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advanced
airport solutions

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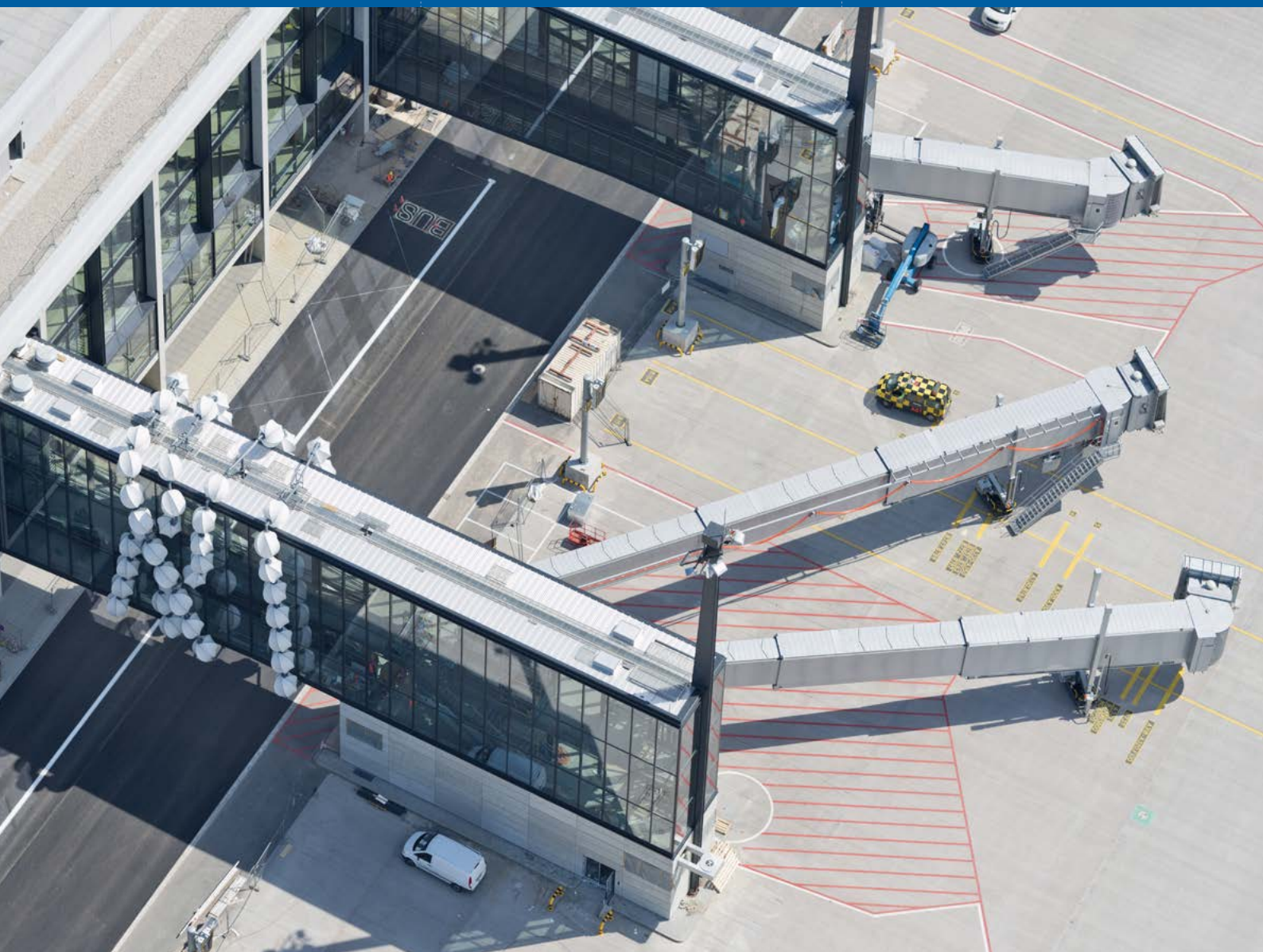
Selected Projects



airsight projects

Brussels International Airport
Technical Study on ATC System interferences with new constructions

New Buildings or other obstacles may causes disturbances on the Air Traffic Control (ATC) and Communication, Navigation and Surveillance (CNS) equipment signals, and have a negative impact on aerodrome operations – notably in terms of safety. Therefore, prior to new constructions, a specific desktop study is required to assess the impact of new buildings on ATC CNS systems.

airsight assisted Brussels International Airport to assess the impact of new proposed rescue and firefighting buildings on CNS facilities such as ILS, VOR, DVOR and radars. For this purpose, qualitative analysis and numerical simulations were conducted, taking into account existing and new buildings, type of runway operations (CAT I or CAT III), as well as construction equipment (e.g. cranes and moving objects).

As experience shows, such desktop studies are very reliable and can facilitate the development of new construction projects in the aerodrome vicinity, while avoiding too costly measures (design revisions, relocation, or reorientation).

Services: CNS Assessment

Luxembourg Airport
Precision Approach Path Indicator relocation study

As required by ICAO and EASA, a Precision Approach Path Indicator (PAPI) is required for Code 3 or 4 runways used by turbojet aircraft.

The main safety objective of such a system is to provide information to pilots on the approach angle necessary to maintain a safe height over obstacles and threshold.

In order to provide a correct visual indication, the relative position of the PAPI to the threshold needs to be precisely positioned and the system well calibrated.

The Administration de la Navigation Aérienne (ANA), responsible for Luxembourg Airport's air navigation equipment, commissioned airsight to determine the optimal relocation of the existing PAPI within a runway rehabilitation project. For this exercise, numerous criteria were taken into account e.g. critical aircraft type, minimum wheel clearance – and eye height – over threshold, achievable harmonisation with ILS signal slope, obstacle situation, ground and runway elevation profile, etc.

Services: Airport Planning

airsight projects

Groupe ADP - Paris Charles De Gaulle Airport
Runway pavement inspections using drone

Groupe ADP is a pioneer in the utilisation of drones at its airports, e.g. for the inspection of terminal buildings or for the calibration of air navigation equipment. So far, for practical and safety reasons such flights within the airside area of the airport were limited to tethered operations only, where the drone is tied to the ground via a leash.

In August 2016, ADP selected airsight to conduct the first large-scale inspection of Paris Charles De Gaulle Airport (CDG) using an untethered drone. This mission had for overall objective to determine if drone-based pavement inspections, as developed and already in used by airsight at German Airports since 2015, could be used in the future in conjunction withconventional on-site visual inspections performed by Groupe ADP personnel driving the runway.

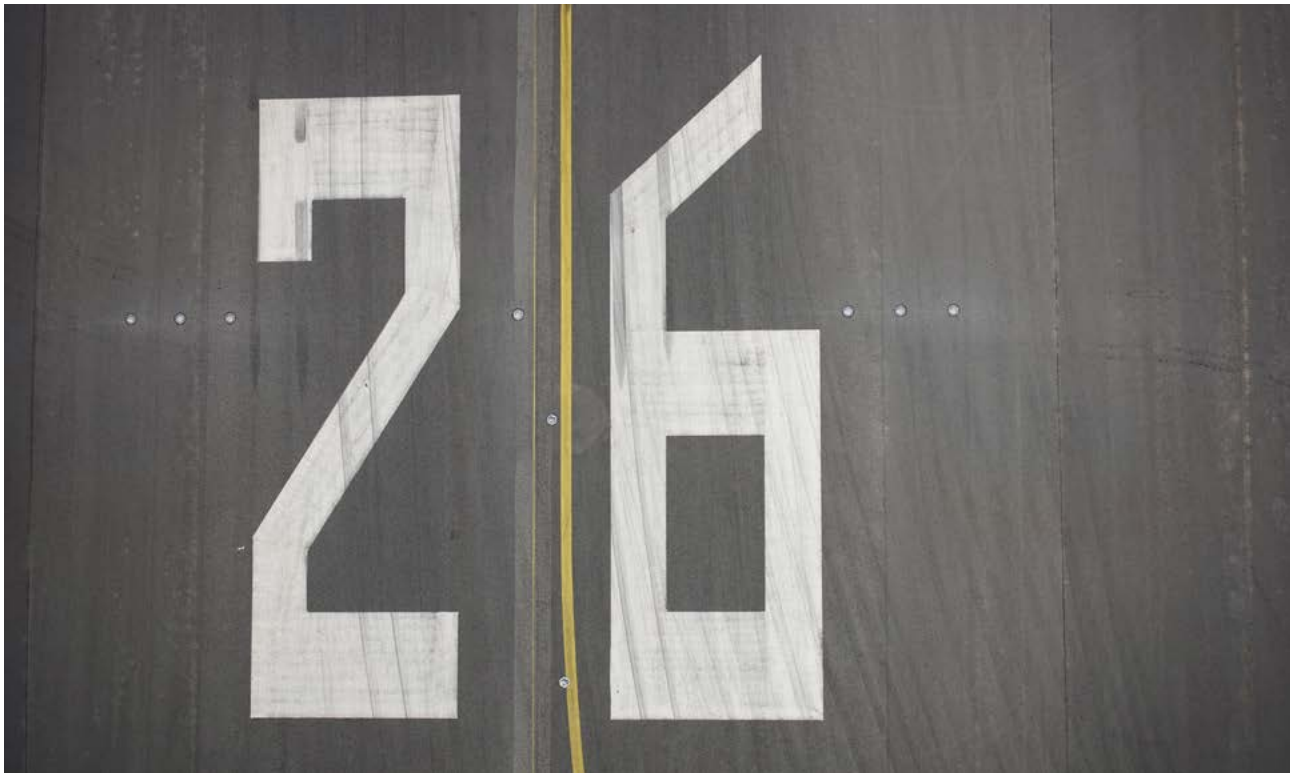
Prior to the inspection, an operational concept and safety case were developed and validated by ADP, the local Air Navigation Service Provider “SNA-RP” and airsight, to integrate safely the missions within airport operations.

During the inspection, a surface of more than 200 thousands square meters was captured – almost 30 soccer fields. To minimise impacts on capacity, the overall net flight time of approximately 1 hour and 45 minutes was split into nine individual flight segments, to take advantage of periods of lower traffic. Thanks to a proper mission preparation, a comprehensive support of Groupe ADP and a close collaboration with air traffic control, the maximum runway occupancy time for a flight segment was 18 minutes. This includes the time required to enter and exit the runway, obtain ATC clearances as well as for conduction of final FOD checks after each drone flight.

As a next step, all gathered data were post-processed at airsight’s premises in Berlin to create a geo-referenced image of the runway with an extremely high resolution.

This served as a basis for a detailed assessment of the runway’s pavement conditions, which was documented in form of a report and associated interactive maps containing all identified distresses, taking into account relevant requirements of ICAO and EASA and other international standards. This analysis and subsequent preventive maintenance actions enabled the Airport operator to extend the lifetime of the pavement, reduce cost, and increase safety for operating aircraft.

Services: UAV-based Pavement Inspections



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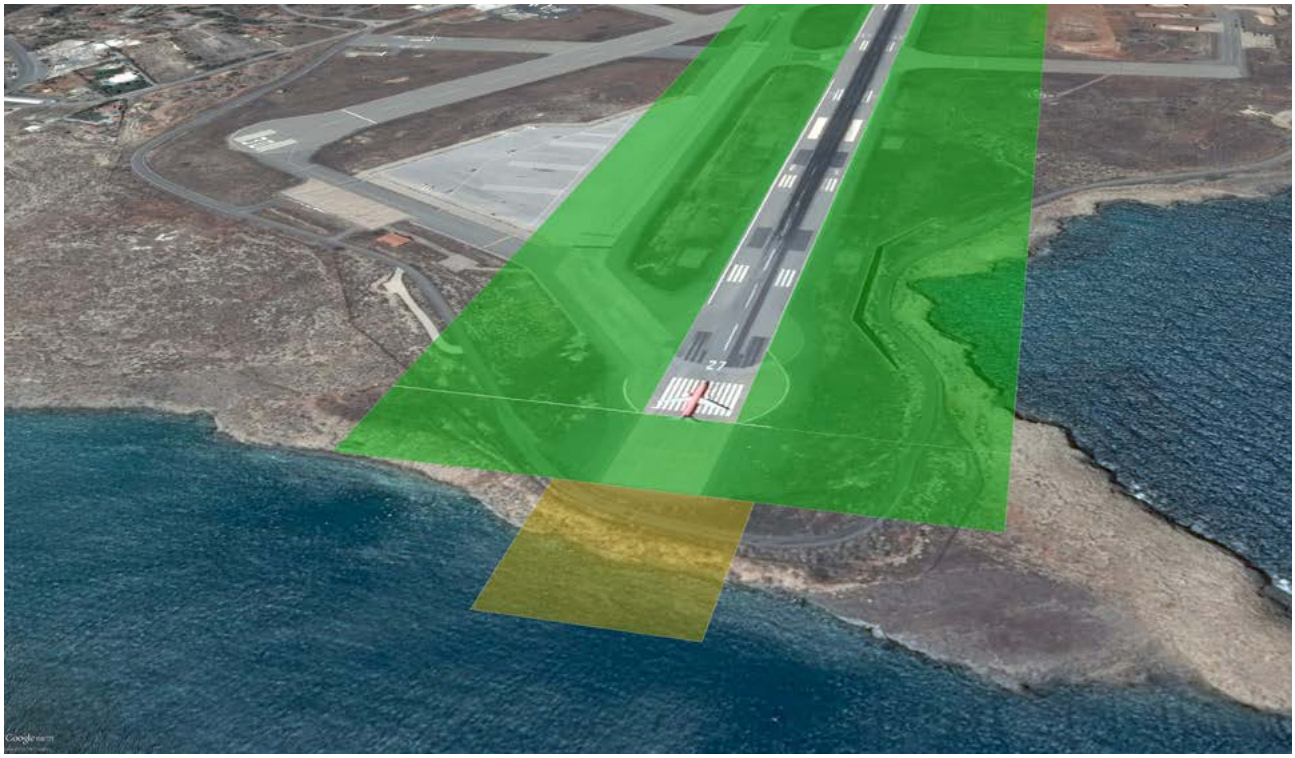


Safety Assessments for non-EASA/ICAO compliant Runway Strip

Numerous airports have several deviations related to the provision of a Runway Strip. Most common deviations are non-frangible objects (buildings, antennas), parallel taxiways or tunnel entrances, fences, public roads or significant slopes in the strip. Above that temporary works involving construction equipment in the strip may cause safety issues.

A runway strip – and its graded portion – aims to "reduce the risk of damage to aircraft running off a runway, and to protect aircraft flying over it during take-off or landing operations" (ICAO Annex 14). Further requirements are introduced by ICAO Aerodrome Design Manual and EASA CS ADR-DSN (e.g. safe use by rescue and firefighting vehicles). On top of that, a large number of national regulations exists: German regulations - for instance - are more permissive than many others to allow construction works in some parts of the non-graded portion of the runway strip (provided that specific conditions are fulfilled).

airsight assisted in the last few years many airports and Civil Aviation Authorities in managing deviations from the above mentioned requirements, conducting on their behalf Safety Assessments and developing mitigating measures to reduce the risks following to the ALARP principles (As Low As Reasonably Practicable) when necessary.
airsight developed and maintain for such exercise a risk-model to quantify the probability of lateral excursion of an aircraft from the runway during take-off and landing. It enables the assessment of the individual risk level for different scenarios based on the local characteristics of each airport (e.g. type of approach, traffic mix, location of obstacles, etc.).

This "safety-based" approach, compliant with aviation regulations, enables airport operators to make informed decisions on the infrastructural or operational measures required to mitigate risks if necessary. Often this approach considerably reduces the investment required to ensure an acceptable level of safety when "full" compliance with infrastructure requirements is not possible or feasible.

Services: Aeronautical Study

airsight projects

Aeronautical Study of service drive in pre-threshold area of a runway

Ground service vehicles crossing an operational runway at an airport can be hazardous and can cause aircraft and vehicle delays as well as severe operational constraints.

At a large international European airport, a service road linking apron and supply areas crosses the secondary runway at the threshold. To avoid long waiting times and operational limitations, a new service drive is proposed in the pre-threshold area of the runway. The objective is to allow vehicles to drive around the threshold independently for a major fraction of aircraft operations on the runway.

Designing a service road in a pre-threshold area is a challenging task as it requires fulfilling numerous restrictive infrastructural and operational requirements. Therefore, airsight was commissioned by the airport operator to carry out an aeronautical study, assessing the feasibility of the concept.

The study was conducted in compliance with international regulations of ICAO and EASA. Based on the concept and its relevant processes, hazards have been identified and associated risk as well as their potential impact on operations have been analysed, focussing in particular on jet blast and RESA related issues. Where required, mitigation measures have been proposed.

In order to partially allow independent operations of the service drive and runway, a “dynamic Obstacle Limitation Surfaces” (OLS) concept has been developed. Instead of being “static” and based on the most critical aircraft, dynamic OLS are based on the size of the aircraft operating on the runway. This approach enables a more flexible and less constrained utilisation of the service drive, as the affected runway is operated mainly by small aircraft.

The aeronautical study enabled to demonstrate that with the help of such a concept, in conjunction with new ATC procedures and associated mitigating measures, the service drive can be operated safely while minimising the impact on airport capacity.

Services: Aeronautical Study

airsight projects

Company Flight Procedures (RNAV) to regional airports in Africa

Airlines greatly benefit from the utilisation of area navigation (RNAV) approach procedures. Reducing the chances of controlled flight into terrain, it increases safety. In addition, it makes the approach easier to fly.

Nevertheless, while the availability of RNAV procedures is increasing, numerous aerodromes in developing countries still do not have developed nor published RNAV procedures.

To still benefit from RNAV at aerodromes where no such procedures are available, airlines can contract independent Flight Procedure Design organisations to develop so called “Company Procedures” for them. These procedures are designed, charted and coded into the fleet’s Flight Management System, as well as validated by the responsible aviation authorities – the only specificity is that these are not published in the aerodrome AIP.

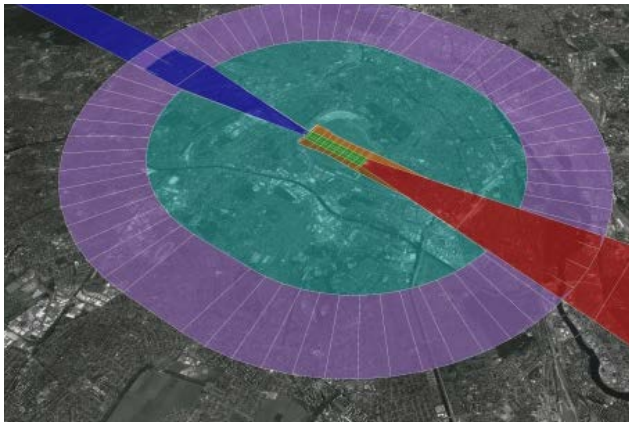
In addition to providing Flight Procedure Design services to aerodromes and Air Navigation Service Providers, airsight designs instrument approach procedures also for commercial airlines, such as Air Austral. This airline, based in La Réunion, operates at several small regional aerodromes in Europe, Asia and Africa and commissioned RNAV procedures design to airsight in order to fully benefit from Global Navigation Satellite Systems (GNSS).

Services: Flight Procedure Design

Berlin Tegel Airport
Mapping of Obstacle Limitation Surfaces (OLS) and infringements

On behalf of Berlin Tegel Airport, airsight was commissioned to map the Obstacle Limitation Surfaces (OLS) and to identify all infringements of these surfaces based on EASA requirements (EASA CS-ADR-DSN).

Safe airport operations require a permanent monitoring and assessment of possible infringements of the Obstacle Limitation Surfaces, as prescribed in the relevant regulations such as ICAO Annex 14 and EASA CS-ADR-DSN.



Services: CNS Assessment

airsight projects

Development of requirements for drone operations at aerodromes

According to a recent survey, more than 25% of the interviewed airports already had experience with drone operations for applications such as asset surveys, pavement inspections, visual landing aid calibration (PAPI), aircraft maintenance inspections, promotional videos etc.

The demand for drone operations at aerodromes is continuously growing, but many operators are facing some difficulties, as there is often no standardised approach nor safety case to enable flights over runways and taxiways, aprons and aircraft stands, passenger terminal buildings, etc.

Drone operations at or around aerodromes are subject to special conditions, but in most cases these conditions are simply not yet defined by the aerodrome operator or responsible authorities. Often, this leads to a systematic rejection of all drone operation applications, non-commensurate rules, or generates a lot of efforts to review the applications on a case-by-case basis.

An aerodrome operator commissioned airsight to develop a clear set of rules for operating drones at and in the vicinity of its airports.

airsight, as aviation safety consultant with experience as drone operator, developed these rules using a risk-based approach. After a review of possible hazards, different fly-zones were introduced, based on the risk operating a drone in these zones represents to aerodrome operations as well as taking into account other requirements (e.g. obstacle limitation surfaces, ATC CNS equipment etc.).

Then, specific minimum conditions were defined for each zone, following the principles that the high-risk zones shall have the highest standards in terms of Concept of Operations, Personnel Requirements, Operating Environment (visibility, wind and temperature conditions), Technical Requirements and Operating Procedures.

Such clear sets of rules are specific to an aerodrome and shall also take into account the national regulatory framework. These define under which special conditions drone operations are possible, and greatly improve transparency between stakeholders (aerodrome and drone operators, air navigation service provider, regulator and responsible authorities etc.).

Services: Safety Case Development

airsight projects

Aeronautical Study for bulk-fuel storage tanks in the vicinity of active runway

New facilities in the vicinity of aerodromes can represent a physical obstacle which could possibly infringe Obstacle Limitation Surfaces. To maintain the necessary level of safety, permanent monitoring and assessment of any infringements or changes to airport operations are required.

airsight has carried out an aeronautical study for an international aerodrome where new bulk fuel storage tanks are proposed to be located close to existing facilities (hangars and maintenance buildings) and near an active runway and approach path. As the proposed facilities represent a change at the aerodrome, an aeronautical study is required as per ICAO / EASA regulations.

The purpose of an aeronautical study is to provide a systematic evaluation and assessment to ensure that the safety of flight and airport operations is not compromised. The applied methodology is based on European Aviation Safety Agency (EASA) and International Civil Aviation Organization (ICAO) guidelines.
Based on the results of a hazard identification exercise related to possible infringements of applicable surfaces as prescribed in ICAO Annex 14 and PANS-OPS, a risk assessment was performed determining the risk of collision between an aircraft and the proposed facilities using statistical models as well as experts' opinions and workshops.

For such a complex infrastructural project, a range of factors has to be considered. While some aspects related to CNS compatibility, secondary events and special emergency procedures were managed by the aerodrome operator itself, airsight focused on the impact of the new facilities and its construction (cranes) on instrument or visual flight procedures in compliance with EASA and ICAO requirements, and associated risk of collision.

The study enabled the proposed construction to go ahead, provided certain conditions are met and mitigating measures implemented.

Services: Obstacle Assessment, Aeronautical Study

airsight projects

Several Airports
Safety Cases for flexible contingent runways

Over the last few years, some single runway airports have converted a parallel taxiway into a secondary runway. The most famous example is Gatwick Airport: the northern runway (08L/26R) was initially a taxiway. Today, it is declared as a runway and can be used as such when the main runway (08R/26L) is not in use for any reason (e.g. maintenance, emergency). In “normal” operations, it is simply used as a taxiway, as the two runways cannot be operated in parallel. The time required for changing over the configuration is only two hours.

Such practice, not defined by ICAO, is referred to in the industry as “switch-on/switch-off runway”, “flexible contingent runway”, or “temporary emergency runway”. It is very convenient when infrastructural development is limited. It enables extensive maintenance works to be carried out on the main runway without having to reduce scheduled operations or to close down the airport.

Nevertheless, such practice is extremely complex to introduce and manage. It requires important infrastructure adaptations, very precise procedures as well as a solid safety case to demonstrate that the concept can be operated safely.

airsight participated in the development of numerous such safety cases, together with airport operators, air navigation service providers, airlines and authorities.

The main difficulty of such project resides in the management and mitigation of risks of confusion, runway incursion, ATC errors as well as risks related to the transition between the runway configurations.

Furthermore, in many cases, a taxiway cannot be fully upgraded to a runway, both in terms of infrastructure and equipment. If compliance cannot be fully achieved, a safety-based approach is required to manage non-compliances, or to prioritise the elements to be upgraded, e.g. runway guard lights, stop bars, markings.

To conclude, a flexible contingency runway may be considered in case no other options for continued operations are available. It can be operated safely, but is associated with numerous restrictions and a comprehensive analysis of risks involved.

Services: Safety Assessment, Aeronautical Study

airsight projects

Several Airports
Runway holding positions and obstacle limitation surfaces

Aircraft taxiing or holding too close to the runway may endanger airport operations. Therefore, as per ICAO/ EASA, “the location of a runway-holding position shall be such that a holding aircraft or vehicle will not infringe the obstacle free zone, approach surface, take-off climb surface or ILS/MLS critical/sensitive area or interfere with the operation of radio navigation aids” (see ICAO Annex 14 6th Edition, Standard 3.12.3 or analogously GM1 ADR-DSN.D.340 of EASA CS-ADR-DSN, Issue 2, 2015).
In order for aerodromes to fully respect this standard it requires a very precise planning of the location of the holding position, taking into account the entire aircraft fleet, taxiway system geometric aspects and all approach types.
The verification of the compliance of a runway holding positions is therefore a challenging exercise, in which airsight excels and demonstrated its expertise in several projects.
airsight’s methodologies and tools makes the positioning of holding positions and the identification of possible infringements very efficient.
Also, in some cases, non-compliances to the applicable specifications cannot be ensured: simply because it is “technically” not feasible due to the lack of space, or because a displacement of the holding positions would have a too negative impact on airport capacity.
airsight is capable of conducting a safety assessment as per ICAO or EASA requirements and to recommend mitigating measures to maintain or achieve an acceptable level of safety.

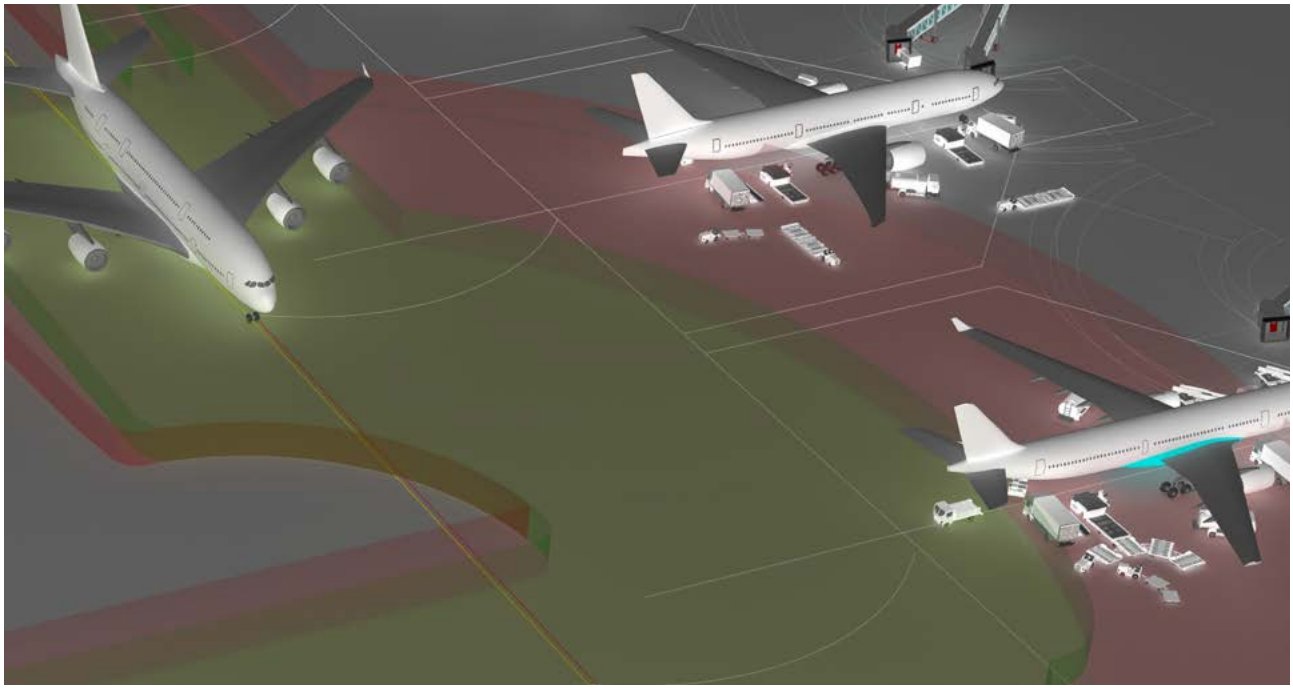
Services: Safety Assessment, Obstacle Assessment

Berlin Brandenburg Airport
EASA compliance assessment of the north runway

In preparation to a major rehabilitation project of its north runway, Berlin Brandenburg Airport commissioned airsight to conduct an in-depth investigation of the conformity of the existing infrastructure against the most recent EASA Certification Specifications.
In total, more than 140 infrastructural elements related to the runway and associated taxiways have been individually assessed. It included the review of signs, markings, lights, shoulders, and further applicable requirements such as strips, runway end safety area, etc.
Runway rehabilitation projects are generally a great opportunity to solve existing deviations to applicable requirements as well as to optimise the infrastructure and equipment (rapid exit taxiways, fillets, lighting etc.): through the identification of possible improvements and development of efficient implementation strategies, significant synergies and cost savings can be realised.

Services: Compliance Assessment, Airport Planning

airsight projects



Several Airports

A safety-based approach to assess jet blast at aerodromes

The design of an airport movement area must take into account the impact of "jet blast". For this purpose, planners rely on dedicated software which can display the jet blast contours for different velocities and thrust levels (i.e. idle, break-away, take-off).

Nevertheless, many airports still experience incidents related to unexpected jet blast effects, notably on the apron during taxi operations. Jet blast can blow vehicles, equipment or other objects and cause severe injury to people or damages.

On the other hand, airport planners often state that fulfilling "by design" jet blast limitations are too restrictive. It considerably increases the required safety margins, requires the installation of expensive jet blast fences or the definition of very restrictive operational measures. Planners sometime rather rely on experience than on simulation results or demonstrated values.

A lot of uncertainty remains with regard to the real jet blast related risks.

How reliable are the jet blast contours provided by the aircraft manufacturers further used for simulation purposes? Which criteria or parameters shall be used for airport planning purposes, in order optimise airside design while preventing incidents and minimising operational limitations?

These fundamental questions have been asked a lot to airsight over the past few years.

A review of the values provided for different aircraft types revealed noticeable inconsistencies and major differences between jet blast contours of similar aircraft types. For instance, B737-800 and Airbus 320-200 are almost the same in terms of dimensions, mass and engines – but their breakaway contours diverge significantly (148 vs 29 m)! Similarly, the declared contours for a B747-400 are twice more demanding as for a heavier A380.

The main reason for these differences is that there are no standards to determine jet blast values. Manufacturers' methods are not comparable and in addition inconsistent between their own aircraft models. Furthermore, specific manoeuvres on the apron (e.g. turns, engine-out operations) are not considered – only a "one-fit-all" value is generally provided.

These facts do not mean that simulations are useless, but show that some more expertise is required as well as a closer examination of the local operational conditions: turns, aircraft mix, possible pilots' behaviours, procedures etc.

In selecting which contour values to be used at an aerodrome, airsight uses a unique safety-based approach together with more accurate values obtained via different methods (full-flight simulator trials, measurements, consolidated technical research) and considering specific operational conditions and scenarios.

The benefits for aerodromes are a more accurate design and a more efficient space utilisation, less operational restrictions - while maintaining or increasing the safety level.

Services: Safety Assessment, Apron Planning

airsight projects

Auckland Airport
Review of apron infrastructure and operations

Auckland International Airport (AIA) is facing a significant increase of traffic, combined with a continuous evolution of the aircraft fleet. The apron infrastructure is limited both in terms of available aircraft stand and space, resulting in complex and possibly less efficient operations for all users.
To face this challenge, AIA launched several strategic initiatives aiming to improve the situation. One of these initiatives, commissioned to airsight, was to conduct a comprehensive review of AIA apron infrastructure and operations.
Within the review of the apron infrastructure, airsight airport planners took a fresh look at the apron assets. They proposed several innovative solutions based on best-practices, for instance to create additional available areas for ground handling activities and servicing equipment, to simplify push-back procedures and to decongest taxi operations, to improve compliance with requirements or to provide pilots better situational awareness with optimised markings and signage.
The review of the operations aimed to identify potential opportunities to improve both the safety (including airside discipline) and efficiency of operations. Based on airsight's expertise and more than 20 interviews with key-stakeholders, numerous recommendations were proposed on various topics such as safety management systems, slot and stand allocation, apron management services and ground handling operations.
These numerous recommendations ranged in size from simple, low cost solutions that would be tangible in the short-term, up to more significant infrastructure solutions that would be tangible in the medium term.

Services: Airport Operations, Apron Planning, Airport Planning

airsight projects

Hamburg Finkenwerder Aerodrome
Airfield Pavement Inspections using drones

Hamburg Finkenwerder Aerodrome belongs to the Airbus main plant in Europe, where notably the assembly of A320 or A380 family aircraft is performed. The aerodrome has a 3 200 m long runway and is used for corporate, freight, test and delivery flights. To maintain the high level of safety and availability the aerodrome is subject to yearly pavement maintenance inspections.
Airbus Operations division, the aerodrome operator, commissioned airsight to conduct an inspection of the main apron area using drones / Unmanned Aerial Vehicles (UAVs) / Remotely Piloted Aircraft Systems (RPAS) in order to assess the general feasibility of such new inspection methods in conjunction with operations, and assess their benefits for their utilisation on the entire movement area.

Inspection Flights
The inspections were carried out in coordination with ATC on the main apron located south of the runway, representing a surface of 130 000 square meters of concrete pavement: the equivalent surface of 18 football fields.
airsight's UAV, manoeuvring in windy conditions along pre-programmed GPS-based flight segments with a minimum distance of 150m to the runway and 10m to parking aircraft, could gather the required image material for the detailed off-site analysis of the pavement surfaces.

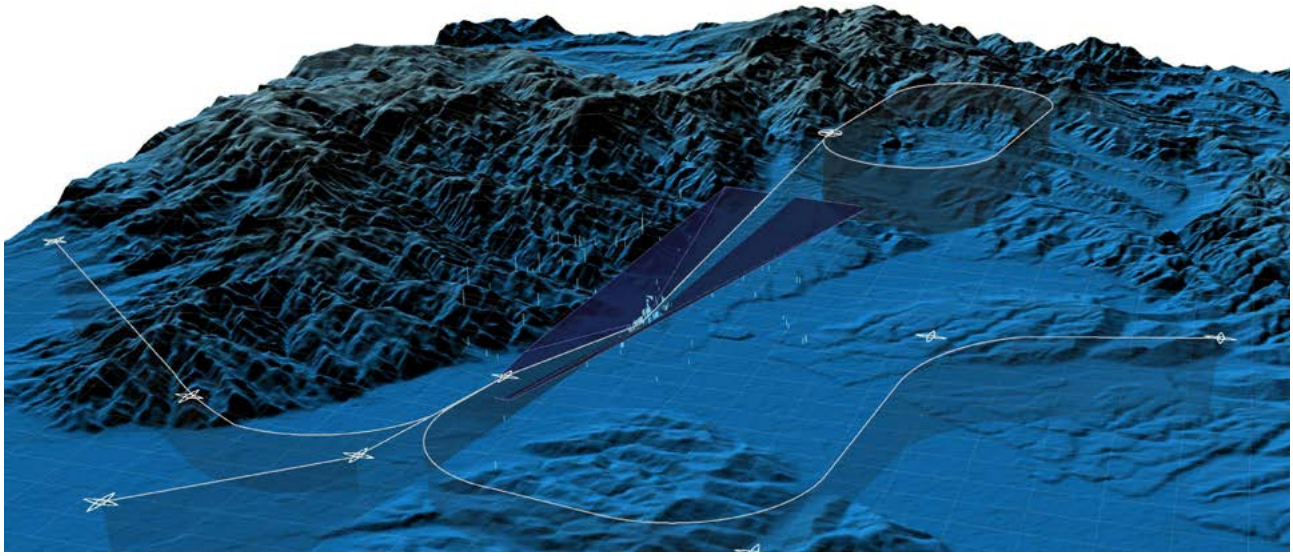
Orthophoto generation
All images – representing 45 gigabyte of raw material – were then stitched into one single georeferenced orthophoto. This process took four days on airsight server-grade hardware and dedicated software. The resulting image had a resolution of 2mm/pixel: about 15 times better than typical high-end aerial imagery obtained by low-flying aircraft, or about 500 times better than images obtained by satellites for civilian use.

Assessment and documentation
The accuracy of the image material enabled a detailed assessment and documentation of the conditions of the airfield pavement. This task, performed by airsight experts using a CAD software, enabled the identification of distresses in accordance to client's or industry-recognised standard such as ASTM D 5340 (Standard Test Method for Airport Pavement Condition Index – PCI – Surveys).

Benefits
For this project, the utilisation of UAV for pavement inspections had numerous benefits in comparison to conventional inspections: a minimal impact on airport operations, a standardised and efficient off-site analysis, a full reproducibility and traceability of the visual impression as well as the corresponding results over time – not dependent on the subjectivity of the surveyors.
More generally, the provision of such image material and associated reports unveils a wide range of new applications for airport operators and their maintenance team: optimised asset management using Geographical Information System (GIS) application and Pavement Management Systems (e.g. MicroPAVERtm), off-site quantification of rehabilitation measures, etc.

Services: UAV-based Pavement Inspections

airsight projects



ROMATSA - Romanian Air Traffic Services Administration

Flight Procedure Design services for 12 Romanian Airports

airsight is providing since 2010 Flight Procedure Design services to ROMATSA, the Romanian Air Traffic Services Administration.
In April 2015 airsight has been selected by ROMATSA via a public tender process to provide Flight Procedure Design services at 12 Romanian airports and associated TMA.
In total, within a period of 18 months, over 130 procedures will be designed in accordance with ICAO PANS-OPS and PBN Manual.
airsight is authorised or recognised / endorsed by several States as an Instrument Procedure Design Organisation for both conventional and Performance-based Navigation (PBN) procedures, fulfilling the guidelines of ICAO Document 9906 Volume I - Flight Procedure Design Quality Assurance System and being ISO 9001:2001 certified. airsight has the personnel, equipment and expertise to conduct very efficiently large scale airspace development and Flight Procedure Design projects taking into account several complex interdisciplinary constraints (such as safety, noise and capacity).

Services: Flight Procedure Design, Air Traffic Management

Flight Procedure Design training course
airsight also provides courses on flight procedure design and obstacle assessment: please visit our website for information about the next sessions.
www.airsight.de/training

Geneva Airport

Safety Assessment of the new East Wing terminal and apron reorganisation

To match future demand, Geneva Airport planned the construction of a new 350 Million Euros Terminal. The building, known as the „East Wing“, will be about 520 metres long, 20 metres wide and 19 metres high, and will replace the existing facilities and strengthen long-haul services (6 Code F aircraft positions).
This project involved a major re-organisation of the apron assets (aircraft stands, taxiways, service roads, hydrant fuelling system), notably to accommodate the different phases of the terminal construction while minimising the impact on airport operations.
airsight has been commissioned by Geneva Airport to conduct several safety assessments for the construction phases and the final state of the East Wing. For this purpose, several workshops were organised and conducted to identify hazards, review risks (in terms of probability and severity), and develop mitigating measures.
Through a multidisciplinary iterative approach and the involvement of all relevant stakeholders (airline operators, ground handlers, apron management services, architects and civil engineers), not only the safety of the retained design was improved, but also airport operations and the phasing of the construction process.
All results of the project were documented by airsight and submitted to the responsible authorities, which approved the proposed construction in 2014.

Services: Safety Assessment, Apron Planning

airsight projects

Dubai Airports and Dubai Air Navigation Services (DANS)
Safety Case for parallel runway operations under low visibility conditions

airsight has a long standing cooperation with Dubai Airports and Dubai Air Navigation Services (DANS), through engaging in numerous projects throughout the years. Under this project, airsight developed a safety case for the simultaneous operation of both runways at Dubai International (DXB) under Low Visibility Conditions (LVC) as part of the approval by the competent authority.
Dubai International has two parallel runways whereas only the northern runway was approved for take-off and landings during LVC. Even though such situation rarely occurs, this implies a significant capacity bottleneck which had to be challenged.

Limited visibility and reduced visual perception abilities of all stakeholders at the airport requires the implementation of specific provisions related to the infrastructure as well as to procedures. Therefore, airsight conducted an initial gap-analysis of the existing infrastructure and procedures against applicable ICAO Standards and Recommendations. As a result of this analysis, it could be demonstrated that the physical characteristics of the southern runway and adjacent areas meet these requirements.

A second study included a safety assessment of the ATC and airport operations procedures. The scope of this assessment was to identify possible hazards and risks associated with the implementation of the revised procedures, and to derive appropriate mitigation measures in cooperation with the process owners.

During LVC, special attention has to be given to the protection/safeguarding of aircraft taking-off or landing. Therefore, taxi procedures have been optimised for both traffic crossing the runway and traffic adjacent to the runway to warrant safe and efficient operations. Airsight contributed in the optimisation of the procedures based on its wide ranging expertise in airport operations and safety assessments. On the basis of the developed safety case, DANS & Dubai International Airport has been approved by the authorities for the simultaneous operations of both runways during LVC.

Services: Safety Assessment, Air-Traffic-Management

airsight projects

Luxemburg Airport
Compliance Assessment of the runway infrastructure

A runway rehabilitation project often aims not only to resurface the runway, but also to improve numerous infrastructural elements (signs, markings, lights, electrical systems, shoulders, etc.). This represent a major opportunity to correct possible deviations to the applicable aviation specifications, with the further enhance the airport's level of safety and serviceability.
As part of Luxemburg airport's ongoing commitment to deliver and operate excellent facilities, airsight was commissioned to conduct an assessment of the current compliance of Luxemburg airport's runway. The objective of this assessment was to enable the airport to identify possible deviations to the applicable requirements (ICAO, EASA), to prioritise issues, and to finally make informed decision on how to integrate their resolution within the upcoming rehabilitation project.
The compliance assessment was mainly conducted off-site, using comprehensive check-lists containing more than 500 elements referring to ICAO Standards and Recommended Practices (SARPs) contained in Annex 14 6th Edition as well as the recently published EASA aerodrome Certification Specifications (CS-ADR-DSN). With this approach, Luxembourg airport covered both international and European requirements in one single analysis, facilitating the certification procedure according to the new European regulations.
The results of the assessment enables Luxemburg airport to correct deviations within the rehabilitation process – leading to significant economical and operational benefits for the airport – or by the implementation of efficient operational measures. airsight further assists Luxembourg airport in the management of deviations and in the communication with the responsible authorities.

Services: Safety Assessment, Compliance Assessment

Hannover Airport
Aeronautical Study of airport infrastructure's (including helipads) deviations to ICAO Annex 14 and national requirements

As at most airports, infrastructure and equipment at Hannover Airport has developed strongly in the last few decades. Additionally, the applicable national and international legal requirements continued to evolve, notably in terms of scope and complexity.
Based on the latest amendment of ICAO Annex 14 (including Volume 2 – Heliports), Hannover Airport initiated to review entirely from the ground up its current compliance to the relevant specifications, in order to mitigate risks that may impact the safety of air operations. Furthermore, the outcomes will be used as a fundamental basis for the – according to European regulations – required airport certificate.
This project was structured in form of an exhaustive and systematic aeronautical study. An initial compliance analysis, enabling the identification of deviations and resulting hazards, was followed by an assessment aiming to develop and prioritise the measures required for safe operations. The outcomes of this project were also presented to the according national aviation authority, and were further the basis for the initiation of several projects to achieve a higher compliance level of the infrastructure and airport operations. Some of these projects are also supported by airsight consultancy (e. g. upgrade of helipads, reorganisation of the main terminal apron).

Services: Safety Assessment, Compliance Assessment

Tallinn Airport
EASA Compliance review of airside planning

Lennart Meri Tallinn Airport (EETN) is the main airport in Estonia. It features a single 45 m wide runway with a length of 3070 m. In the next years the project “Tallinn Airport Airside Area Development Project” will aim to improve and expand the airside infrastructure. It will includes for instance an extension of the existing runway and taxiways, the construction of new apron and taxiways, as well as a general upgrade of the infrastructure for CAT II operations (e.g. ILS, lighting systems etc.).

Estonia, as a member state of the European Union, falls under the scope of EASA. Therefore Tallinn Airport (EETN) has to comply with regulation 139/2014 (EU aerodrome regulations) and corresponding applicable specification for aerodrome planning and design (i.e. Certification Specifications).
The proposed design for the airport expansion project, developed prior the introduction of EASA specifications, was based on ICAO Annex 14 5th edition. Though ICAO and EASA requirements are very similar in scope and nature, the future airport infrastructure should be compliant to the new EASA requirements – and ideally consider the latest version of the 6th edition of ICAO Annex 14.

In this regard, airsight was commissioned to review the applicable differences between ICAO and EASA requirements and make recommendations on managing compliance.
airsight developed and uses comprehensive check-lists based on EASA specifications and their corresponding elements in ICAO SARPs and related guidance material. This makes such assessment very efficient and the provided results of the analysis enables a seamless conversion into the new EASA regulatory system, and warrant the viability of the future aerodrome layout.

Services: Aviation Regulations, Compliance Assessment

airsight projects

German Ministry of Transport

Developing a concept for the implementation of safe flight operations under IFR conditions in uncontrolled airspace (class G)

The German Ministry of Transport commissioned airsight to develop a concept for implementation of flight operations under instrument flight rules (IFR) in uncontrolled class G airspace in Germany.

Unlike other European states, German airspace rules currently differ from the European Commission's Standardised European Rules of the Air (SERA) regulations as they do not allow flight operations under instrument flight rules (IFR) in uncontrolled airspace (class G). This is due to safety concerns caused by VFR flights operating above and below clouds, thus resulting in a potential risk of aircraft collision.

Allowing IFR flights to operate safely in class G airspace is essential to comply with European Regulation 923/2012 on air and operational provisions regarding services and procedures in air navigation and to respond to the growing demand for helicopter emergency medical services (HEMS) as well as supply services for offshore wind farms.

airsight has detailed knowledge of national and international regulations and a dedicated and highly qualified team of experts with extensive references on safety assessments and flight procedures, and managing stakeholders with diverging interests (i.e. National Aviation Authorities, military, airspace users).

The study included an assessment of the legal framework, the establishment of a comprehensive airspace concept, the development of processes for the approval of flight operations as well as the drafting of regulatory requirements to implement future procedures.

The end objective of this project was to determine the conditions acceptable to achieve a high level of safety for all stakeholders involved, and to facilitate the acceptance and future implementation of such a concept.

Services: Flight Procedure Design, Air Traffic Management, Aviation Regulations

airsight projects

Anjouan Ouani Airport, Comoros
Design of a new RNAV approach procedure

The use of area navigation (RNAV), based on the Global Navigation Satellite Systems (GNSS), brings several benefits to access remote airports not equipped with traditional ground based radio navigational guidance: it increases safety by providing precise guidance for pilots and therefore makes the approach easier to fly and reduces chances of controlled flight into terrain. RNAV approaches can further enhance the availability of the airport as well as flight efficiency.
Air Austral is a French commercial airline with headquarters and main-base in La Réunion. It operates scheduled services to Europe, Africa, Thailand as well as to a number of destinations in the Indian Ocean, including the island Ajouan of the Comoros.
On behalf of Air Austral, airsight designed a new RNAV instrument approach procedures to Ajouan's Ouani Airport in accordance with ICAO PANS-OPS, ICAO PBN Manual and the guidelines of ICAO Document 9906 Volume I - Flight Procedure Design Quality Assurance System.
This project introduced Instrument Flight Rules (IFR) procedures for Air Austral to Anjouan Ouani Airport.

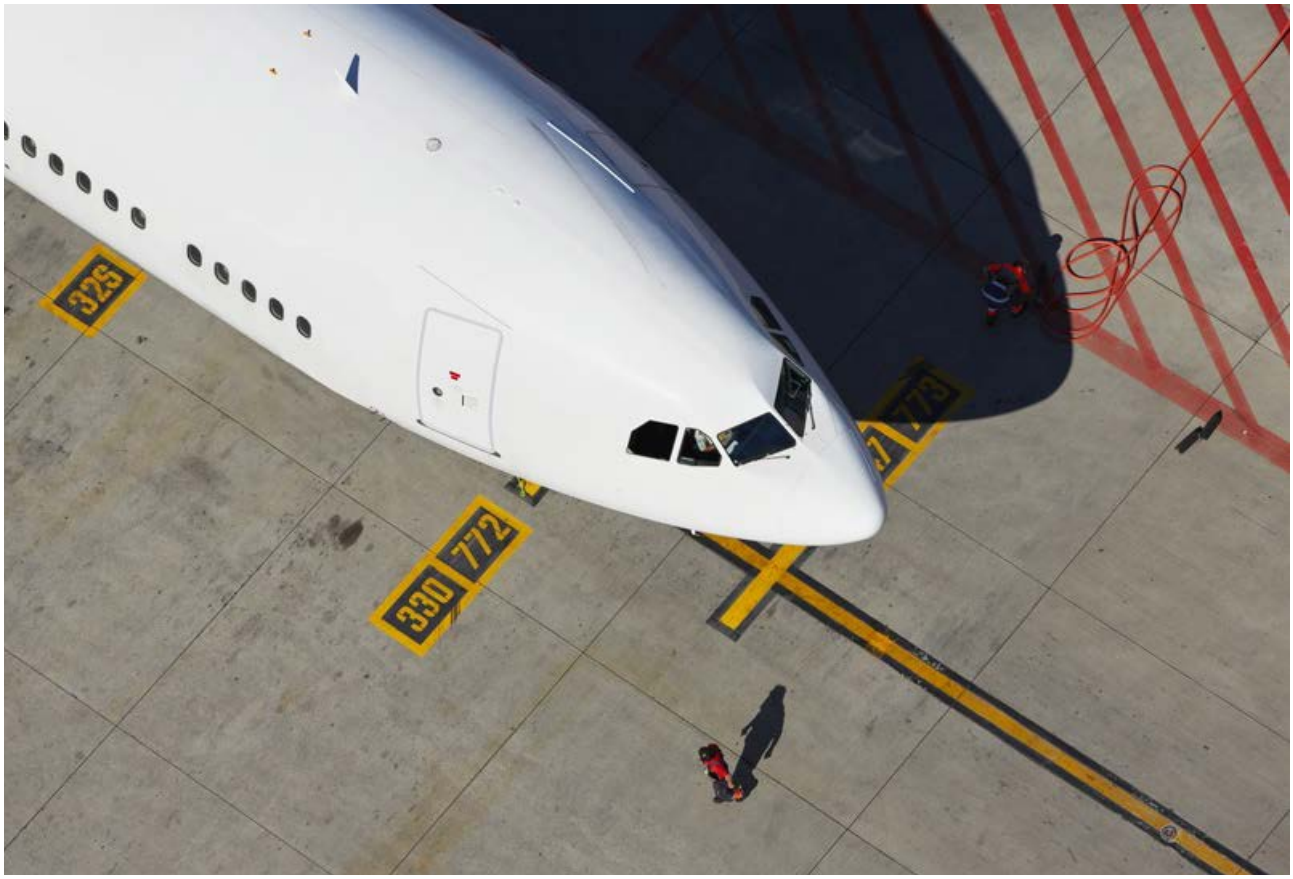
Services: Flight Procedure Design, GNSS Approaches

Malta International Airport
Aeronautical Study on the installation of a solar farm

Solar panels are becoming increasingly attractive as a means of supporting the energy requirements of airports. They allow airports to reduce their operating costs and reinforce their commitment to the environment.
Nevertheless, the installation of solar panels may be limited by aerodrome safeguarding constraints and, as required by ICAO, further require an Aeronautical Study to ensure that safety of operations will not be compromised.
In this context, airsight was commissioned by Malta International Airport to conduct an Aeronautical Study in order to determine the possible locations for the installation of a large-scale solar farm within the perimeter of the aerodrome using a safety-based approach.
The developed Aeronautical Study consisted of a review of the applicable regulations and guidance material available and the identification of potential hazards, e.g. sun reflections and glare on ATCOs and pilots, potentially impaired rescue and firefighting operations, interferences with navigation (e.g. ILS) and surveillance equipment (radars). Based on the identified hazards and associated risks levels, mitigating measures were identified and possible locations for the installation determined.
Airports present a significant opportunity for hosting solar technologies due to large amounts of open land, however the successful implementation of solar systems depends on detailed planning and safety analysis as performed in this project.

Services: Aeronautical Studies and Safety Assessment, Obstacle Assessment, CNS Site Analysis

airsight projects



Brussels Airport
Aircraft Stands Optimisation

Most incidents occur on the aircraft stands: on average, one incident resulting in aircraft damage occurs per 5000 flights. One of the main contributing factors for such high incident rate is the lack of space on stands, notably in the front of the aircraft. While most design are compliant with ICAO Annex 14 and EASA provisions, an optimisation of the aircraft stands layout can lead to a significant improvement of ramp safety.

The redesign of aircraft stands is a long and complex exercise. Therefore, Brussels Airport asked for the support of airsight for reorganising and optimising their aircraft stands.

airsight has years of practical knowledge in CAD-based simulations for apron design and aircraft stand optimisation tasks and is well aware – through numerous projects – of the best-practices increasing apron safety.

aircraft stand optimisation has several objectives, such as maximising the usable area in front of the stands for ground handling activities, as well as to minimise the number of stop lines to make it more workable for marshallers. The main complexity of this planning task resides in the consideration of each stand specific mix together with a high number of constraints, as ICAO/EASA separation limits, airport specific guidelines for stand design and predefined operational processes, passenger boarding bridges operational limits (PBB), location of hydrant pits, escape corridors for fuel trucks etc.

Simtra's Pathplanner, used by Brussels Airport as well as airsight in most airport planning assignments, enabled the detailed modelling and simulation of the proposed objective and constraints, along with the identification of optimal stand layout.

Airport operators are partially responsible for safe operations during ground handling, and an efficient apron design is crucial to minimize the risks to both aircraft and personnel.

Services: Aircraft stands design, apron planning

airsight projects

Luxembourg Airport
Feasibility Study Central De-icing Concept

airsight has been commissioned as a subcontractor to carry out a detailed assessment determining the suitability of new central de-icing concept at the existing airport site of Luxembourg Airport.

In general, de-icing processes at aerodromes are performed on stands or at dedicated centralised de-icing facilities. The implementation of a centralised de-icing concept represents a large investment, however it brings numerous advantages: i.e. the de-icing process takes place in closer vicinity to the runway (less critical hold over times – "HOT"), freeing up valuable capacity at the aerodrome as well as enabling a more efficient collection and recycling of fluids.

airsight specialises in airport operational and infrastructural planning , including de-icing facilities and processes. Notably, airsight developed a comprehensive study on the regulation of ground de-icing and anti-icing services at European aerodromes on behalf of European Aviation Safety Agency (EASA).

For Luxembourg Airport, the proposed concept was developed in line with relevant international standards by ICAO and EASA as well as industry best-practice guidelines. The required number and area of de-icing facilities was based on an airport's specific traffic profile. Particular challenges of this project were the high traffic density during departure peak and the large proportion of large cargo aircraft placing a high demand on the efficiency of the processes. airsight assessed the general feasibility and potential benefits of implementing a centralised concept and carried out an optioneering study on various location options to derive the most suitable solution based on all airport specific characteristics and constraints.

Luxembourg airport is looking at extensive infrastructural enhancements. The results of this study facilitated the decision process for such a costly investment and allowed the airport to integrate appropriate implementation measures into the planning process.

Services: Feasibility Study, Winter Operations, Aircraft Deicing

airsight projects

Athens International Airport
Audit of Aviation Safety Management System

airsight has been appointed to carry out an audit of the aviation safety management system at Athens International Airport, 'Eleftherios Venizelos'.
The main aim of an audit on safety management systems (SMS) is to verify the system functions well and ensures safe operations.
airsight's wide ranging expertise in safety management systems (SMS) includes assisting operators with introducing and operating such a system as well conducting audits of its implementation and continuing compliance for many airports all over Europe. Such services include defining the organisational structure and responsibilities, developing proactive and reactive processes, documenting the SMS and designing concepts for safety training and promotion, as well as checking compliance with national and international regulations and developing recommendations on how to maintain compliance and increase safety.
The audit for Athens International Airport (AIA) was directed primarily on the safety management system (SMS) itself, including related airfield and ground handling services (airfield operations, driver training, wildlife management), as well as on the interaction of the involved departments and third parties.
The focus of the audit was to verify compliance of AIA's safety approach with the applicable relevant ICAO regulations and guidance material. A specialised audit team of airsight experts carried out a comprehensive documentation review and site visits to Athens International to collect all required data and information.
The processes and actions were found to be compliant with the ICAO Safety Management Manual and the final audit report highlighted numerous areas of good practices, attesting the outstanding performance of the airport of the airport's SMS. "Even the best can improve", and under this motto, some recommendations were developed on how to implement potential enhancements and how to improve the effectiveness of the system.

Services: Compliance Assessment, Safety Management System

airsight assists aerodromes with the new EASA aerodrome regulations

EASA aerodrome regulations are now in force, and concerned aerodromes have to „convert" existing certificates into certificates that comply with the new regulations. airsight proposes new services to support aerodromes to face this challenge.
After several years of preparation and review, the new European regulations for aerodromes are now in force. Aerodromes will have until end of 2017 to comply with these rules and obtain from their responsible authorities a new certificate.
This conversion process may represent tremendous efforts for aerodromes: it requires the involved personnel to read and understand the new rules (more than thousands requirements spread in different books), demonstrate compliance across the entire organisation (provided material evidence is available), and to adapt operations to meet new EASA requirements.
airsight, currently proposing the most complete training programme on EASA aerodrome regulations (www.airsight.de/training), now also offers consulting services to assist aerodrome facing this new challenge.
The services proposed cover the entire life-cycle of a possible certification procedure, and can be customised to match each aerodrome specific requirement.

Services: Gap Analysis (CS, OPS), Development of Certification Basis (CB), Training, Management of deviations

Contact airsight for more information on these services!

airsight projects

Dubai Airports
Designated Final Approach and Take-Off Areas (FATO) for helicopter operations

airsight has a long standing cooperation with Dubai Airports, being engaged in numerous projects, and has now been appointed to develop designated Final Approach and Take-Off Areas (FATO) for helicopter operations at Dubai International Airport (DXB) and Al Maktoum International Airport (DWC).
Dubai airports are currently not equipped with dedicated facilities for helicopter operations. The new facilities will cater the largest helicopters serving the Dubai airports for day and night operations.
To ensure safe helicopter operations on a surface level heliport, obstacle limitation surfaces need to be established taking into account critical objects, and approach and take-off climb criteria need to be defined carefully. airsight's wide ranging expertise and experience in the design of airport and heliport infrastructure includes various international projects dealing with numerous planning questions and all safety related matters.
The design is based on international standards and industry best practise and integrates the facilities into the existing airport infrastructure and operational conditions. The supporting safety cases assess potential hazards and inherent risks associated with the implementation of the facilities and identify mitigation measures ensuring safety of airport operations.

Services: Flight Procedure Design, Helicopter Operations

Prof. Dr. Holger Schulz takes office as honorary professor at the Technical University of Berlin

On March 12th 2014, founding member and long standing Managing Director of airsight Prof. Dr. Holger Schulz was appointed honorary professor for "airport planning" in the faculty of Mechanical Engineering and Transport Systems at the Technical University of Berlin.
Since 2005, Prof. Dr. Schulz has been lecturer for "airport planning" and has extended his commitment at the university to lectures on "flight procedure design" in 2009. His continuous work on the complex ICAO regulations provides his students with an access to the perspective of the practice in this safety oriented and thus rather conservative field.
Prof. Dr. Holger Schulz is an internationally renowned expert for airport planning and aviation safety. He holds a Master's degree in Aeronautical Engineering from the Technical University of Berlin and received his Ph.D. in the field of satellite-based precision landing procedures (GBAS). He is a certified Ground Operations Agent and Aviation Auditor as well as a trained private and commercial pilot.
Prof. Dr. Schulz has been active in various advisory boards, such as ICAO's Committees. Furthermore, he has been working as an advisor for several international aviation panels dealing with aviation safety, such as Eurocontrol, EASA, and Airport Council International (ACI), and has gained worldwide a reputation as a leading specialist in this field.

airsight projects

Cologne Bonn Airport
Operational safety study: vehicle operations on a taxiway

Cologne Bonn Airport commissioned airsight to carry out a comprehensive exercise to develop an operational solution to allow safe operations of ground vehicles on the maneuvering area (i.e. live taxiway).
Ground service vehicles crossing an operational taxiway can be hazardous and can cause aircraft and vehicle delays as well as severe operational constraints. At Cologne Bonn Airport an essential service road connecting two main parts of the airfield crosses one of the operational taxiways – TWY B. To ensure safe and efficient operations of ground vehicles and aircraft taxiing, a suitable operational solution needed to be developed to improve the current situation.
Aviation safety is one of airsight's core competencies, with expertise ranging from operational analyses to aeronautical studies and assessments on all kinds of safety matters that concern airport operators or air navigation service providers.
One particular challenge of this project became apparent when a benchmarking exercise showed that the layout and operational necessities in CGN are unique in Europe and no similar processes exist at other airports that fulfil the specific requirements of this particular situation. To account for the distinctive nature of the task, specific safety requirements were defined, serving later as key indicators for the realisation of an operational concept. Various options were developed and evaluated including operational regulations aided by gates or barrier mechanisms, re-routing of taxiflows and a complete re-design of the intersection. During the optioneering process comprehensive stakeholder consultations were carried out to reach consensus and agree a serviceable solution.
This study derived a solution that provides operational safety and is commercially viable, provided vital aid for the consultation process and achieved the necessary stakeholder consensus.

Services: Safety Assessment, Airport Operations

Regional airport
Runway layout optimisation

Regional airports are of crucial importance, particularly on remote islands with few connections to the mainland. Their development is significant for both, tourism and local residents. However, the extension of their infrastructure is often limited by the surrounding environment – and ever demanding regulatory requirements.
airsight provided its expertise to optimise the proposed extension of a new runway, taking into account the very demanding requirements in terms of runway field length (to reach long range destinations) on the one hand as well as the numerous constraints such as the obstacle situation, flyability, land use and the new EASA regulations for aerodrome certification on the other hand.
In such a difficult environment – infrastructural, operational and regulatory – a holistic approach is essential which makes airsight's competencies in these subject matters a great benefit for airport project developers.

Services: Runway Design, Flight Procedure Design, Obstacle Assessment

Dubai International Airport

Safety Case for construction works within the runway strip

In summer 2013, airsight was commissioned to develop a safety case for construction works within the runway strip at Dubai International Airport (DXB). The project was conducted in close cooperation with different departments of Dubai Airports (Development, Compliance and Airside Operations), DANS (Dubai Air Navigation Services) and the construction companies.

Prior and after a temporary closure of runway 12R/30L in 2014, various constructions are required to be conducted within the strip during flight operations on the runway. In order to ensure the safety of operations on the runway as well as on the adjacent taxiways and the construction site, a comprehensive safety case was created. The aim of this safety case is the identification of potential hazards, the assessment of inherent risks and the development of adequate mitigation measures.

In a first step, the system to be assessed was defined and the potential hazards were identified within a workshop. Based on the results of the hazard identification, all risks were assessed in terms of frequencies and severities. Within this process, various methods (qualitative and quantitative) have been applied. As an example, for estimating of the probability of a collision of an aircraft veering-off the runway with the construction site, airsight's veer-off risk-model was applied. The evaluation of the risks induced by other processes of operational nature, such as the accessibility of the construction site, could be assessed qualitatively within dedicated expert workshops.

Later, during a final workshop, the risks have been reviewed and the derived mitigation measures have been discussed in terms of feasibility and effectiveness. To conclude the project, all results of the safety case were documented in accordance to the template used by Dubai Airport Airside Operations Department.

Services: Safety Case, airport operations in conjonction with construction works

airsight projects

Malta International Airport
airsight's Safety Management Software A-SMS

airsight's A-SMS Web is a software application which supports airports in setting up and maintaining efficiently a Safety Management System. Initiated as early as 2005, the software is today implemented at several airports, such as Zurich, Belgrade, Bremen or Hamburg Finkenwerder Airport.
Malta International Airport (MIA) selected as well airsight's software solution to make the existing SMS more robust and efficient. After a short training and customisation phase, the multiple benefits of the utilisation of A-SMS are clearly visible!
A-SMS greatly facilitates the collection of occurrence reports (incidents or accident) and safety advices submitted by the airport personnel, as well as by airlines and ground handlers.
The proper management of a large amount of complex safety related information is a very difficult task for all airports. With the help of A-SMS, MIA's Safety Department is now able to analyse systematically each single report, and document investigations, identifies hazards, evaluate risks as well as develop mitigating measures and monitor their implementation.

Services: Aerodrome Safety Management

Additional Information and A-SMS Demonstration
For more information on A-SMS, or to schedule a live demonstration, please visit:
www.airsight.de/a-sms

Airport Berlin Brandenburg
Safety Assessment of non ICAO-compliant independent parallel departures

airsight and it's external partners were (in the context of an EU wide tender procedure) commissioned to conduct a Safety Assessment for non ICAO-compliant independent parallel departures at Berlin-Brandenburg Airport (BER) taking into account Implementing Regulation (EU) No. 1035/2011 (Requirements for the provision of air navigation services).
According to ICAO, independent IFR departures may be conducted from parallel runways, provided the departure tracks diverge by at least 15 degrees immediately after take-off. This design criteria, initially defined to enhance safety of air operations by increasing the spatial separation between departing aircraft, is however a major constraint for developing more efficient and environmentally sustainable flight routes.
Therefore, based on the currently ICAO-compliant routes developed by the German Air Traffic Services (DFS) for BER on its opening, airsight is responsible to evaluate whether – and under which conditions – non ICAO-compliant alternatives may ensure the same Level of Safety.
This Safety Assessment will be aligned to Eurocontrol Safety Assessment Methodology (SAM) as well as above mentioned EU regulation and consider aspects of airspace design, Air Traffic Control, as well as the technologies and equipment available.
In this exercise, airsight combines its expertise in the fields of Safety Assessment, Flight Procedure Design, Airport Operations and Environmental Impact Assessment to develop and assess possible alternative scenarios.

Services: Safety Assessment, Air Traffic Management, Flight Procedure Design

airsight projects

Hamburg Airport
Apron rehabilitation and flight operations

Hamburg airport is planning within the infrastructure programme “HAM NEXT” to rehabilitate and optimise its main apron (around 250 000 sq. m) as well as certain taxiways. The main challenge of this project is to conduct major civil works in conjunction with airport operations.
Following a Europe-wide official public procurement procedure, Hamburg Airport selected airsight as planner and technical consultant, in order to ensure safe and efficient operations while rehabilitating its main apron.
airsight is responsible for optimizing both the construction phases and the interim apron layouts, as well as to coordinate with the different airport departments and other stakeholders the upcoming civil works and resulting operational constraints. To preserve a maximum of positions opened, as well as to maintain safe operations at all time (e.g. low visibility operations), a systematic approach has been applied. This approach is based on a detailed analysis of the operational processes (e.g. ground handling, aircraft and vehicles movements) and interrelations between the different airport components, equipment and system requirements.
Within this project, airsight develops the project documentation required by the responsible authorities and defines the technical specifications related to apron operations to be followed by the civil engineering companies responsible for the realisation of the project.

Services: Aerodrome operations in conjonction with construction works

Malta International Airport
Obstacle and operational Safety Assessment of a new hangar

Safe airport operations demand a permanent monitoring of obstacles in the close proximity of airports as well as beneath the respective obstacle limitation surfaces. The construction of new infrastructures requires a systematic obstacle evaluation to ensure that the necessary level of safety is maintained.
Malta International Airport commissioned airsight to analyse the impact on safety of a new hangar (ICAO Annex 14 and PANS OPS), representing a potential infringement of the applicable ICAO obstacle limitation surfaces. Besides the new building itself, airsight also evaluated other obstacles, such as the hangar construction site (including cranes), existing buildings or mobile objects (taxiing or parking aircraft) for all runways and operations.
The most important outcome of the study is that the hangar could be erected, and the additional results of the safety assessment served as a basis to determine the most efficient mitigating measures balancing both safety and operational constraints.

Services: Obstacle Assessment, Aeronautical Study

airsight projects

Berlin Tegel Airport
Support services for aircraft stands design and allocation

Changes in the fleet mix (e.g. operations of new aircraft types, such as B787), the development of new routes as well as the increase of traffic require a continuous adaptation, extension and optimization of airports aircraft stands. Besides the actual planning and implementation of new positions, the allocation of aircraft to the stands is also crucial.

airsight supports since more than 14 years Berlin-Tegel Airport's operation and construction department in their activities. The tasks conducted by airsight include the design as well as the execution plans for new or modified aircraft stand layouts, the periodic review and adaptation of the documentation used for stands allocation, as well as technical support for the constructions on the apron required to ensure safe operations. For instance, airsight verifies on behalf of the airport operator the compliance to ICAO/EASA specifications (obstacle clearance, separation requirements etc.) or validates the feasibility of safe ground-handling processes (e.g. push-back, de-icing). These services are delivered in a time and cost-efficient manner through the utilization of specific tools (such as CAD-based ground movement simulations, aircraft type and characteristics databases, or automatic obstacle evaluation software). With regard to updating the position management system, airsight relies on an Airport Manual Concept developed in close collaboration with the Tegel Airport. This concept foresees an annual review and update of all information related to each aircraft stands, such as aircraft types and related markings or installed guidance systems (e.g. visual docking guidance, aircraft type specific stop markings). The documentation is provided in a consistent and clear manner to the involved airport departments (e. g. further responsible for the development of aircraft stand allocation rules in an industry specific software application or for staff training), as well as to the airport ground personnel (ramp agents) and other ground handlers (e. g. fuelling services).

Services: Aircraft stands design, apron planning

airsight projects

Warsaw Chopin Airport
Study on the implementation of ILS CAT III Low Visibility Procedures

Following a European wide public procurement procedure, Warsaw airport commissioned airsight and its partners ARUP and Airbus to assess the feasibility of implementing ICAO CAT III precision approach and landing operations as well as take-off operations under low visibility conditions (LVTO).
The extensive study was divided into several work-packages. The main aims were to investigate the cost/benefit of achieving lower decision heights and to assess all main technical and operational aspects related to a CAT III operations upgrade.
After conducting a comprehensive compliance study of the airport infrastructure against ICAO requirements (incl. analysis of the obstacle situation), airsight carried out a safety assessment, as required by the regulations for such major changes of operations. Infrastructural and operational changes required to accommodate CAT III operations were documented and prioritized to facilitate their implementation and to obtain approval from the appropriate authorities. airsight further reviewed the current training of the operations and airside personnel and undertook an analysis of the potential cost and benefit of a future implementation of a GNSS Landing System (GLS).
In addition, a specific site study was conducted using analytical simulation to determine the required dimensions of the ILS critical and sensitive areas for CAT III operations, taking into account possible interferences caused by objects near the runway such as other aircraft, buildings and objects.

Services: Compliance Assessment, CNS Site Analysis, Low Cost-Benefit Analysis

Aéroports du Cameroun
Aerodrome Certification in Cameroon

In cooperation with the Flughafen München GmbH – inter alia responsible for the project management –, extensive compliance analysis of the airside infrastructure, procedures and equipment were conducted at the airports Douala (DLA) and Yaoundé Nsimalen (NSI).
After an in-depth off-site assessment (e.g. based on obstacle data, CAD plans, certificates and other data available), a two weeks on-site inspection campaign was conducted by airsight, amongst others to measure or collect information not yet available.
To manage such large and complex aerodrome infrastructure and operations compliance inspections against national or international regulations, airsight developed a unique methodology supported by associated tools and databases (e.g. compliance check-lists, software for the automatic evaluation of possible obstacle infringements, geo-referenced pictorial documentation of findings). These enable to conduct thorough and systematic compliance verifications to various ICAO SARPs or other specifications (guidance material or national specifications), as well as to document efficiently possible findings.
Services: Certification Support, Compliance Assessment

airsight projects

Berlin Tegel Airport

Aeronautical Study of ICAO Code E Aircraft Operations

The number of ICAO Code E aircraft (A330, A340, B777, B747) operating at Berlin Tegel airport has increased and this process will continue until the airport closure. To ensure that operational safety for these aircraft types is not compromised, the airport operator contracted airsight to conduct an aeronautical study of the airside areas at risk.
The study included the detailed analysis of the relevant infrastructure, such as the width of taxiways (main gear clearance), the clearances between taxiing and parking aircraft and objects (wing tip clearance), as well as the runway and taxiway shoulders and strips.

Services: Aeronautical Study, Compliance Assessment

Berlin Brandenburg Airport

Conduction of training courses within the ORAT program for BER airport future airside personnel

The airport operator is facing a series of important challenges due to the imminent launch of the new international airport Berlin Brandenburg (BER). This includes, among other things, the merger of the approximately 17,000 employees of the company as well as external service providers from the previous two Berlin airports Tegel and Schoenefeld on the capital's new airport. To ensure a smooth start, a series of preparatory measures are being taken within the project ORAT (Operational Readiness and Transfer). Besides testing the new equipment and operational procedures, preparatory training courses for the employees of the airport operator have been scheduled.
airsight was responsible for the training of the approximately 5 000 persons on the following specific topics: Apron training (topography, infrastructure, operations), training on processes in the Airport Operations Control Center, Winter service training, Radio training, training on practices in the area of runways and taxiways (driving licence training), as well as training for the logistics companies involved in the airport transfert.
The team of airsight was composed of 15 instructors, with an extensive experience in the development and conduction of training courses related to airport operations.

Services: ORAT Training, airside driver training

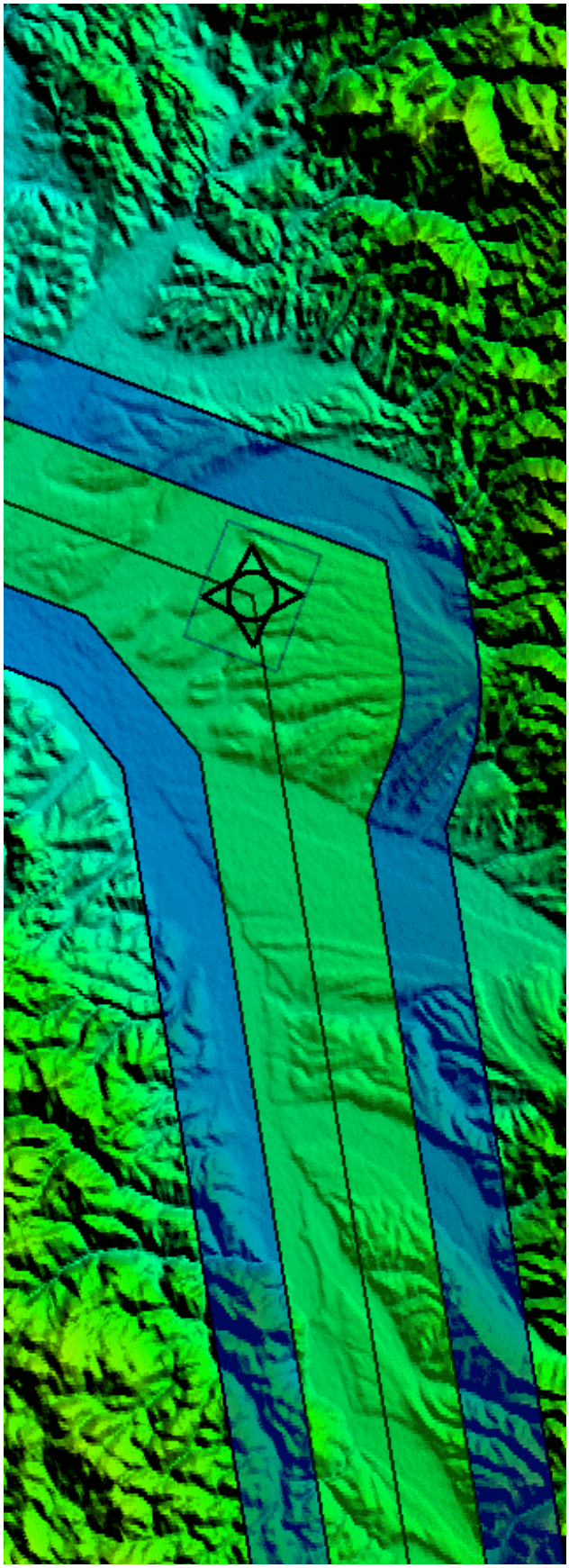
airsight projects

ROMATSA

Flight Procedure Design, coding and flight inspection of P-RNAV and conventional SID-STAR routes in Romania

airsight has been awarded a series of contracts for the design, encoding, charting and validation of conventional and P-RNAV Flight Procedures in Romania.
The contracts aimed to develop Standard Arrival Routes (STARs) and Standard Instrument Departures (SIDs) within the Arad, Cluj, Timisoara, and Bucharest TMAs.
The routes were designed by airsight according to ICAO requirements (ICAO Doc. 8168 – PANS OPS, Doc. 9906 – Quality Assurance Manual for Flight Procedure Design, ICAO Doc. 9613 – Performance-Based Navigation Manual) and with the objectives of optimising the route structure for Air Traffic Control and airspace users in terms of safety, workload, capacity, fuel consumption and environmental consideration (such as aircraft noise).
Within this project, airsight also managed and supervised the coding, charting, and flight validation of the designed procedures. These inspections aimed to ensure the flyability and validity of the new procedures prior their final acceptance by the responsible civil aviation authorities.

Services: Flight Procedure Design, Coding and Charting



About airsight flight procedure design services

airsight develops flight procedures taking into account several interdisciplinary constraints (such as safety, noise and capacity) as well as airspace configuration integration issues in coordination with ANSPs, aviation authorities, airports and airlines.

airsight flight procedure design department is certified ISO 9001, and developed in the last few years conventional and Performance Based Navigation (PBN) approaches for numerous clients worldwide.

In addition, airsight also proposes since the year 2000 obstacle assessment and flight procedure design training courses, which provides participants comprehensive insights into complex topics. For more information on airsight training, please visit:
www.airsight.de/training

airsight projects

Wind Energy Project Developers
Aeronautical Study for Wind Turbines

The growth of wind energy leads to more and more turbines being constructed near aerodromes. With a height of 150 m or more wind turbines can represent a serious obstacle for aircraft. In addition, in the vicinity of smaller airports where flight operations are conducted under visual flight rules, wind plants may represent a serious hazard to airport operations. Turbines can further have adverse effects on radar signals (e.g. reflection, distortion) which affect the safety of flight operations. Therefore, when wind turbines are placed nearby airfields, it is necessary to consider all possible impacts on the safety of flight operations during planning and approval procedures.

airsight conducted in the last few years over 20 aeronautical studies related to the installation of wind turbines on behalf of project developers.

International aviation regulations state that: „objects which extend to a height of 150 m or more above ground elevation shall be regarded as obstacles, unless an aeronautical study indicates that they do not constitute a hazard to aeroplanes."

Wind Turbines and Aerodrome Operations

airsight and its partners assisted numerous project developers planning new wind farms or single wind turbines in considering all aeronautical related aspects and in obtaining required authorisations. In these projects, airsight defined the possible constructible areas, evaluated and mitigated the impact of wind turbines on air operations - while taking into account diverging external stakeholders' interests (aerodromes, aviation/ military authorities, air navigation service providers).

Wind Turbines and CNS Compability

Wind turbines may cause interferences on Communication Navigation Surveillance (CNS) equipment (radar, Instrument Landing System etc.) and consequently can affect the safety of air operations. Therefore, project developers must either comply with very restrictive requirements, or demonstrate that proposed developments do not interfere with CNS equipment
airsight conducted site specific assessments supported by numerical simulations to verify the availability or quality of CNS signals, and demonstrate to the authorities the feasibility of the proposed projects.

airsight projects

German Ministry of Transport
Supporting research for the development and implementation of the German State Safety Programme

ICAO Annexes include the requirement for States to establish a State safety programme (SSP) aimed to achieve an acceptable level of safety in aviation operations.
A safety programme is an integrated set of regulations and activities aimed at improving safety (ICAO Doc 9859). The core objective of an SSP is the development of integrated safety management capabilities within the state's authorities and its stakeholders (aircraft operators, air navigation service providers, certified aerodrome operators, maintenance organisations…), in order to strengthen of both prescriptive and performance based oversight.
An SSP is based on the four main elements of Safety Management, namely State's Safety Policy and Objectives,Safety Risk Management, Safety Assurance, Safety Promotion.
Within this two-year project, airsight consultants will assess through interviews and workshops involving industry stakeholders the current implementation status of the SSP main elements, analyse possible gaps, and ultimately propose a concept for the development and implementation of Germany's future aviation safety programme.

Services: Aviation Regulations, State Safety Programme

Hellenic Civil Aviation Authorities
PANS-OPS flight procedure design training

airsight conducted a 6-week initial training on Flight Procedures Design according to ICAO PANS-OPS at the premises of the Hellenic Civil Aviation Authorities (HCAA) in Athens, Greece.
Over two periods of three weeks each, 10 air traffic controllers of the HCAA were trained on flight procedure design according to the international standards of ICAO PANS-OPS. The training covered general flight procedure design principles, conventional instrument flight procedures as well as basic area navigation (RNAV) and performance-based navigation (PBN) concepts and procedures.
The course was compliant to ICAO Doc 9906 "Quality Assurance Manual for Flight Procedure Design", Vol. II "Flight Procedure Designer Training", and included numerous exercises to enable the participants to design flight procedures in their future assignments.

Services: Flight Procedure Design Training

airsight projects

Luxembourg Findel Airport
Code E and F Aircraft Aeronautical Study

The operation of New Larger Aeroplanes (NLAs), such as the 747-8F (considered with a wingspan of 68.5 m as Code F aircraft), poses a host of challenges for aerodrome operators, especially at aerodromes which infrastructure was not designed to fit aircraft of such dimensions.
Prior operating such new type of aeroplanes, aerodrome operators shall provide the responsible authorities with the appropriate documented evidence of compliance with the applicable regulations (ICAO Annex 14), and demonstrate that possible deviations does not adversely affect the safety or significantly affect the regularity of operations of aeroplanes at the aerodrome.
airsight was commissioned by the company "TR Engineering", to conduct an aeronautical study on ICAO Code E and F aircraft operations at Luxembourg Findel Airport, in order to ensure the safe operations of Cargolux new fleet of 747-8F.
The conducted study included the compliance verification of runways (dimensions, shoulders, separations), straight and curved taxiways and taxilanes (dimensions, shoulders, separations), runway holding positions, visual aids, lighting and marking, aircraft stands, as well as rescue and fire fighting services. The utilisation in such project of a risk-based approach, supported by the work of the "Boeing 747-8 Airport Compatibility Group (BACG)" (published in 2008), enables to demonstrate that - taking possibly into account especially developed mitigation measures - some deviations may not infringe safety.

Services: Aeronautical Study, Compliance Assessment

Belgrade International Airport
airsight A-SMS Safety Management System Implementation

Belgrade "Nikola Tesla" Airport, Serbia's largest airport, selected airsight's Safety Management Software solution "A-SMS" to support and make more efficient the existing SMS within the whole airport organisation.
Under the coordination of the Safety Department, A-SMS aims to facilitate the communication and management of safety relevant information (incidents or accident reports and investigation, hazards, risks and mitigating measures) among the different departments. The web application will be used by several departments such as rescue and fire-fighting, airport operations, airport planning and development, airport maintenance departments, as well as the ground and passenger handling services department. Each department can now independently manage their own sub-system, while the safety department – informed via email notification in real time – coordinate and monitor the current progress of the required actions.
The new collaboration possibilities offered by A-SMS enables Belgrade Airport to facilitate teamwork and develop synergies, as well as to develop new metrics to measure and further improve the level of safety aerodrome.

Services: Aerodrome Safety Management, Software Development

airsight projects

European Aviation Safety Agency (EASA)

Study on the regulation of ground de-icing and anti-icing services

The danger posed by thickener residues from certain types of anti-icing fluids has been known for some time. Incidents in past years have led to a number of safety recommendations made to EASA by several Accident Investigation Bodies.
airsight GmbH was commissioned by EASA to investigate and recommend the means by which Aviation Authorities of Member States manage matters with respect to the certification of service providers, and availability of fluids at aerodromes.
The Study, finalised in 2011, concludes by recommending that EASA develop a work programme aimed at making improvements in six distinct areas, built upon the Recommendations made in the Final Report. The Final Report contains 26 recommendations for action which are aimed at improving the safety of de-icing / anti-icing of aircraft during ground operations. The solutions recommended include voluntary and regulatory actions involving national authorities, air operators, aerodromes and service providers.

Services: Aviation Safety Regulations, Regulatory Impact Assessment

Luxembourg Findel Airport

Operational concept for rehabilitating the runway while continuing air operations

To minimise the impact of the construction works on air operations, runway rehabilitation projects are often divided up into phases, where different parts of the runway remain operational with a reduced length available.
airsight was tasked by “TR Engineering” to determine possible operational strategies to enable continuous safe air operations while rehabilitating the runway.
To enable a phasing of the reconstruction works, achieved by temporary displacements of the runway thresholds, airsight engineers determined the required take-off and landing distances taking into account aircraft performance as well as the existing movement areas.
Additionally, based on applicable regulations and industry practices, the consultants defined the applicable restrictions to be observed on the construction site (e.g. restrictions due to jet-blast, ICAO obstacle limitation surfaces, ICAO runway strips, low visibility procedures etc.), as well as the necessary steps for a detailed planning and scheduling of the reconstruction.
A thoroughly planned efficient runway rehabilitation operational concept minimises impacts on air traffic operations while maintaining defined safety levels. In turn, this reduces cost as well as construction time during the rehabilitation phases.

Services: Aerodrome operations in conjonction with construction works

airsight projects

Kaunas / Vilnius International Airports
Feasibility study and development of Low Visibility Procedures (CAT II)

The introduction of ILS CAT II/III procedures is essential to many airlines, as it allows the operational availability of the airport in all weather conditions. However, several operational and technical factors need to be considered in order to ensure safe operations.
In 2010, airsight assisted Vilnius and Kaunas International Airports, the two largest Lithuanian aerodromes in upgrading to ILS CAT II operations and introducing Low Visibility Procedures. These projects started with an initial evaluation of the meteorological statistical data (e.g. Runway Visual Range, cloud ceiling, wind) to quantify the potential capacity increases. Subsequently, as required per ICAO, airsight conducted a compliance assessment of the aerodromes' infrastructure and equipment against the applicable Standards and Recommended Practices (SARPs) for CAT II operations. The result of this assessment was a work programme and recommendations that the aerodromes and responsible authorities could follow to ensure compliance and to facilitate the operational upgrade. Taking into account the obstacle situations, airsight also determined the applicable Obstacle Clearance Altitudes / Heights for the new ILS CAT II approaches.
Furthermore, airsight consultants also assisted Vilnius Airport in the development of tailored Low Visibility Procedures, taking into account several specific characteristics and local constraints.

Services: Low Visibility Procedure, Compliance Assessment, Obstacle Assessment

European Aviation Safety Agency (EASA)
State of Implementation of ICAO Regulations at European Aerodromes

EASA is the centrepiece of the European Union's strategy for aviation safety and will in future be responsible for the legal implementation of ICAO Annex 14 within the EU.
Together with its partner TÜV NORD CERT, airsight was commissioned by EASA to collect and analyse information on the state of the implementation of the provisions of that ICAO Annex 14. This study involved the visit of 30 EASA Member State Civil Aviation Authorities and 56 aerodromes, aiming to better understand the different national regulatory approach towards aerodrome safety and identify best practices. The results shall further serve as a basis to assess the level of flexibility of the upcoming EASA Implementing Rules required to take into account the specific particularities of each Member States.

Services: Aviation Regulations, Compliance Assessment, Aerodrome Operations, Safety Management

airsight projects

Brussels Airport
Impact of Cross- and Tail-Wind on Aerodrome Safety, Capacity and Noise

Cross- and tail-wind have a high impact on flight safety and aerodrome operations. Though international standards or best practices may be applied to define the maximum wind components, these are rarely supported by a thorough underlying rationale and do not take into account airports specific characteristics.
airsight, on behalf of the Belgian State Secretary for Mobility, carried out in 2009 a qualitative and quantitative analysis on the combined impact of alternative maximum wind component figures on safety, capacity and noise pollution at Brussels International Airport.

Services: Safety Assessment, Capacity Calculation, Noise Simulations

EUROCONTROL
Cost of Safety Management System

The lack of resources allocated to Safety Management System (SMS) is a major concern for the successful implementation and operation of SMS.
This issue is partially due to the non-availability of reliable information to support the decision of allocating resources (manpower, equipment and money) to SMS.
airsight developed in 2009 for EUROCONTROL a standard Cost Model aiming to quantify costs of SMS. It enables a detailed estimation of these costs, in order to assist Safety Departments and budget responsible persons to make informed decisions on the resources to allocate to SMS activities, as well as to better understand the composition of the cost of an SMS.

Services: Air Traffic Management, Safety Management, Economical Study

Irish Aviation Authority
Aeronautical Study & Safety Evaluation for the Planned New ATC Tower of Dublin International Airport

On behalf of the Irish Aviation Authority (IAA), airsight – together with Aviation Solutions – analysed the impact of a new 100m high control tower building with respect to safety and operational aspects. A special focus was set on the construction phase of the building (e.g. effect of cranes).
The safety analysis covered the compliance verification of the new tower according to different international aviation regulations (ICAO Annex 14 Obstacle Limitation Surfaces, ICAO PANS-OPS Surfaces) as well as a quantitative analysis of the risk of aircraft collision based on the ICAO Collision Risk Model. In addition, the analysis covered the various requirements by ICAO PANS-ATM and included analyses of the line-of-sight, the floor space and the controller working positions and the CNS / ATM Equipment.

Services: Obstacle and Safety Assessment, ATC simulations

airsight projects

Brandenburg State Ministry for Infrastructure and Regional Planning
Technical Assessment within the Approval Procedure of Berlin Brandenburg Airport

The expansion of Schoenefeld Airport into Berlin Brandenburg International Airport is Europe's biggest airport project. Before the airport goes in operations, it has to receive the approval of the responsible authorities – in this case the Brandenburg State Ministry for Infrastructure and Regional Planning.
In cooperation with its partner TÜV NORD CERT, airsight provided during three years the authorities with aeronautical engineering expertise and support for the verification of the airport's compliance to national and international regulations, as well as for the assessment of the technical and operational condition of the infrastructure.

Services: Compliance Assessment

Airbus - Hamburg Finkenwerder Aerodrome
ATC Safety Assessment of Ship Traffic Crossing Arriving and Departing Air Traffic

60 metres high container ships and cruise ships like Queen Mary 2 serving the port of Hamburg represent significant obstacles for the air traffic at Airbus - Hamburg Finkenwerder Aerodrome.
airsight carried out in 2009 an EUROCONTROL ESARR 4 compliant ATC Safety Assessment of this unique situation. Structure interviews and workshops with all involved stakeholders were conducted in order to identify the hazards, model and quantify the risks, and propose efficient mitigation strategies.

Services: Air Traffic Management, Safety Assessment

airsight projects

Berlin Brandenburg Airport
Cost-Benefit Analysis for the Operations of Apron Control Services

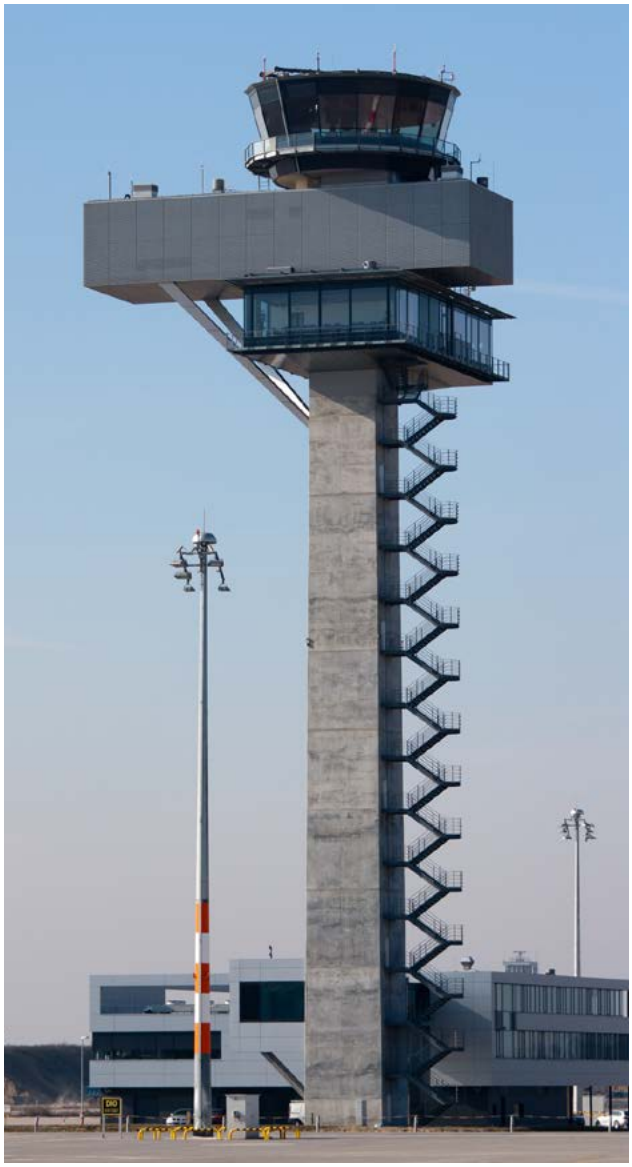
Due to the high traffic volume expected at Berlin Brandenburg International Airport, Apron Control Services will be provided by a dedicated ATC unit. These unit may be operated either by the National Air Navigation Service Provider, by an external service provider, or by the airport operator itself.
airsight analysed the cost and benefits of these three options, taking into account the operational constraints, the relevant national and international regulations, as well as the future manpower, equipment and facilities requirements.

Services: Cost-Benefit Analysis, Airport Operations

Austrian Federal Ministry for Transport, Innovation and Technology
Development of a Training Policy and Training Programme for the Civil Aviation Department

As required by ICAO, national safety oversight organisations must determine the minimum professional qualifications of their technical personnel and also provide the required training necessary for them to effectively accomplish their duties.
Accordingly, airsight developed on behalf of the Austrian Federal Ministry of Transport the mandatory Training Policy and Programme, as well as a Training Plan, ensuring that the CAA employees are well-trained for their activities.

Services: Training Programme



airsight is an experienced and well-established company providing airports, air navigation service providers as well as civil aviation authorities and organisations with consulting and engineering services, software and training.

The airsight portfolio includes topics such as aerodrome design and operations, airport capacity and simulation, flight procedure design and obstacles assessment, aircraft noise, safety regulations and oversight, safety assessment and safety management systems supported by airsight's A-SMS software.

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Experience: Since 1999

Employees: > 25

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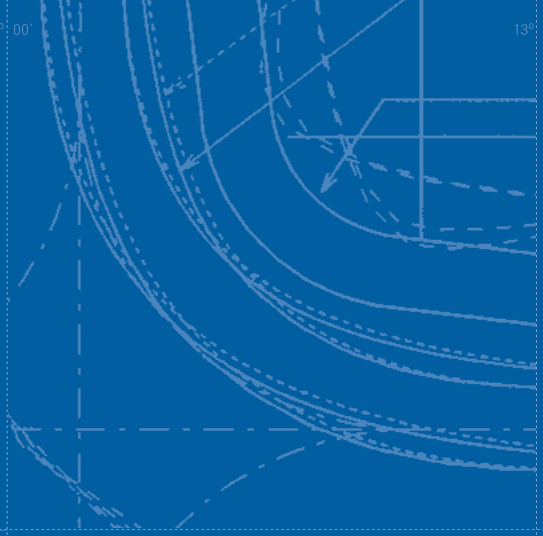

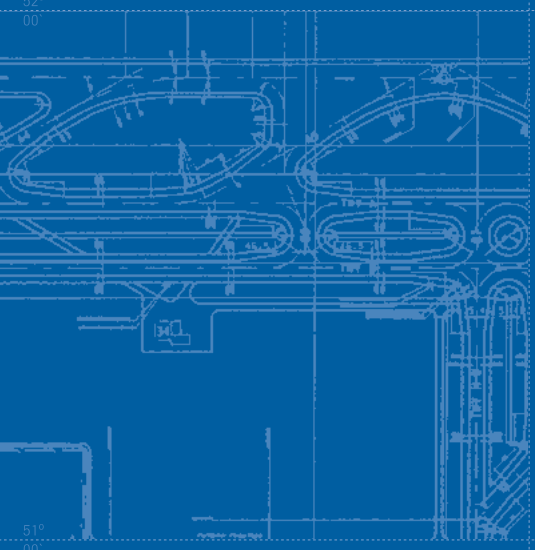

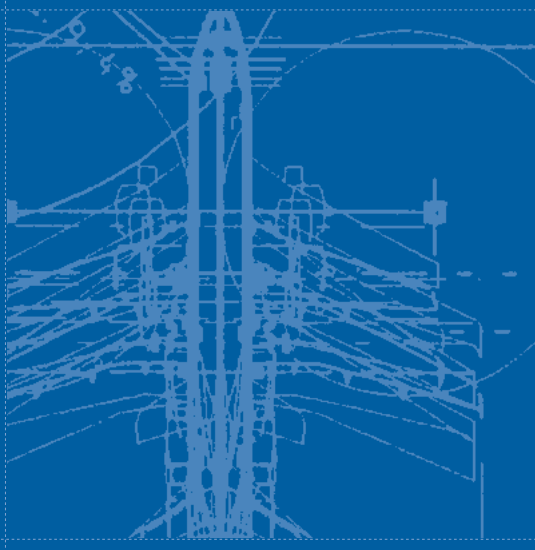

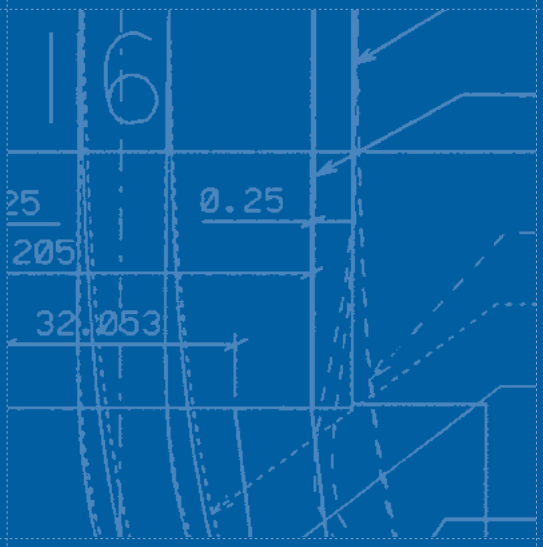

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