RWSL
for Paris-CDG

IMPLEMENTED

PARIS-CDG, 1ST EUROPEAN AIRPORT EQUIPPED WITH THE RUNWAY STATUS LIGHTS SYSTEM TO FURTHER REDUCE RUNWAY INCURSIONS

DSNA, the French air navigation service provider, and Groupe ADP, the Paris airports operator, have invested in a fully automatic, safety advisory high-technology system at Paris-CDG, that seeks to improve airport safety by indicating if the runway is unsafe to cross, enter or take-off.

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GROUPE ADP

"CDG 2020", A STRATEGIC PLAN
FOR HIGH-PERFORMING AIRPORT OPERATIONS

To increase runway capacity to 82 incoming flights per hour by 2020 in full safety at Paris-CDG airport, DSNA, the French air navigation service provider, and its partners – Groupe ADP, the Paris Airports operator, and Air France – have jointly drawn up an ambitious roadmap. In this regard, **the RunWay Status Lights (RWSL) system** has been identified as a lead project in the safety domain.

Paris-CDG is one of the busiest airports in Europe with 4 runways, 3 control towers, 1,500 flights per day.

The hypothesis adopted as to traffic growth is that of a moderate increase whose effects are amplified by greater sea sonality, concentration of demand during peak morning landing and take-off periods between 8:00 and 12:00 noon, and an increased percentage of heavy aircraft.

RWSL, THE OPERATIONAL CONCEPT

RWSL is not, at any time, intended to convey approval or clearance to proceed onto a runway or to take-off from a runway. RWSL is a fully automatic safety system independent of an air traffic controller's action. By using ground surveillance radar, it provides crews and vehicle drivers with immediate, accurate and clear indications when the runway is unsafe to cross, enter or take-off. Its implementation on the field consists of 2 types of lights **1** **2**.

Runway Entrance Lights (RELs)
Illuminated RELs mean STOP!
The runway is unsafe to enter or cross.

Take-off Hold Lights (THLs)
Illuminated red THLs mean STOP!
The runway is unsafe for take-off.
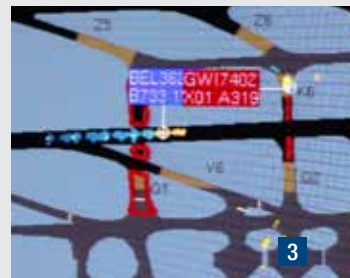
Controller's display

In Paris-CDG, the controller can visualize activation of the lights on the Advanced-SMGCS display **3**. When the red lights are off, the pilot or vehicle driver must wait for ATC clearance before crossing or entering the runway.

A SAFETY NET AGAINST RUNWAY INCURSIONS

RWSL is a type of autonomous runway incursion warning system (ARIWS) as defined in ICAO Annex 14 aerodromes. Also deployed in the USA and in Japan, France participated, together with Japan, the USA and other worldwide experts in criteria harmonization, promoted by ICAO, to ensure worldwide and consistent operational use where implemented.

The RWSL system was deployed at Paris-CDG on the Northern inner runway (09R/27L) on the 24th of October 2016 and on the Southern inner runway (08L/26R) on the 23rd of May 2017. It is the first one commissionned in Europe. Many design changes have been elaborated by DSNA to complete initial specifications to adapt the RWSL system to Advanced-Surface Movement and Guidance Control System (A-SMGCS) performances. An appropriate balance has been reached so that a pilot or a driver should never be in a position to cross a red light in a "safe situation" (reduction of erroneous indications).

In addition, the airport traffic fluidity is not affected.

The project was launched in close partnership between DSNA and Groupe ADP, with participation of European air transport bodies and airlines.

RWSL at Paris-CDG, a project validated through the SESAR project "Airport safety support tools for pilots, vehicle drivers and controllers" led by DSNA and selected as **a SESAR Solution**.

High value contribution of EUROCONTROL to safety analysis.
Safety case approved by the National Supervisory Authority (DSAC).

H24 operational evaluations of the system carried out with Air France and easyJet, the two main user airlines, starting on the Northern inner runway (09R/27L) in June 2016. The final commissioning was validated on the 24th of October 2016.

The European Commission has cofinanced DSNA for the final deployment, as a key enabler for runway safety in the implementation project "CDG 2020 step1" submitted with support of the SESAR Deployment Manager.

RWSL is not the single safety net against runway incursion installed at Paris-CDG airport but another 50% to 70% reduction of the remaining most serious runway incursion occurrences can be expected thanks to this system.

With the RWSL system, pilots and vehicle drivers have more situational awareness and can make runways even safer.

RWSL AT PARIS-CDG HAS ALREADY PROVED ITS VALUE!

Incident report: *"We landed at CDG on 09L, vacated and were cleared straight away to cross 09R via K6. As we were about to enter 09R via K6, red lights being part of the RWSL system came on. We stopped at K6, set the parking brake and saw a take-off in progress. Once 09R was cleared, we asked for clarification why we were already cleared to cross whilst a take-off was in progress. ATC apologized and recleared us to cross the runway".*

Maurice GEORGES *CEO DSNA*

''Safety is not only a prior condition for innovation, it is also its most direct product and the most fundamental one to enhance the overall performance levels of air navigation.''

Some airlines' feedback

''I was asked to join the last operational test of the RWSL system. I was particularly impressed by the clarity of the visual indications enabling easy appropriation of the system's logic by operators. I am convinced that RWSL will be a major safety improvement in addressing this specific risk''.

AIRFRANCE

"We have seen recently a great safety improvement at Paris-CDG airport by the implementation of the Runway Status Lights System at RWY 27L/09R. This additional safety protection system is in our world of aviation considered as being effective and efficient. EasyJet would like to congratulate the airport of Charles de Gaulle for the implementation of the RWSL system as it makes it safer for our pilots, crew and passengers''.

easyJet

About DSNA
DSNA, the French Air Navigation Service Provider, handled 3.1 million flights in 2017 with the record one-day peak in Europe: 11,016 flights on July 7th, 2017.
DSNA is member of FABEC, SESAR JU and the A6 Alliance. It is also member of the consortium in charge of SESAR Deployments.