

Wake Vortex Separations

When aircraft fly, they leave a trail of disturbed air called wake, which are swirling masses generated by the wingtips.

Aircraft need to be sufficiently separated during approach and departure to ensure the wake turbulence from one aircraft does not affect other aircraft.

They are placed in different categories according to their separation requirements.

The heaviest aircraft are categorised as SUPER, needing the greatest separation from lighter aircraft following behind.

The A320/1 and E145 have a difference in wingspan of almost 16m, and a difference in maximum take-off weight of up to 70 tonnes (depending on type) but are currently both in the MEDIUM category. This means the A320/1, used commonly at London Gatwick, previously suffered from overly conservative separation when following HEAVY aircraft. RECAT-EU addresses this, leading to more consistent and optimised aircraft spacing into London Gatwick.

ICAO Current Separations



RECAT-EU Separations

NMB FACTSHEET

Advanced Mixed Mode

Time Based Separation

NATS (London Gatwick Air Traffic Control) are introducing Time Based Separation (TBS) to make the spacing between aircraft more reliable. TBS changes the conditions to space aircraft on arrival from distance-based to time-based. TBS is helpful in strong headwind conditions because headwinds can lead to an aircraft slowing down, reducing the airport throughput. TBS can help to counteract this. TBS will standardise decision making for aircraft separation through using a tool to make the decision on the gaps between aircraft, rather than a controller’s judgement.

What is Advanced Mixed Mode | AMM?

Mixed mode operations involve using a runway for both arrival and departures. London Gatwick will be the first mixed mode deployment of TBS. AMM uses the European Union’s wake turbulence categories and time-based separation minima on approach and departure (RECAT-EU) to space aircraft based on time (TBS). AMM allows for gaps tailored to the actual aircraft arriving and the relative gap needed between them rather than less effective, longer gaps between them.

RECAT-EU categories of aircraft

SUPER	HEAVY	UPPER	MEDIUM	SMALL
A380	A330	B767	A318/9	B732-5
	A350	B757	A320/1	E135-195
	B777	A300	B736-9	AT42-72
	B787	A310	A220	DH8D

Departure RECAT-EU time-based separation of aircraft (min)

Follower Leader	SUP	HVY	UPR	MED	SML
SUP	-	1:40	2:00	2:20	2:40
HVY	-	-	-	1:40	2:00
UPR	-	-	-	1:20	1:40
MED	-	-	-	-	-
SML	-	-	-	-	-

Benefits

AMM at Gatwick is predicted to lead to an annual reduction in CO₂ of 18.8KT through a reduction in aircraft holding. The introduction of AMM has the potential to produce the following benefits:

- Consistency in arrivals
- Fewer go-arounds
- Less delay into the night period