

→imagine →perform →deliver →advance →imagine →perform →deliver →advance

"...en route."



AVIATION CONSULTING PARTNERS

A blue-toned photograph of a string of diamond-shaped kites flying against a cloudy sky. The kites are arranged in a diagonal line from the bottom left towards the top right. The sky is a deep blue with darker, wispy clouds. The kites are white with dark outlines, and their lines are thin and dark. The overall mood is serene and contemplative.

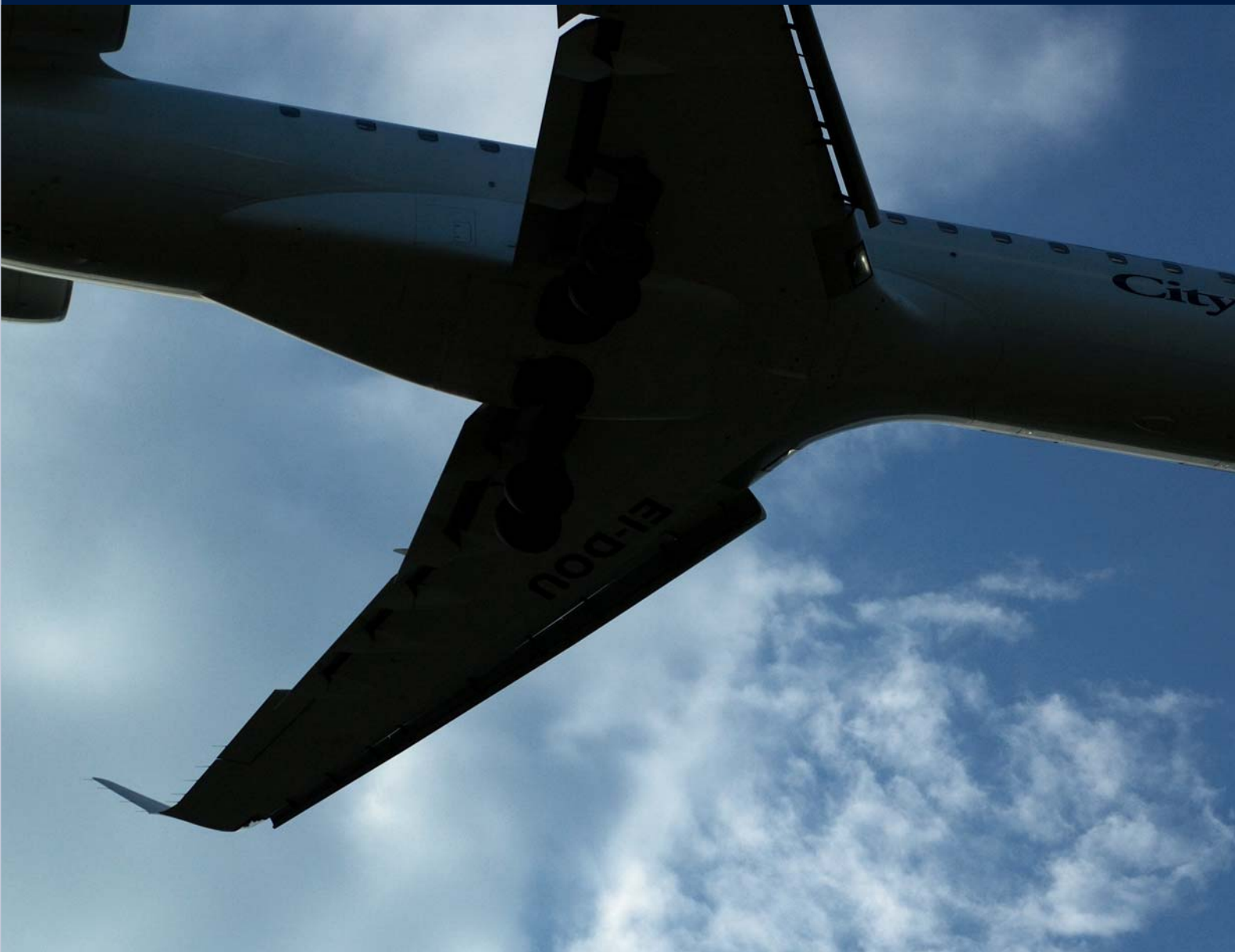
"Kites rise highest against the wind, not with it."

Winston Churchill



welcome to **enroute.**

Welcome to an aviation firm that feels passionate about what we do. Welcome to a team of professionals that lifts off every day to deliver the best we have, and with a singular destination: to take care of each project as if it was the only one. By generating new ideas. By applying maximum technical rigor and the most advanced tools. By adapting to the needs of each client in order to achieve maximum return on our client's effort. By demonstrating, at the end of the journey, that we can fly together high – with our feet on the ground.



persons
lifting ideas.

Meet the Enroute team: a group of seasoned professionals with a shared passion for Aviation. Their working experience along the last two decades covers different practices, geographic areas, clients and cultures – but they bring in common enthusiasm, craftsmanship, integrity, commitment with clients, and the experience of delivering together complex aviation projects. A team with a high degree of self-imposed exigency devoted to creativity and results-focused ideas.





ideas
tailored to projects.

We will seat at your side –not in front of you– to listen, to understand, to think with you and determine how our ideas can help making your projects real: real successes. It is our aim to adapt our approach to your needs, your interests, and your goals. We would like to deserve transcending the supplier status, and becoming a solid project delivery partner for you. Flying with you onboard the same plane, Enroute to a common destination, where we will arrive on time, on budget, after enjoying together a smooth, turbulence-free flight. Your success, your peace of mind is at stake and we will commit ourselves to your satisfaction: it is only through our client's success that our success is achieved.





projects
focused on persons.

Our approach to problem solving encompasses both the right technologies, and experience: innovation together with the knowledge we have acquired through over twenty years of professional performance, combined with research, investigation, and lecturing activities, through our involvement with universities and Civil Aviation Organizations. At the end of the day, our projects translate into realities that help to provide a safer, more secure, and sustainable Air Transport for the people. Results achieved through a meticulous and devoted work which delivers quality for our clients.





six work areas.
hard work areas.

From initial airport planning and feasibility stages, to project implementation, and airport operations support, Enroute can help customers to realize their potential and make things happen in six different work areas. Six areas of hard work where Enroute will strive in pursuit of results by mastering on our state of the art engineering and simulation tools, previous international experience, and sound knowledge of International Civil Aviation standards.

aviation & airport transactions

- Traffic Forecasting
- Airport Inventory
- Compliance Inspections
- Legislation & Regulation
- Development Plans
- CAPEX & OPEX plans
- Earnings Forecasting
- Financial Analysis
- Commercial Plans

airport planning

- Airport Master Planning
- Siting Studies
- Capacity Analysis
- Terminal Building Functional Design
- Greenfield Airports Feasibility Studies
- Facilities Planning
- Airspace Analysis
- Nav aids siting
- Environmental Planning
 - Strategic Environmental Assessment
 - Environmental Impact Assessment
 - Airport Noise Analysis
 - Airport Emissions Analysis

simulation & modelling

- Airfield and Airspace Processes
- Terminal Building Processes
- Aircraft Turn and Swept Path Analysis
- Multilayer Pavement Modelling
- Nav aids Signal Modelling
- Airport Noise Modelling
- Airport Emissions Modelling

aviation safety management

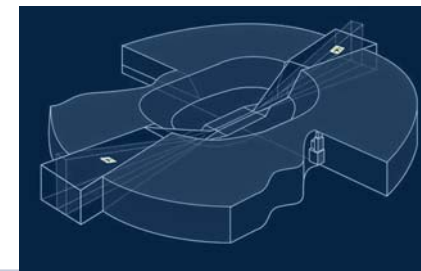
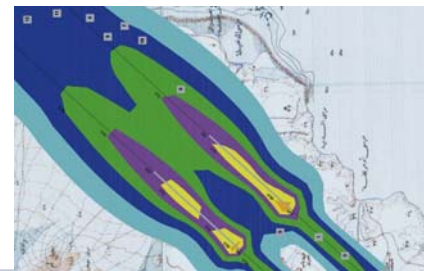
- Aeronautical Studies
- GIS-based Airfield/Airspace Obstruction Analysis
- Safety & Risk Assessments
- Minimization of Airport Operations Disruption during construction
- Analysis of flight procedures

airport engineering

- Airfield Design
 - Layout
 - Pavements
 - Earthwork, Drainage and Airside Treatment Plants
 - Marking
 - Visual & Navigation Aids
 - Ancillary & Control Systems
- Airport Facilities Design
 - Meteorological Facilities
 - Power Plants and Distribution System
 - Air Rescue & Fire Fighting Systems
 - Hangars
- Building Facilities Conceptual Design
 - MEP Systems
 - Baggage Handling Systems
 - HVAC Systems
 - Fire Fighting and Fire Alarm Systems
 - Building Management & IT Systems
 - Conveying Systems
 - Electronic Safety and Security Equipment
 - Passengers Boarding Bridges
- Heliport Engineering
 - Helipad & Heliport Siting Studies
 - Helipad & Heliport Facility Planning
 - Helipad & Heliport Design

project implementation management

- Development Phasing
- Construction Schedules
- Design Management
- Project Controls
- Procurement support services
- Management of Procurement Process





we've been there!

From northern Europe to equatorial Africa, from the Americas to the Far East, our working experience covers a wide variety of cultures, tongues, and working environments. Despite this variety, Enroute's sole and only language – good work, no matter where does it need to be delivered – has taken us far in our journey.



TOCUMEN PANAMA EXPANSION PROGRAM

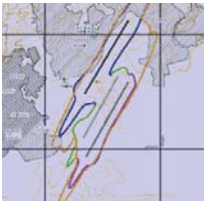
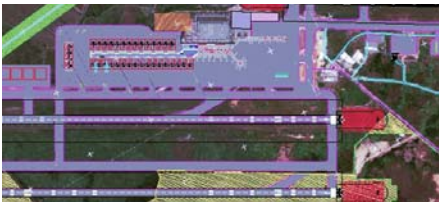
title Tocumen International Airport
Expansion Program, Panama
client Tocumen International Airport, Panama/ICAO
practice area Various
date 2011-2012

description

Since January 2011 our team has been supporting Tocumen International Airport, though the ICAO TCB, in different work areas that span across planning, environmental planning, engineering, and project implementation services,

including:

- General coordination and supervision services for the Master Plan Update effort.
- Preparation of CAPEX and proposed works program for the 20 year planning horizon.
- Preparation of current and future noise contours using the FAA Integrated Noise Model (INM), and generation of a land use plan.
- Business Plan, CAPEX, valuation of transaction conditions, Panamá Pacífico International Airport.
- Functional Design of the Passenger Terminal Area Expansion Project.
- Location study, functional design, technical specifications, new Control Tower.
- Tender documents for procurement of a variety of services and works, such as an Airfield and Airspace Simulation Study, Design and Construction of a new Cargo Access Control Station, and preparation of the technical specifications for the design-build tender for the initial 5 year expansion program of the airport, including the expansion of the passenger terminal area, a new Control Tower, new Runway, and an Access boulevard.



SHARM-EL-SHEIKH EXPANSION PROGRAM

title Sharm-el-Sheikh International Airport
Expansion Program, Egypt
client Egyptian Airports Company/Prointec, S.A.
practice area Various
date 2009-2012

description

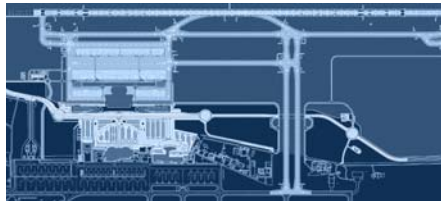
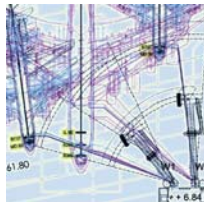
The expansion program at SSH International Airport involves major construction at both the airfield, and the passenger terminal area and road access.

The airfield expansion includes the construction of a new 3,600 m long ICAO code E runway, a new taxiway system, and a new apron designed for 15 remote stands and 25 contact stands around the new Terminal 3.

The new, 200,000 sqm terminal building developed in two main operational levels is intended to serve 10 Million passengers per annum, which will bring SSH total capacity to 17 MPax. The project also comprises a new access and parking areas, electrical distribution systems, airfield associated facilities and utilities, ancillary buildings, and aviation fuel hydrant systems.

The Enroute team has been involved in different work areas that extend over the planning, engineering, and project implementation phases, including:

- Master Plan development
- Airfield conceptual and detailed design
- New access and urbanization conceptual and detailed design
- Electrical distribution systems
- Airfield associated facilities and utilities
- Obstacle Limitation Surfaces study
- New Terminal Building facilities and utilities
- Airfield and Terminal Building Design Management and coordination
- Development of Method of Measurement, Specifications, and Project Budget, using a CSI Master Format 2010 structure
- Project Controls during the Planning, Design, and Tender phases
- Preparation of Prequalification Questionnaires for the Airfield and Terminal Building tenders, under African Development Bank rules. Supervision of the prequalification processes; evaluation of applications and preparation of shortlists of contractors
- Preparation of Tender Documents for the Airfield and Terminal Building tenders, under African Development Bank rules.



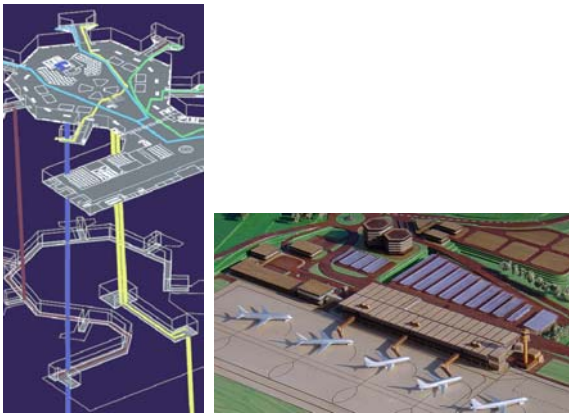
TERMINAL BUILDING
FUNCTIONAL DESIGN

title Passenger Terminals Building
Functional Design
client Various
practice area Airport Planning
date 2009-2012

description

The implementation of a new terminal building, or the expansion of an existing facility, are some of the most demanding challenges an airport operator can face, in terms of technical and operational complexity, and financials-construction and operation and maintenance costs, and future revenue generation. The functional design exercise as proposed by Enroute is intended to ensure that the right solutions –in terms of layout, size and distribution of operational and support areas, circulations, functionalities, proximities, design parameters– are selected before entering the detailed design and construction phases, by means of a thorough review of requirements, processes, and flows (passengers, airport staff and employees, baggage, goods...) along the Terminal Building. Additionally, the process is conducted taking into consideration security and commercial areas requirements, and the integration with the Terminal Building of other adjacent functional areas such as Aprons, Road Access, Parking areas, etc. Enroute can support this exercise with numerical simulation tools for the passenger and baggage flows to ensure that the selected design parameters are met –for instance, IATA Level of Service standards–, and to analyze together with the airport operator different “what if” options.

Enroute's Team has successfully applied this approach for a number of Passenger Terminal Building Functional Design projects at Madrid-Barajas, Gran Canaria, Menorca, Reus, Santiago de Compostela, Vigo and Tocumen Panama International Airports.



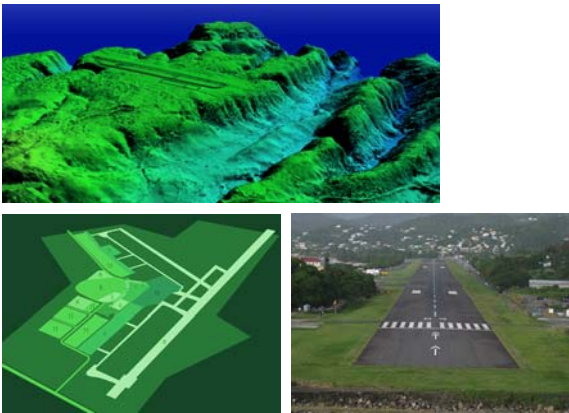
MASTER PLANNING

title Master Plans Updates, Asturias, Almeria
and Zaragoza International Airports
client Aena
practice area Airport Planning
date 2011-2012

description

The Enroute team has contributed to the Master Plan Updates for these three medium size airports for Aena, the Spanish Airports Authority. The main goals for these multidisciplinary exercises that encompass airport planning, environmental planning, and urban planning experts, have been to provide flexible and adaptable planning foundations for both the short, and long term development of the airports, aligned with their relevant business strategies, and a harmonized integration with their surroundings. The CAPEX plans proposed call for an average investment of US\$ 200 M at each airport along the planning horizon, when traffic will reach up to 5 million passengers per annum at Zaragoza.

Enroute has assisted Aena with background analysis and status review; inspection and appraisal of Airside and Landside facilities; Interviews with airlines, airport users, government departments, airport stakeholders and agencies; Air traffic forecasting; Passenger survey; Strategic planning/air traffic allocation; definition of Airport planning and design parameters; Demand/capacity study; Airspace capacity analysis and planning; Future facility requirements; Airport development constraints; Airport development strategy; Airport site development options; Strategic evaluation of airport development options; Airport land use and facility plan; Airport development phasing plans; Conceptual design; Environmental impact study; Financial and economic analyses; Evaluation of options and documentation of Airport Master Plan.



SUSTAINABILITY

title Sustainable Development & Operation
of Airports
client Various
practice area Airport Planning-Environmental Planning
and Environmental Impact Assessment
date 2010-2012

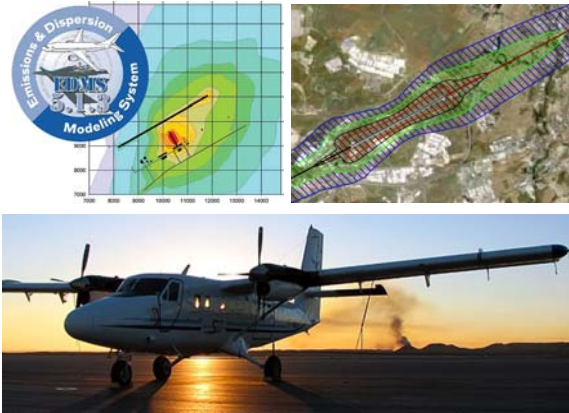
description

Enroute's environmental planning, and environmental impact assessment capabilities are completely focused on airports – how to better integrate them into their surrounding environment, and how to make them more sustainable. Our experience ranges from the early planning stages for either a Greenfield or an existing Airport expansion project –the Strategic Environmental Assessment (SEA) process as dictated by the European SEA Directive (2001/42/EC)– to the impact assessment for specific airport infrastructure projects, including the definition, and cost and feasibility assessment, of impact mitigation measures and other green airport initiatives.

Our capabilities also include the use of the standard FAA INM and EDMS models for the assessment of noise impact and emissions to air in the vicinity of airports.

Some recent experience in this domain includes the following references:

- New South Costa Rica Airport Palmar Sur: future noise impact assessment and land use plan; emissions inventory prediction along the planning horizon.
- Tocumen International Airport, Panama: current and future noise contours; land use plan.
- Warsaw F. Chopin International Airport, Poland: Strategic Environmental Assessment, Master Plan Update 2012-2037.
- Insalah Gas Field, Algeria: Environmental Impact Assessment for a new 2,000 m Airstrip.



PROCUREMENT

title Tender Management Services
client Various
practice area Project Implementation Management
date 2010-2012

description

Beyond the planning and design stages, the Enroute team can support our clients in the process of successfully implement their projects, on time, on budget.

We will develop project implementation phasing schedules, and detailed construction schedules that will take into account both the financial and operational needs and constraints that each capital expansion project needs to meet, laying the foundations for a solid Project Controls System along the life of the project.

Enroute can also help you to shape and manage your procurement processes for planning, engineering and construction tenders. First, by defining the contract strategy that better suits the type of project, the local procurement uses, and by helping you to define the appropriate tender process under the rules of International Financing Institutions; second, by defining the appropriate Prequalification and Request for Proposals packages, and by helping you to evaluate the responsiveness of applicants to these.

Recent project references in this area of work include:

- Preparation of Prequalification Packages and Tender Documents under African Development Bank rules, and evaluation of applications, Sharm-el-Sheikh International Airport, Egypt, expansion program (Airfield, Terminal Building, Control Tower).
- Definition of Scope of Work, Technical Specifications, and Evaluation Criteria; proposals responsiveness evaluation for different procurement projects, ICAO TCB (Tocumen-Panama Cargo Access Area, and Airfield and Airspace Modeling tenders; San José International Airport aircraft maintenance facilities demolition and reconstruction, and Nuevo Aeropuerto del Sur Master Plan and EIA, Costa Rica).
- Panama Airport Expansion Design-Build Tender Documents – Scope of Work, Specifications.



SAFETY

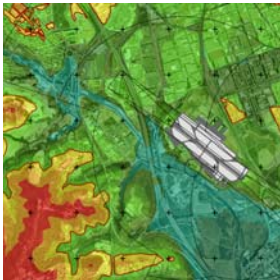
title Aeronautical Studies, Safety Assurance, Operational Disruption Minimization
client Various
practice area Aviation Safety Management
date 2005-2012

description

Enroute's team has acquired along the years a sound knowledge of Standards and Recommended Practices, (SARPs) as set forth by the International Civil Aviation Organization (ICAO) to ensure safe and efficient operation of the aviation industry. This acumen allows us to evaluate non-conformities with SARPs and decide by means of an Aeronautical Study if an exemption under certain conditions should be granted or not, especially in those cases where correction entails significant physical or economical difficulties. In other cases, our expertise can be focused on airfield inspections and risk analysis as part of an Airport Certification Program, or in the definition of restrictions that should be imposed on works in the movement area to ensure safety and minimize operational disruptions during construction, while achieving reasonable construction cost and schedules. Airfield and Airspace Obstruction analysis by means of a GIS-based tool is one of our specialties. This tool can be used to define legal protection zones around the airport, and, together with our analysis of flight procedures, airport operations, and our radioelectric simulation tools, is the base for Aeronautical Studies pertaining Obstacle Limitation Surfaces violations.

Some of our references in this domain include:

- Obstacle Limitation Surfaces Consultancy Study at Sharm-el-Sheikh Airport, Egypt.
- Analysis of non-compliances with ICAO SARPs, and proposal for corrections at Georges F. C. Charles International Airport, Saint Lucia.
- Aeronautical Study, impact of Highway GC-1 on Gran Canaria Airport operations.
- Aeronautical Study, impact of Urban Plan APR 08.03 on Madrid-Barajas Airport operations.
- Aeronautical Study, impact of Airport Business Park on Gran Canaria Airport operations.
- Aeronautical Study, impact of Málaga Urban Development Plan on Málaga Airport operations.
- Studies for Minimization of Airport Operations Disruption during construction works in more than 30 airports.



AIRFIELD DESIGN

title Airfield Civil and Electrical Desing
client Various
practice area Airport Engineering
date 2005-2012

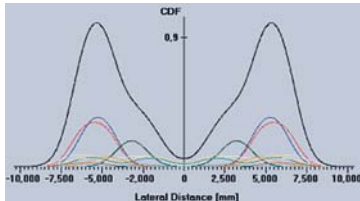
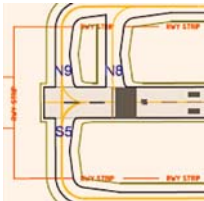
description

Runways, taxiways, aprons – or a complete airfield: Enroute can cover all areas related to airfield design, starting with airfield layout definition based on ICAO SARPs; earthwork calculations based on DTM (Digital Terrain Models); drainage design following FAA's Rational Method and using software models; pavement design and evaluation in accordance with FAA/ICAO/UFC regulations through the use of multilayer models; PCN calculations; airfield lighting design and floodlighting, signage and markings, airfield structures...

Special consideration is given in Enroute's approach to airfield design to factors such as cost effectiveness, constructability, and minimization of operational disruptions through a careful definition of work areas and schedules taking into account airfield operational, and safety constraints.

Recent references of our work include:

the design of the complete airfield expansion at Sharm-el-Sheikh International Airport (new 3,600 m long runway with 2 rapid exit taxiways; full parallel taxiway and other taxiway links; remote and contact ramps), and the airfield for the new Alcantari International Airport in Sucre, Bolivia, as well as numerous airfield projects at almost every commercial airport in Spain.



FACILITIES DESIGN

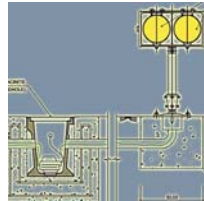
title Design, Airport Facilities and Utilities
client Various
practice area Airport Engineering
date 2005-2012

description

Together with our airfield design capabilities, Enroute's expertise covers also the design of different airport facilities and utilities such as apron floodlighting, security, airside urbanization, airport electrical power plants and distribution systems (both landside and airside), air rescue & firefighting systems, hangars, meteorological facilities, and heliports. Our portfolio of services also includes location studies and conceptual design for airport navigation aids.

Some of our design references for Spanish airports include:

- New electrical system, Murcia-San Javier Airport.
- New airside electrical system and power station, Madrid-Barajas Airport.
- New electrical system and substations, Melilla Airport.
- Heliport, Sabadell Airport.
- New electrical system, Fuerteventura Airport.
- Meteorological stations for 43 Spanish Airports.
- Meteorological station for 18R-36L New Runway Madrid-Barajas Airport.
- Air Rescue Service Heliport, Vivero-Lugo.
- Meteorological Radar, Nijar-Almeria.
- Heliport, Sta. Cruz de Tenerife.



OTHER REFERENCES

- **2012:** ICAO Airport Master Planning Workshop for Airports of Thailand staff. Client: ICAO/AoT
- **2012:** Environmental and Social Impact Assessment (ESIA) for the new "South Airport" at Palmar Sur, Costa Rica Client: ICAO
- **2012:** Feasibility Study of a New Airport at Andern, Gabon. Client: Gabon Government/SNC Lavalin
- **2010-2011:** Preparation of publication in AIP (AD-2) of non-compliances, exemptions, and exceptions to SARPs, Madrid-Barajas and Ibiza Airports, Spain. Client: SENASA/AESA
- **2010:** Assessment of Corporate Aviation Operation at George F. Charles International Airport, Saint Lucia. Client: ICAO/SLASPA
- **2010:** Master Plan and Strategic Environmental Assessment, New Huelva Airport, Spain. Client: A. del P.
- **2008:** Design, Pavement repair, Runway and Taxiways at Menorca Airport, Spain. Client: Aena/Prointec
- **2008:** Feasibility Study for a new airport. Santa Rosa de Copán, Honduras. Client: BID/SNC Lavalin
- **2008:** Aeronautical Study: Impact of Agüimes Urban Development Plan on Gran Canaria Airport Operations, Spain. Client: Local Government/Prointec
- **2007:** Master Plan, New Sucre Airport, Bolivia. Client: AASANA/Prointec
- **2006:** Design, Apron expansion at Zaragoza Airport, Spain. Client: Aena
- **2006:** Design, Electrical system enhancement at La Palma Airport, Spain. Client: Aena
- **2005:** Aeronautical Study: Impact of VHF/UHF Communication Center Upgrade on Obstacles Limitation Surfaces at Tàrrrega (Lleida), Spain. Client: Local Government/Prointec
- **2005:** Feasibility Study, Engine Ground Run-Up Enclosure at Palma de Mallorca Airport, Spain. Client: Aena/Prointec
- **2004:** Master Plan, New Castellón Airport, Spain. Client: Local Government
- **2003:** Design, parallel taxiway at Sabadell Airport, Spain. Client: Aena
- **2002:** Design, Repair and extension, Industrial Zone Apron at Palma de Mallorca Airport, Spain. Client: Aena
- **2002:** Design, Electrical system enhancement at Vigo Airport, Spain. Client: Aena
- **2001:** Design, Access Taxiway to THR 11, and airport car parking at Asturias Airport, Spain. Client: Aena
- **2001:** Design, Taxiway extension at Jerez Airport, Spain. Client: Aena
- **2000:** Design, Access Taxiways to South Runway at Palma de Mallorca Airport, Spain. Client: Aena
- **2000:** Design, Category II/III upgrades at Palma de Mallorca Airport, Spain. Client: Aena
- **2000:** Design, Category II/III upgrades at Bilbao Airport, Spain. Client: Aena
- **2000:** Design, Category II/III upgrades at Vigo Airport, Spain. Client: Aena.



enroute’s signature services.

Enroute delivers to its clients a unique blend of professionalism and technical expertise devoted exclusively to the aviation consulting sector. Our motivation is to turn our client’s dreams into real-world success beyond expectations, while enjoying doing our work. Passion, enthusiasm, and essential technical skills are our signature. Enroute’s professional staff benefit from a breadth of worldwide expertise in airport and civil aviation development. Led by a team of experience aviation professionals, Enroute is structured into two main practices, covering Aviation & Airport Planning, and Airport Engineering:

alfonso díez mentzel
MSc, Aeronautical Engineering
Managing Partner

adiez@en-route.aero

Mr. Díez’ expertise in the Aviation Consultancy domain spans over more than 25 countries around the world. His specialties include ICAO Airport Planning & Design Standards and Recommended Practices, Aeronautical Studies, environmental aspects of Airport Planning & Engineering, management of large, complex projects in an international environment, Airport Technical Due Diligences, CAPEX assessment, and Project Implementation Management, including procurement under FIDIC and International Financing Institutions rules. Recent representative experience includes managing the Pre-qualification and Tender processes for the expansion program at Sharm-el-Sheikh Airport, on behalf of the Egyptian Airports Company; Issuance of a new version of the AIP for Madrid-Barajas Airport, Spain; Update of Tocumen International Airport Master Plan, Panamá; and the Environmental Impact Assessment for the Master Plan Update, Warsaw International Airport, Poland.

Mr. Díez is also a lecturer for different Airport Planning and Aerodrome Certification courses, and has recently co-authored an aerodrome certification manual published by Aena and the Madrid Polytechnic University.

josé mª blanco menduïña
Aeronautical Engineer
Partner – Airport Engineering

jmblanco@en-route.aero

A Professional Engineer with over 22 years experience in the fields of airport planning, airport engineering, and aviation & airport consulting, Mr. Blanco’s specialties include airfield civil works engineering, airfield systems engineering (lighting & signing, electrical distribution systems, navigation aids and other aeronautical facilities), aviation safety management studies & consulting (aeronautical safety studies, airspace obstruction analysis, safety & risk Assessments) and master planning. He has worked in several countries for Aviation and Airport Authorities and has been involved in the planning and development of a significant number of major airport projects. He has recently served as Airfield Civil Works, Systems, and Facilities Design Manager for the development of Sharm-el-Sheikh International Airport (Egypt). Other significant references include the development of airfield civil works and facilities projects for major airports such as Madrid-Barajas, Barcelona, and Palma de Mallorca International Airports in Spain, and the New Sucre Airport, in Bolivia.

Mr. Blanco is also a lecturer for aviation safety management and obstacles limitation surfaces analysis courses, organized by the Madrid Polytechnic University.

santiago lerma villegas
Aeronautical Engineer
Partner – Airport Planning

slerma@en-route.aero

Mr. Lerma is an Aeronautical Engineer with over 18 years experience in airport planning, aviation & airport consulting and airport infrastructure design. He is specialized in airport master planning, conceptual and preliminary design, and functional design of airport terminal areas using self-developed simulation software for capacity calculations, in addition to standard software applications such as SIMMOD, INM, and EDMS. His international experience covers projects in countries such as Egypt, Bolivia, Honduras, Panamá, Costa Rica or Gabon, and includes involvement as ICAO expert in assisting local authorities with relevant airport planning issues. Mr. Lerma’s experience also covers airfield civil works engineering, including geometrical design, pavements design and evaluation (using, inter alia, multilayer models), drainage and related systems, fuel hydrants and other aeronautical facilities. In this domain, he has recently served as Design Manager for Civil Works for the Sharm-el-Sheikh International Airport expansion program, Egypt.

Mr. Lerma is also an expert in operational safety for aviation. He is a lecturer for Airport Noise Analysis courses in the Airport Planning, Design, Operations and Management Master Program by the Madrid Polytechnic University.



*"The greatest reward for doing is the opportunity
to do more."*

Jonas Edward Salk

→ imagine → perform → deliver → advance → imagine → perform → deliver → advance

enroute

AVIATION CONSULTING PARTNERS

c| Mare Nostrum, 65

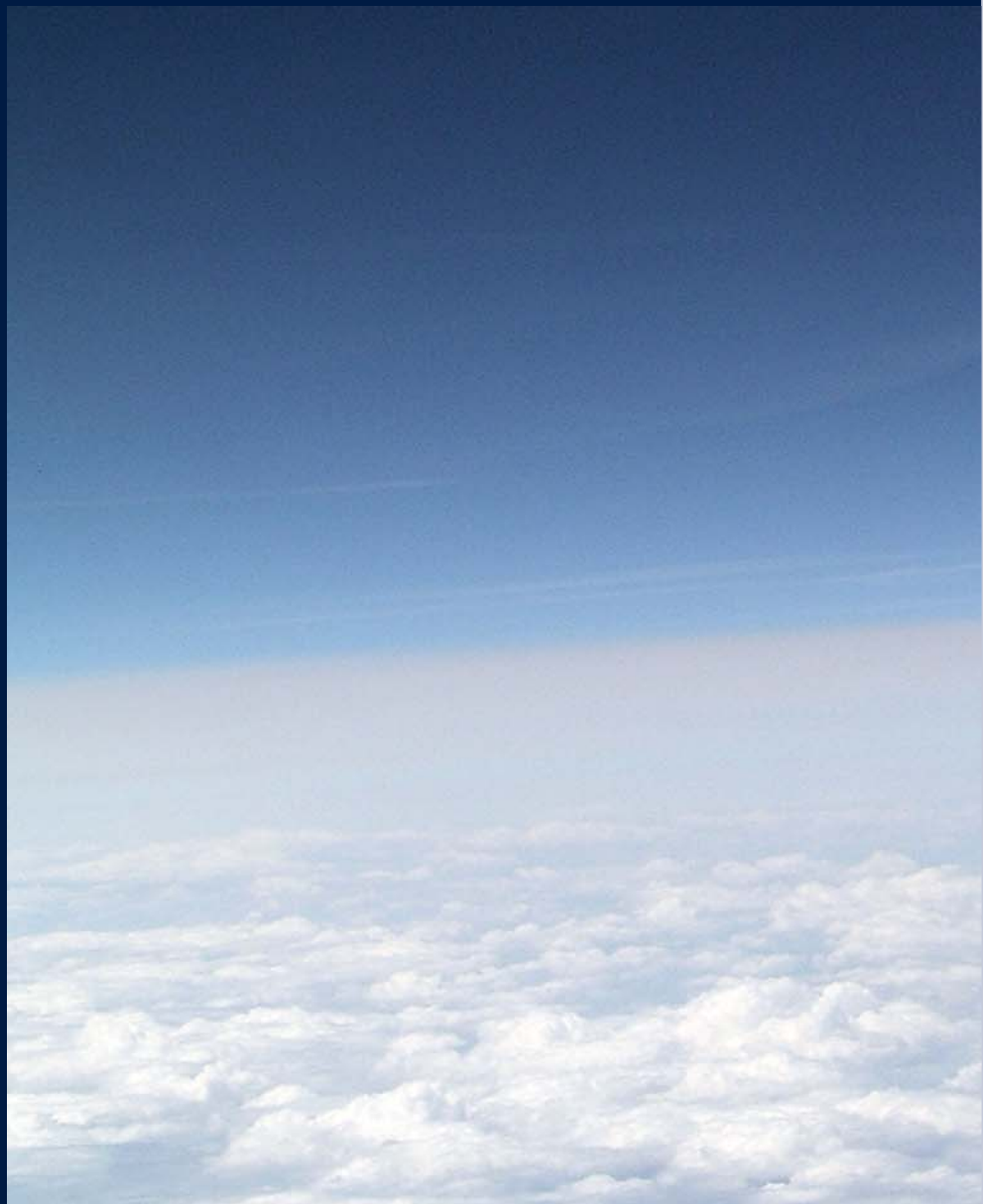
E28221 Majadahonda-Madrid. Spain

t +34 910 812 380

f +34 916 796 004

www.en-route.aero

info@en-route.aero



AVIATION CONSULTING PARTNERS