - FP7
CAPPADOCIA	Coordination Action Pro "Production, Avionics, Design" on Cost-efficiency in Aeronautics	European - FP7
DAMTEX	Ultra-thin, non-conventional carbon fibre laminates	National - AirTN
IMPRIME	Digital Materials Printing	National - CDTI - PID
MERINDA	Composites fatigue	National - CDTI - PID
ADDIFLY	Additive Manufacturing Technologies	National - CDTI - PID
PEEN FORMING II	Development of peen forming for metallic structures	National - CDTI - PID
SUPERCALCULUS	Advanced numerical simulations	National - CDTI - PID
ISOP	Peen Forming Optimisation	National - CDTI - PID
ABORDA	Leading Edge Design optimization	National - RETOS - MINECO
ESTAVRIL	New composite development for light weight railway trains	Regional - ETORGAI - Basque calls
SUMOCAR	New composite architectures for control surfaces and ground testing validation	Regional - ETORGAI - Basque calls
ATEA-AERO	New automated composite processes for landing gear doors	Regional - ETORGAI - Basque calls
PROSAVE2	Advanced Systems research for a more eco- friendly aircraft	Regional - GAITEK - Basque calls

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
MEGAZALAK	Large aerospace structures efficient design and manufacturing	Regional - HAZITEK- Basque calls
PAINT-INK	Boric surface treatments for choppers and anti- fire composite coatings	Regional - HAZITEK- Basque calls
PROMULENS	Multi-material Hybrid light weight structures	Regional - HAZITEK- Basque calls
HASI	Industry 4.0	Regional - HAZITEK- Basque calls
DESTACAR	Development of high performance technologies for the manufacture of multimaterial components	Regional - Interconnecta - Galicia calls
ALESTIS		
INTERNAL DEVELOPMENT	Composites Aerostructures resistant to high temperatures	Others - A350XWB
INTERNAL DEVELOPMENT	Integrated fuselage barrel structures	Others - A350XWB
INTERNAL DEVELOPMENT	Optimization of composite beams	Others - A350XWB
AYESA AIR CONTROL		
JIGLESS	Advanced tooling for aerospace assemblies	European - CLEAN SKY 2
MINERVA	Advanced tooling for aerospace assemblies	National - INNTERCONNECTA
NEBULA	Advanced tooling for aerospace assemblies	National - INNTERCONNECTA
DRONECAPTOR	Protection of airspace from malicious drones	National - INNTERCONNECTA
A12X	Functional Test digitalization	National - INNTERCONNECTA
CIDETEC		
SEALANT	Optimization and scale-up of final sealing of Sulfuric Acid Anodizing employing Design of Experiments. Anodized Surface-treatment	European - CLEAN SKY 2
Future Litium-ion Technology	Development of advance materials and electrolytes for advance Li-ion cells.	European - ESA

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
CTA		
ORBIT	Aerodynamic Rigs for VHBR IP Turbine. Experimental aerodynamics	European - CLEAN SKY 2
OUTCOME	OUT of autoclave COMPOSITE manufacturing, wing and tail unit components and multifunctional design. Test technologies, STRUCTURAL TEST,	European - CLEAN SKY 2
ENOVAL	Engine Module Validators. Experimental aerodynamics	European - FP7
TEMPROCEN	Automation technologies for metal empennage. IT Technology, NDT Test technologies	National - CIEN
DIEMETEN	Empennage metal design with new testing technologies. IT technologies, Estructural test, HALT test, accelerated fatigue technology	National - RETOS
SPACECAP V	Development of the spatial technologies. space test technologies,	Regional - DFA - Basque calls
CONVAUTIN	Development of Advanced Control Technologies for Smart rigs. advanced control development	Regional - DFA - Basque calls
GENTALVE	Disruptive Technologies for the New Generation of High Speed Turbines. Experimental aerodynamics	Regional - ELKARTEK- Basque calls
ACTIMAT	Research and Development of new smart materials. Test technologies,	Regional - ELKARTEK- Basque calls
AEROTRESNAK	Smart Rig for for Large Aerostructural Components in Industry 4.0. NEW test technology, developmen of Smart Rigs for	Regional - ELKARTEK- Basque calls
INGRAVE	Innovative aerodynamic test configurations for the new generation of high-speed turbines. Experimental aerodynamics	Regional - DFB - Basque calls
KONMUSAT	New Controlled Switches for Waveguide in Satellites. design of test rig for space component	Regional - HAZITEK - Basque calls
LIT-SENS	Development of smart products using new sensorization and lighting technologies. IT Technology, NDT Test technologies	Regional - HAZITEK - Basque calls
EKIPANEL	Development of a high performance composite panel through advanced manufacturing processes. IT Technology, NDT Test technologies, Structural test, fire test	Regional - HAZITEK - Basque calls
EKIN		
TALDEA	<p>Make the sensorized approach more robust and reliable, lower costs and eliminate sensors with repeatability or sensitivity to coolants</p> <p>Eliminate cables and systems that contradict the need to close production machine. This fact happens to use Wireless, and inductive sensors or cameras.</p> <p>Comprehensive capturing in the field of "fog monitoring and computing". In the machine itself, elements can be integrated to capture and filter higher level information to higher hierarchies. Big data on physical models, that is, that improvements are proposed on process models, providing monitoring and data management, which in the case of discrete event processes, will never be massive.</p>	Regional - HAZITEK - Basque calls

3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
GRUPO TTT		
PRO-SURFACE	Surface Treatments	National-RETOS
HAUCK HEAT TREATMENTS		
ITP AERO projects	Heat Treatments	Several
SENER projects	Heat Treatments	Several
IK4		
INDUCTICE	Efficient, Modular and LighWeight Electromagnetic Induction Based Ice Protection System	European - CLEAN SKY 2
ISSELUB	Innovative sealing and sensing technologies for extended life of lubricated elements	European - CLEAN SKY 2
WINNER	smart Wing panels for Natural laminar flow with functional Erosion Resistant	European - CLEAN SKY 2
ETSIN	Modular, Scalable, multi-functional and high power density power controller for electrical taxi in new aircraft	European - CLEAN SKY 2
TR4EMACS	Flexible Test Rig of Aircraft Control Surfaces powered by EMAs	European - CLEAN SKY 2
SIMFAL	Assembly Planning and SIMulation of an Aircraft Final Assembly Line	European - CLEAN SKY 2
ALFORAMA	Innovative Al alloy For aircraft structural parts using Additive MAnufacturing technology	European - CLEAN SKY
CRO-INSPECT	New inspection system based on advance Ultrasonic Test of large aircef components	European - CLEAN SKY
DELASTI	Development of advanced Laser based technologies for the manufacturing of Titanium HLFC structures	European - CLEAN SKY
DISTRACTION	Design against Distortion of metallic aerospace parts based on combination of numerical modelling activities and topology optimisation	European - CLEAN SKY
ECO-TECH	Development of innovative and ECO-friendly airframe TECHnologies from desing to manufacturing to improve airrafe life cycle environmental footprint	European - CLEAN SKY
HiperTURB	Development of investment casting process of nickel superalloys with enhanced weldability.	European - CLEAN SKY
HYPROCELL	Development and validation of integrated multiprocess Hybrid PROduction CELls for rapid individualized laser-based production	European - CLEAN SKY

3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
LIGHTWELD	Characterization of metallurgical joining technologies for Al, Al-Li and Mg joints	European - CLEAN SKY
Rib-on	Innovative Stamping Die for Aluminium Ribs hot stamping	European - CLEAN SKY
SENTRY	Sustainable Dismantling and Recycling of Metallic Aerostructures	European - CLEAN SKY
WELDMINDT	Open rotor engine WELDED parts insp using Miniaturized NDT	European - CLEAN SKY
Optimize	Design of Experiments to OPTIMIZE design solutions for a Power reduction Gearbox	European - CLEAN SKY
EBREAK	Engine Breakthrough Components and Subsystems	European - H2020 - AAT
ALISE	Advanced Lithium Sulfur Battery for EV	European - H2020 - NMP
FourByThree	Highly customizable robotic solutions for effective and safe human robot collaboration in manufacturing applications	European - H2020-EU
SusPIRE	Sustainable production of industrial recovered energy using energy dissipative and storage technologies	European - H2020-EU
COROMA	Cognitively enhanced robot for flexible manufacturing of metal and composite parts	European - H2020-FoF
ForZDM	Integrated Zero Defect Manufacturing Solution for High Value Adding Multi-stage Manufacturing systems	European - H2020-FoF
MC-SUITE	ICT Powered Machining Software Suite	European - H2020-FoF
OPTIMISED	Operational Planning Tool Interfacing Manufacturing Integrated Simulations with Empirical Data	European - H2020-FoF
PRECOM	Predictive Cognitive Maintenance Decision Support System	European - H2020-FoF
PROGRAMS	PROGnostics based Reliability Analysis for Maintenance Scheduling	European - H2020-FoF
SYMBIO-TIC	Symbiotic Human-Robot Collaborative Assembly: Technologies, Innovations and Competitiveness	European - H2020-FoF
ZAERO	Zero-defect manufacturing of composite parts in the aerospace industry	European - H2020-FoF
ERSAT EAV	ERTMS on SATELLITE - Enabling Application & Validation	European - H2020-Galileo
MOBNET	Mobile network for people's location in natural and man made disasters	European - H2020-Galileo

3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
AIOSAT	Autonomous indoor-outdoor safety tracking	European - H2020-Galileo
PROPART	Precise and robust positioning for automated road transport	European - H2020-Galileo
A4BLUE	Adaptive Automation in Assembly For BLUE collar worker satisfaction in Evolvable context	European - H2020
MM-TECH	New aerospace advanced cost effective materials and rapid manufacturing technologies	European - H2020-Transport
SCORE	Score board of competitiveness of European transport manufacturing industries	European - H2020-Transport
DITAS	Data-intensive applications Improvement by moving daTA and computation in mixed cloud/fog environments	European - H2020-ICT
ADDISPACE	Platform for the dissemination and transfer of Additive Manufacturing Technologies in the Aerospace Sector of SUDOE	European - Interreg SUDOE
MERLIN	Development of Aero Engine Component Manufacturing using Laser Additive Manufacturing	European - FP7- Transport
ENOVAL	ENgine mOdules VALidator	European - FP7-AAT
SMERobotics	The European Robotics Initiative for Strengthening the Competitiveness of SMEs in Manufacturing by integrating aspects of cognitive systems.	European - FP7
SELENA	More electrical, safe and reconfigurable systems oriented to a most efficient aircraft and reducing pilot working-load	National - CIEN
FACTORIA	Automated assembly processes and advanced deposition manufacturing technologies for structures reducing environmental impact	National - CIEN
FUSELAGE	Development of automated manufacturing and high integration processes of aeronautical fuselage structures in an Industry 4.0 environment	National - CIEN
ULTRAERO	Ultraprecision machines based on low cost and high impact solutions for the aeronautical sector	National - RETOS
EPAMP	Project of Power Amplifier in Band E (71 – 86GHz)	National - RETOS
IMPRIME	Development of carbon fiber coatings	National - CDTI - PID
OTHERS	Pressure tanks carbon fiber filament winding	Others
SAVE	Development of carbon fiber preforms by pultrusion	Others
C- RECYCLING I	Development of added value applications from prepreg and carbon fiber composites residues from the aeronautical sector	Regional - ECOINNOVACION - Basque Calls

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
C-RECYCLING II	Revalorization of carbon fiber residues in high added value intermediate and final products of various industrial sectors	Regional - ECOINNOVACION - Basque Calls
MOTLIG	Electromagnetic, mechanical and thermal study of light engines	Regional - ELKARTEK- Basque calls
ESCALITURB	Competitive technologies for interturbine hot structures	Regional - ETORGAI - Basque calls
aeroHUMS	Adjusting and validating modelling technologies, microlubrication and health monitoring for small size aeronautic reducers more reliable and economical	Regional - GAITEK - Basque calls
PRECISUS	Ultrasonic assisted drilling for high precision holes in aeronautics .Industrias Laip	Regional - GAITEK - Basque calls
UCURVIC	New grinding machine for the automated manufacture of couplings for the aeronautical sector	Regional - HAZITEK - Basque calls
PROMULENS	Lightened Structural product by multi-material approach and hybrid assembly enabling technologies	Regional - HAZITEK - Basque calls
RCARBEFILL	Use of carbon fiber powder waste for the production of conductive monofilament for 3D printing applications	Regional - IHOBE - Basque Calls
CASTWELD	Aeronautical structures based on INCO718 with improved weldability manufactured by microfusion	Regional-HAZITEK-Basque calls
OTHERS	Optimization of the manufacture of complex preforms and structural filling for aerostructures of composite material	Others
AEROTOOL	Innovative tools for last generation materials machining in the aeronautics industry	Others
CRIOCEN	Development and application of cryogenic refrigeration systems in aeronautical machining	Others
ITP AERO		
Clean Sky 2	VHBR Engine Intermediate Pressure Turbine Technology	European - CLEAN SKY 2
JTI - Clean Sky	Advanced propulsion plants: Development of new concepts for the future generation of aircraft propulsion plants in accordance with the environmental requirements established by ACARE.	European - CLEAN SKY
LEMCOTEC	Low emissions Core-Engine Technologies. Improvement of core-engine thermal efficiency	European - FP7
E-BREAK	Engine Breakthrough Components and Subsystems. Advanced sealing technologies and oil systems, Engine variability and thermomechanical behaviour, Health monitoring, High temperature materials and abradables, Light weight material	European - FP7
FACTOR	Full Aerothermal Combustor – Turbine Interaction Research. Combustor-turbine interactions design, High-pressure turbine, specific fuel consumption reduction, European test facility, aerodynamic and aerothermal measurement, design simulation	European - FP7

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
OPENAER	New engine and aircraft configurations for the future air transport system. Aerodynamics, Methods, Materials, Mechanical design, Manufacture and Control.: Development of technologies for the design and manufacture of components in the hot area of an aeronautical gas turbine in "open-rotor" configuration	National - CENIT
PROSAVE	Eco-efficient aircraft	National - CENIT
FUTURALVE	Material and advanced manufacturing technologies for new generation high-speed turbines. Development of advanced materials and manufacturing technologies necessary to design optimized components of high speed turbines and be able to manufacture them with better use of the raw material	National - CIEN
ALEXANDRIA	Development of Damage Inspection Techniques and Methodologies and New Generation Dimensional Metrology for the Aeronautics, Railways, Naval and Wind Power sectors.	National - MICIN
DESAFIO	Development of High Reliability Manufacturing Systems for rotating parts with High Surface Integrity Requirements.	National - MICIN
TAG	Feasibility studies for the development of general aviation turbines. Feasibility studies for the development of low pressure turbines, structures and external components in turbines for general aviation	National - SAE
MASIR	Advanced Noiseless Machining. Noise reduction: Techniques to reduce noise in industrial environments engaged in the precision machining and well-being of parts.	National Calls
VANCAST	Next Generation Nozzle Guide Vane Design and Casting Technology. Technologies for the Design and Casting of the New Generation of Low-pressure Turbine Blades.	Regional - Basque Country Calls
SAGER	Large-scale Energy Storage Systems for the Electricity Grid. Development of energy storage technologies.	Regional - Basque Country Calls
EUSKESTUR	Manufacturing technologies: Development of Basque excellence pole for the manufacture of radial structures for aeronautical turbines	Regional - Basque Country Calls
GENESYS		Regional - Basque Country Calls
PAINT	Polo Aeronautico para la Innovación en Turbinas. High Performance Manufacturing	Regional - Basque Country Calls
ESCALITURB	Competitive technologies for aeronautical turbine hot structures. Develop the technology to perform 100% reliably and in high production (from 10 to more than 1000 components year) hot structures interturbine of the aeronautical engine of the middle segment	Regional - Basque Country Calls
TALDEA	Turbinas de ALta velocidad: DEsarrollo de tecnologías de fabricación Avanzada. Development of advanced manufacturing technologies to produce future high-speed turbines of future aeronautical engines in segments of medium and high thrust	Regional - Basque Country Calls
NOISE MEASUREMENT	Optimisation and validation of techniques for the advanced measurement of noise in a jet engine.. Advanced instrumentation: Optimisation and validation of techniques for the advanced measurement of noise in a jet engine.	Regional - Madrid Region calls

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
SACMI	Advanced Control and Monitoring System of ITP AERO. Control systems: Development of a control system applied to the fuel control unit of an aeronautical engine.	Regional - Madrid Region calls
DIALPE	Fatigue life design and verification of the vibration behaviour of gas turbine monocrystal blades. Mechanical technology: Study of fatigue and service life behaviour of small size monocrystal blades for a gas turbine.	Regional - Madrid Region calls
MESIMA		
TALDEA	Turbinas de alta velocidad (High-speed turbines). waterjet cutting and trimming	Regional - HAZITEK - Basque calls
MIZAR ADDITIVE		
TRANSFOR	3D manufacturing across France and Spanish border. Additive manufacturing	European - INTERREGSUDOE
FUTURALVE	Advanced manufacturing and materials technologies for the new generation of high-speed turbines. 3D manufacturing	National - CIEN
NOVALTI		
AEROTIAL		European - MANUNET
KOMMUSAT		Regional - HAZITEK - Basque Calls
Turbine blades for test RIGs		Others
ORBITAL CRITICAL SYSTEMS		
CRYSTAL	CRITICAL sYSTEM engineering AcceLeration	European - ARTEMIS
UAV-RTEMS	Design and development of a UAV (Unmanned Air Vehicle) D0-178B certifiable Health Monitoring System based on RTEMS real-time operating system.	European - ESA TTP
MOBNET	Lead of consortium with development of a system that localize mobiles during emergency situations.	European - H2020
SELENA	Forecast system for electromechanical actuators.	National - CDTI
ETH-RTOS	Real time operative system wiht DIMA capability	National - AVANZA
PLATHW	Design and development of a D0-254 certifiable, cost-effective and multipurpose Hardware platform for Avionics subsystem applications.	National - AVANZA
OPENSYS	Design and development of an application programming interface for the communication between IMA partitions and Cockpit Display System	National - CDTI

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
Test benches complete Simulation	Test benches complete Simulation, Acquisition and monitoring SW/HW Environment. System that provides a common environment for running design models, simulations and real equipment to support testing and / or simulation of avionic equipment subsystem or system.	National - CDTI
RENISHAW		
FUTURALVE	Futuralve project is to create advanced material and manufacturing technologies for the new generation of high-speed turbines for the aerospace sector. Throughout the project Renishaw is directly involved with the development of new lightweight additively manufactured materials. Renishaw will also contribute to the metrology and part verification of the aerospace parts throughout the Futuralve project by its award winning 5 axis measurement system REVO® and on-machine contact scanning system SPRINT™.	National - CIEN - CDTI
3D Manufacturing Technologies	CATEC is a technical centre of excellence and aims to become, over the next few years, a national and international R&D centre for developing aerospace technologies. In this Centre Renishaw has installed its Ren AM500M and AM 250 additive manufacturing machines.	Others: CATEC
Advanced Manufacturing Technologies	The objective is to develop advanced manufacturing technologies; these developmental level technologies can be quickly transferred to industry. The centre also acts as an intersection of ideas and advancement for agencies and companies with capabilities, interests, and businesses in the aeronautical engines and structural components sector. The centre has several different manufacturing technologies, including Sprint, REVO and the metal 3D printing machine AM 400.	Others: CFAA
SARIKI METROLOGÍA		
FUTURALVE	Advanced manufacturing and materials technologies for the new generation of high-speed turbines (Futuralve). 3D inline inspection system	National - CIEN - CDTI
ESCALITURB	Advanced forming, welding processes for hot structures on Turbines. 3D inline inspection system	Regional - HAZITEK - Basque calls
SENER		
PEGASUS	Flight Qualification of Deployable Radiator using Two Phase Technology. The main objective of this project is to develop a Deployable Thermal Radiator (DPR) based on Loop Heat Pipes Qualification Model. This includes the design, manufacturing and flight qualification testing to achieve a Technological Readiness Level (TRL) 8. Development of the Deployment Mechanism of the DPR.	European - H2020

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
SIROM	Standard Interface for Robotic Manipulation of Payloads in Future Space Missions. The main objective is to develop a standard interface that considers a set of connections that allow coupling of payload to manipulators and payload to other payload. The realization of a modular reconfigurable system depends, among other things, on interfaces, that includes mechanical interfaces connecting the blocks to one other, electrical interface for power transmission, thermal interfaces for heat regulation and interfaces to transmit data throughout the satellite. Design and develop the standard and modular IF that groups the mechanical, electrical, data and power interface as a building block for future robotic applications in Space.	European - H2020
CG-SPACE	Compact systems for space antenna pointing mechanisms. Design and develop space antenna pointing mechanisms optimizing the electrical motors, sensors and gear systems in order to produce a compact and robust design.	Regional - HAZITEK
SISTEPLANT		
PLATFORM	Open access pilot plants for sustainable industrial scale nanocomposites manufacturing based on buckypapers, doped veils and prepregs. Industrialisation in nanocomposites - Led by TECNALIA and research in relation to aerostructures with FIDAMC (AIRBUS). Scaling up of a pilot plan of buckypapers and prepregs (nano-enabled products). Set up and optimization of large scale buckypapers manufacturing	European-H2020
TQM NANO	Traceability, quality, processes control and production follow-up in pilot plants for nanocomposites manufacturing based on buckypapers and prepregs. Knowledge-based engineering, information and communication technologies for manufacturing (industrial robotics, computer-aided engineering and design, automated manufacturing, product lifetime management, etc.)	Regional - HAZITEK - Basque Calls
TECNO-I PLANT	Definition of a new paradigm for aerospace components manufacturing: intelligent manufacturing, extremely agile flow, leading edge technologies. Intelligent manufacturing plant / Human manufacturing plant / Digital manufacturing plant / Supply Chain / Life Cycle of product and processes	Others: Internal Development

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
TECNALIA		
OUTCOME PROJECT/CONSORTIUM	<p>Out of autoclave composite manufacturing, wing and tail unit components and multifunctional design. CORE PARTNER OF ITD AIRFRAME</p> <ul style="list-style-type: none"> - Out of autoclave composite manufacturing, wing and tail unit components: Advanced preforming and RTM - Hot stamping of innovative aluminium alloys 	European - CLEAN SKY 2
FASELAG	<p>FAil-Safe Electro-mechanical actuation for LAnding Gear: development of an electromechanical actuation system (EMAS) for extension-retraction of main and nose landing gears for future SMALL A/C. Development of ECU HW&SW</p>	European - CLEAN SKY 2 - SYS
VALEMA	<p>Validation tests of electromechanical actuators and its dedicated control units at TRL 6 level. Development of ECU HW&SW</p>	European - CLEAN SKY 2 - SYS
EMA4FLIGHT	<p>Development of Electromechanical Actuators and Electronic control Units for Flight Control Systems. Development of ECU HW&SW</p>	European - CLEAN SKY 2 - SYS
BLINDFAST	<p>Innovative Blind Fastener Monitoring Technology for Quality Control: Definition, development and prototype realization of a real-time inspection monitoring process for blind rivets installation. Evaluation of relevant signals and data acquired during fastening process. The monitoring technique allows classifying blind fasteners and detect the imperfect installed ones.</p>	European - CLEAN SKY 2 - LPA
HFLE	<p>Hybrid Fixed Leading Edge.</p> <ul style="list-style-type: none"> - Development of RTM tool for leading edge with HLFC system - RTM process automation 	European - CLEAN SKY 2 - LPA
ACOTAAL	<p>Automation concepts and Technologies for Aircraft assembly Lines in the Aircraft Factory of the Future. Lightweight and compact robotics and grippers Collaborative robotics, moveable robotic platforms, cable driven robots....</p>	European - CLEAN SKY 2 - LPA
FLIGHT-EMA	<p>Advanced Flight Control System- Design, development and manufacturing of an EMA with associated ECU and dedicated Test Bench. Development of ECU HW&SW and test-bench</p>	European - CLEAN SKY - SYS
TESTHEMAS	<p>Design and Implementation of a Load Simulator Rig and Ground Test Bench Adaptation Kit for a HEMAS Test Rig. Test Rig for linear actuators that will be capable of conducting synchronized tests on three assemblies of Helicopter linear Electro Mechanical Actuators (HEMAS) while applying different counterloads on them</p>	European - CLEAN SKY - GRC

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
BIONIC AIRCRAFT	<p>Increasing resource efficiency of aviation through implementation of ALM technology and bionic design in all stages of an aircraft life cycle.</p> <ul style="list-style-type: none"> - Development of heat treatment for aluminium-lithium AM parts- Development of NDT methods and life time prediction - Development of repair methods - Mechanical / microstructural characterization 	European - H2020 - MG
C3HARME	<p>Next generation Ceramic Composites for Combustion HARsh environMEnts and space. Development of UIHT ceramic matrix composites by SPS technology for aerospace applications</p>	European - H2020 - NMP
PEGASUS	<p>Flight Qualification of Deployable Radiator using Two Phase Technology. New materials development, in particular the replacement of the chromium-based coatings currently used in the DPR by alternative chromium-free surface treatments and coatings</p>	European - H2020 - SPACE
SMILE	<p>SMall Innovative Launcher for Europe. Materials for fairing and thermal protection systems</p>	European - H2020 - SPACE
MONBASA	<p>Monolithic Batteries For Spaceship Applications. Magnetron sputtering processing of thin-film battery components, particularly the processing of cathode and optimization of the cathode/electrolyte interface. Screening of high voltage cathode formulations. Improvement of the low defect control process.</p>	European - H2020 - SPACE COMPET
LIGHT-TPS	<p>Super light-weight thermal protection system for space application. Development of UHTC coatings</p>	European - FP7 - SPACE
AMAZE	<p>Additive Manufacturing Aiming Towards Zero Waste and Efficient Production of High-Tech Metal Products-. WAAM</p>	European - FP7- FoF-ICT-NMP
SUNNY	<p>Smart UNmanned aerial vehicle sensor Network for detection of border crossing and illegal entry. Development of on-board communication hardware working on two channels UAV-UAV and UAV-ground for sensors data management in all UAV platforms Integration of gimbal and sensors on UAV platform.</p>	European - FP7-SECURITY
TRANSFRON 3D	<p>3D manufacturing across France and Spanish border. Development of high-value added parts by additive manufacturing. LMD and WAAM process parameters and limits, equipment development, components development and posttreatment and characterization of materials.</p>	European - INTERREG - POCTEFA
SELENA	<p>Safer, more electrical and more reconfigurable systems oriented towards a more efficient aircraft by reducing the pilot's workload. Development of ECU SW & HW</p>	National - CIEN

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
TEMPROCEN	New generation of materials and 3D printer for advanced manufacturing. Sealant application automation, Artificial vision for assembly operations, one-shot drilling, flexible tooling for machining, mechanical milling, flexible robotics, etc	National - CIEN
AEROEMA	Electromechanical Actuation for Flight Controls. Development of ECU SW & HW, Model Based Design, Integration , tuning and validation of complete EMA	National - CIEN
SENSOR-GRAPH	MULTIFUNCTIONAL MATERIALS REINFORCED WITH CARBON NANOSTRUCTURES (GRAFENE AND NANOTUBES): APPLICATION AS COMPOSITE MATERIALS, ADHESIVES AND STRUCTURAL SENSORS. CNT buckypapers and graphene reinforced multifunctional materials	National - MINECO- RETOS
PROSURFACE	Development of a new generation of environmentally friendly surface treatments & coatings for aeronautical components. Plasma nitriding, Zinc Nickel coating, Thermal Spray technologies-HVOF, evaluation and testing	National - MINECO- RETOS
UPV/EHU		
PARADISSE	A Productive, Affordable and Reliable solution for large scale manufacturing of metallic components by combining laser-based ADDitive and Subtractive processes with high Efficiency . The overall objective of PARADDISE project is to rationalize, to structure and to make available to the stakeholders of manufacturing value chain t he knowledge and the tools for combining two antithetical processes: Laser Metal Deposition (LMD) and Machining (milling and turning). Additive and subtractive manufacturing processes	European - H2020 - FoF
FUTURALVE	Tecnologías de materiales y fabricación avanzada para la nueva generación de turbinas de alta velocidad (Material technologies and advanced manufacturing for the new generation of high-speed turbines). Development of the advanced materials and manufacturing technologies needed to design optimized components of high speed turbines and to be able to manufacture them with better use of the raw material. Difficult-to-cut materials machining, fixture configurations and optimization, canning development for HIP process, EDM and meassuring technologies.	National - CENIT
ESCALITURB	Tecnologías competitivas para estructuras calientes inter turbinas (Competitive technologies for inter turbine hot structures). At ESCALITURB the consortium will develop the technology to perform reliably 100% and in high production (going from 10 to 1000 components per year) hot turbine structures of the aeronautical engine of the middle segment. Advanced machining, lubricoolant techniques, monitoring and control, finishing processes, EDM, metrollogy and inspection.	Regional - HAZITEK - Basque calls

.3.3.6 R&D

General Description of the Product/service	PROJECT SUMMARY / RELEVANT DETAILS / CONSORTIUMS	CALL
TALDEA	Turbinas de alta velocidad: desarrollo de tecnologías de fabricación avanzada (High-speed turbines: development of advanced manufacturing technologies). In TALDEA, the consortium will develop the advanced manufacturing technologies that allow the production of high-speed turbins of the future aeronautical engines of the medium and high-thrust segments, and always ensuring the integrity of the product and the efficiency in the process. Welding, superfinishing processes, edge control, tool design and testing, fixture optimization, measurement.	Regional - HAZITEK - Basque calls
WEC		
SELESTUR	New product family for dynamic sealing inter-stages turbine	Regional - ETORGAI - Basque calls
ESCALITURB	Advanced forming, welding processes for hot structures on Turbines	Regional - HAZITEK - Basque calls
CFAA Projects	Advanced welding processes	Regional - Public/Private
WOLCO		
TALDEA	Turbinas de alta velocidad (High-speed turbines): Development of advanced Cutting-Tools	Regional - HAZITEK - Basque calls

3.4 The Cluster Members Programmes & Clients

CURRENT AND FORMER PROGRAMMES & CLIENTS

AEROSTRUCTURES

AIRBUS A300/310/318/319/320/320neo, ceo/321/330/330neo/350XWB/380, BELUGA XL. **AIRBUS DS** A330MRTT/400M, CN235, C295. **AIRBUS HELICOPTERS** AS332/350, EC135, NH90, TIGRE. **ATR** 42,72. **BELL** 505 JRX. **BEECHCRAFT** BARON/ BONANZA/ KING AIR. **BOEING** 737, 747-LCF, 747-81/F, 777, 787, E-3 AWACS. **BOMBARDIER** Q-Series, CRJ Family, CSeries. **CASA** C101/212. **DAHER-SOCATA** TBM700. **DASSAULT** FALCON 5/7X. **DORNIER** DO728. **EMBRAER** ERJ135/ 140/ 145/ 145LR/ 145XR, LEGACY, 170/ 175/ 190/ 195, E175/190/195-E2, LINEAGE, KC-390, PHENOM. **EUROFIGHTER** TYPHOON. **SIKORSKY** H-92, S-92. **SINO SWERINGEN** SJ30.

ENGINES

CFM INTERNACIONAL CFM56, LEAP. **EPI** TP400. **EUROJET** EJ200. **GENERAL ELECTRIC** CF700, CT7, F404/414, GE90-14/ 115, J79, LM2500, T700. **HONEYWELL** AS907, HTF7000, Lycoming T53/55, Garret TPE331/TFE731, TF50. **MTRI** MTR390E. **PRATT & WHITNEY** F135, JT8-STD/ 200, PT6/ T3, PW535/ 150/ 810/ 1000G. **POWERJET** SaM146. **ROLLS-ROYCE** BR710/ 715, RB211, TRENT MT30/ 50, TRENT 500/ 700/ 7000/ 800/ 900/ 1000/ XWB. **ROLLS-ROYCE NORTH AMERICA** A250, A601K, M250, T63. **SAFRAN AIRCRAFT ENGINES** ATAR, 9KPLUS/ 09C/ 09K50, CFM 56, SaM146, Silvercrest. **SAFRAN HELICOPTER ENGINES** ARRIEL, MAKILA, ARRIUS.

SYSTEMS & EQUIPMENT

AIRBUS, **AIRBUS DS**, **ALENIA**, **BAE Systems**, **BOMBARDIER**, **CESA**, **DIEHL-BGT**, **EUROFIGHTER**, **GOODRICH**, **HONEYWELL**, **IAI**, **INDRA**, **LATECOERE**, **LIEBHERR**, **MARTIN-BAKER**, **MBDA**, **RATIER FIGEAC**, **ROLLS-ROYCE**, **SAFRAN LANDING SYSTEMS**, **SAFRAN NACELLES**, **SAFRAN TRANSMISSION SYSTEMS**, **SAGEM**, **SIKORSKY**, **THALES**, **ZODIAC AEROSPACE**.

SPACE

ESA/ NASA ARTEMIS, ATHENA, AURORA, CLUSTER, CX-OLEV, EGNOS, ENVISAT, EUCLID, EUREKA, EXOMARS, GAIA, GTAB, HERMES, HERCHEL-PLANCK, HUBBLE SPACE TELESCOPE, HIPPARCOS, INTEGRAL, ISEE-B/aurori/CRV, MELISSA, METEOSAT, METOP, MSG, MTG, NSL, PROBA-3, ROSETTA, SENTINEL, SOHO, SOLAR ORBITER, SPACELAB, ULISSSES, XMM-NEWTON.

OTHERS

AMC21, AMOS3, ARABSAT 4A/B, ARIANESPACE, ASTRATM, ASTRIUM, CIEL-2, CHINASAT9, EXPRESS AM33/44, GE 1i/2i, GALAXY 17, GALILEO, HELIOS I/II, HISPASAT 1C/ D, KOREASAT5, MINISAT, NETLAndER, OLYMPUS, PLEIADES, SPOT-4, SYRACUSE 3B, SUPERBIRD7, SPAINSAT, TURKSAT 3A, WSL, YAMAL 200.



Airbus Beluga XL



Rolls-Royce Trent 7000



PROBA 3

3.5 The Cluster Members' 2017 Figures

64 AEROSPACE MEMBERS

5 GLOBAL TIER 1
Aerostructures - Engines
- Space - Systems

12 GLOBAL COMPANIES
Advanced Services - Engineering - Processes
Solutions - Treatments - Equipment

39 SMES
Products, Components, Processes and
Advanced Services for Aerostructures,
Engines, Systems, Space and Equipment

1 AEROSPACE R&D CENTRE
Certification Testing and R&D

3 R&D CORPORATIONS
with 12 R&D Centres with
Aerospace activities

4 UNIVERSITIES
ETSIB, Master in Aeronautics, Master in Space

176 FACILITIES AROUND THE WORLD
87 in the Basque Country
59 in the rest of Spain
30 abroad (Brazil, China, France,
Germany, India, Malta, Mexico, Poland,
Portugal, Romania, UK, USA)

HEGAN MEMBERS' 2017 FIGURES

Members aggregate **TURNOVER** and **EMPLOYMENT**:
2,425 million € and 14,457 people

2017 Geographical breakdown	Turnover (M€)	Δ 2016	Employment	Δ 2016
Basque Country	954	7.9%	4,819	6.6%
Rest of Spain	1,199	17.0%	7,618	6.3%
Rest of the World	272	-19.5%	2,020	4.8%
TOTAL	2,425	7.9%	14,457	6.2%

2017	M€	% over Sales	Average % over Sales Since 1993
MEMBERS R&D INVESTMENT	201	8.3%	14.8%
MEMBERS EXPORTS	1,614	66.6%	69.2%

CLUSTER DIMENSION (Facilities in Basque Country)

1,35% of the Basque GDP (*)	6.2% of the Basque Industrial GDP (*)	2.4% of the Basque Industrial EMPLOYMENT (*)
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HEGAN MEMBERS DIMENSION (Facilities in Spain)

17.8% of the SPANISH (**)	1.0% of the EUROPEAN (***)	25.5% of the SPANISH (**)	1.8% of the EUROPEAN (***)	15.9% of the SPANISH (**)	1.0% of the EUROPEAN (***)
aerospace TURNOVER		aerospace EMPLOYMENT		aerospace R&D INVESTMENT	

(*) EUSTAT 2016 (est.), (**) TEDAE 2016, (***) ASD 2015

.3.5 The Cluster Members' 2017 Figures

TURNOVER ACCORDING TO SUBSECTORS

AEROSTRUCTURES	55,5%
ENGINES	38,5%
SYSTEMS & EQUIPMENTS	3,5%
SPACE	2,5%

EXPORTS ACCORDING TO COUNTRIES

UK	26%
GERMANY	20%
FRANCE	17%
USA	12%
BRAZIL	6%
OTHERS COUNTRIES	19%

RTD EFFORT

Auto-Financing	87,6%
Public Support	12,4%

181 RTD Projects active in 2017

14 Members participating in Clean Sky 2

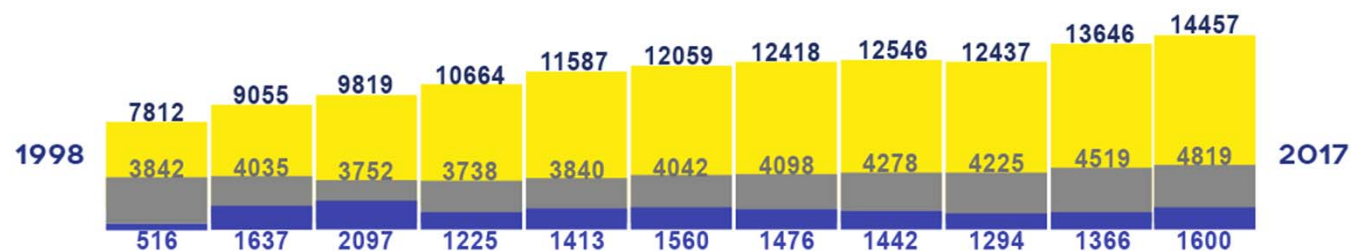
EMPLOYMENT ACCORDING TO QUALIFICATION

	TOTAL	FEMALE
Managers Engineers & Graduates	37%	54%
Technicians, Administration and Others	23%	34%
Manual Workers	40%	11%

.3.5 The Cluster Members' Figures Analysis

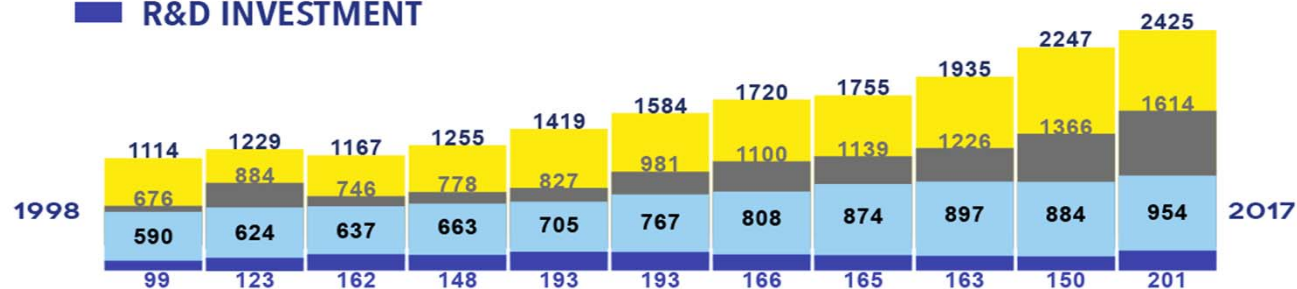
EVOLUTION: PEOPLE

- TOTAL EMPLOYMENT
- EMPLOYMENT in the BASQUE COUNTRY
- PERSONNEL WITH R&D ACTIVITIES



EVOLUTION IN M€

- TOTAL AGGREGATE TURNOVER
- TURNOVER GENERATED IN THE BASQUE COUNTRY
- EXPORTS
- R&D INVESTMENT



4 Acknowledgements



Ana VILLATE
Managing Director

HEGAN is proud to present the results of its 2017 Annual Report, which shows that the Basque aerospace sector continues to be a source of growth, wealth, and quality jobs for the country. All this is thanks to the commitment and dedication of our members as well as the participation of all those involved in the ecosystem, who have helped consolidate the sector as a driving force since the establishment, in 1997, of the association over which I have been honored to preside since last year.

I would like to extend my personal thanks, on behalf of the HEGAN team, for the support and enthusiasm of the members of this cluster. Your hard work and dedication to this association allows us to be proud of what we have achieved during the last year, which has been a special one for me, as we celebrate the 20th anniversary of the Cluster Association.

.4 Esker Onez - Agradecimientos



HEGANek harrotasunez aurkeztu ditu 2017ko urteko txostenaren emaitzak, aeronautika eta espazioaren sektorea Euskadin hazkundera, aberastasuna eta kalitatezko enplegua sortzen ari dela egiaztatzen baitute guztiek ere. Hori guztia gure bazkideek duten konpromisoari eta egindako lan gogorrari esker izan da, eta, jakina, ekosistemako eragile guztien inplikazioari esker: lagungarri izan dira guztiak gure elkartea, iaztik ohore handiz lehendakari nauena, sendotzeko, 1997an elkartea sortu zenetik gaur egunera egindako ibilbidean.

Nire izenean eta HEGANeko taldearen izenean, eskerrak eman nahi dizkizuet kluster hau osatzen duzuen bazkide guztioi, emandako laguntzagatik eta erakutsitako gogoberotasunagatik. Eskerrik asko elkarteari eskainitako ahalegin eta dedikazio guztiagatik, horri esker harro egon baikeitezke azken urte honetan egindako lanaz eta lortutako mugarriez; azken urte hau, kluster-elkarte gisa hogeigarren urteurrena ospatu dugun urte hau, berezia izan da niretzat.

Ana VILLATE
Zuzendaria

Desde HEGAN nos enorgullece presentar los resultados de este Informe Anual 2017 que constatan el hecho de que en Euskadi, el sector aeronáutico y de espacio sigue generando crecimiento, riqueza y empleo de calidad para este país. Todo ello, gracias al compromiso y duro trabajo de nuestros socios y por supuesto a la implicación de todos los actores del ecosistema, que ayudan a que se haya consolidado como un sector pujante desde que en 1997 se constituyó esta asociación que me honro en dirigir desde el año pasado.

Quiero agradecer personalmente, y en nombre del equipo de HEGAN, el apoyo y entusiasmo de los socios que formáis parte de este cluster. El esfuerzo y dedicación que tenéis para con esta asociación y que gracias a ello podemos estar orgullosos del trabajo y de los hitos logrados este último año, especial para mí, y de celebración para todos en nuestro 20º aniversario como Asociación Cluster.

Ana VILLATE
Directora

HEGAN participated in 4 projects which are co-financed by the European Commission: H2020, COSME and INTERREG SUDOE

- ABROAD – Activities and Business from Real internationalization Opportunities for Aerospace Developments
- ADDISPACE – Dissemination and transfer of Additive manufacturing technologies in the SUDOE Aerospace Industry
- MONBASA – Monolithic Batteries for Spaceship Applications
- RUE AERO – Reaching Up to Excellence in Aerospace Cluster Management



HEGAN participates in the project “FAB Connect” Industry 4.0 for Manufacturing, cofinanced by:



HEGAN participates in the project “Cooperation Competitive Intelligence”, cofinanced by



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Photos Courtesy: AIRBUS, BOEING, ESA and ROLLS-ROYCE



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