



GROUPE ADP COVERS ITS WINTER COAT



Philippe Biotteau, Snow and ice removal Expert Assistant, Paris-Charles de Gaulle

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Aircraft de-icing, Paris-Charles de Gaulle

PREAMBLE

Keeping a foothold in operational activities, creating links, feeling useful... Winter service volunteers have many valuable motivations for airside teams at the arrival of the first snowflakes. Every year, hundreds of Groupe ADP employees volunteer to ensure the smooth running of Paris-Charles de Gaulle and Paris-Orly airports, working with the specialists on airside.

All winter long, Groupe ADP and its volunteer employees, Météo France, the Direction Générale de l'Aviation Civile and the airlines, work together to guarantee safety at Paris-Charles de Gaulle and Paris-Orly. All are ready to mobilize their staff and equipment in the event of a snowy episode.

«Winter service is a large family, in which different professions and profiles come together»

Céline Bianchi-Galeuzzi, Head of filming and winter service volunteer (Paris-CDG)

AIRCRAFT DE-ICING

In winter, ice deposits on the fuselage and wings of an aircraft, making it too heavy and degrading its flying conditions, which can prevent it from taking off. For obvious safety reasons, the pilot-in-command can then request that his aircraft be de-iced.

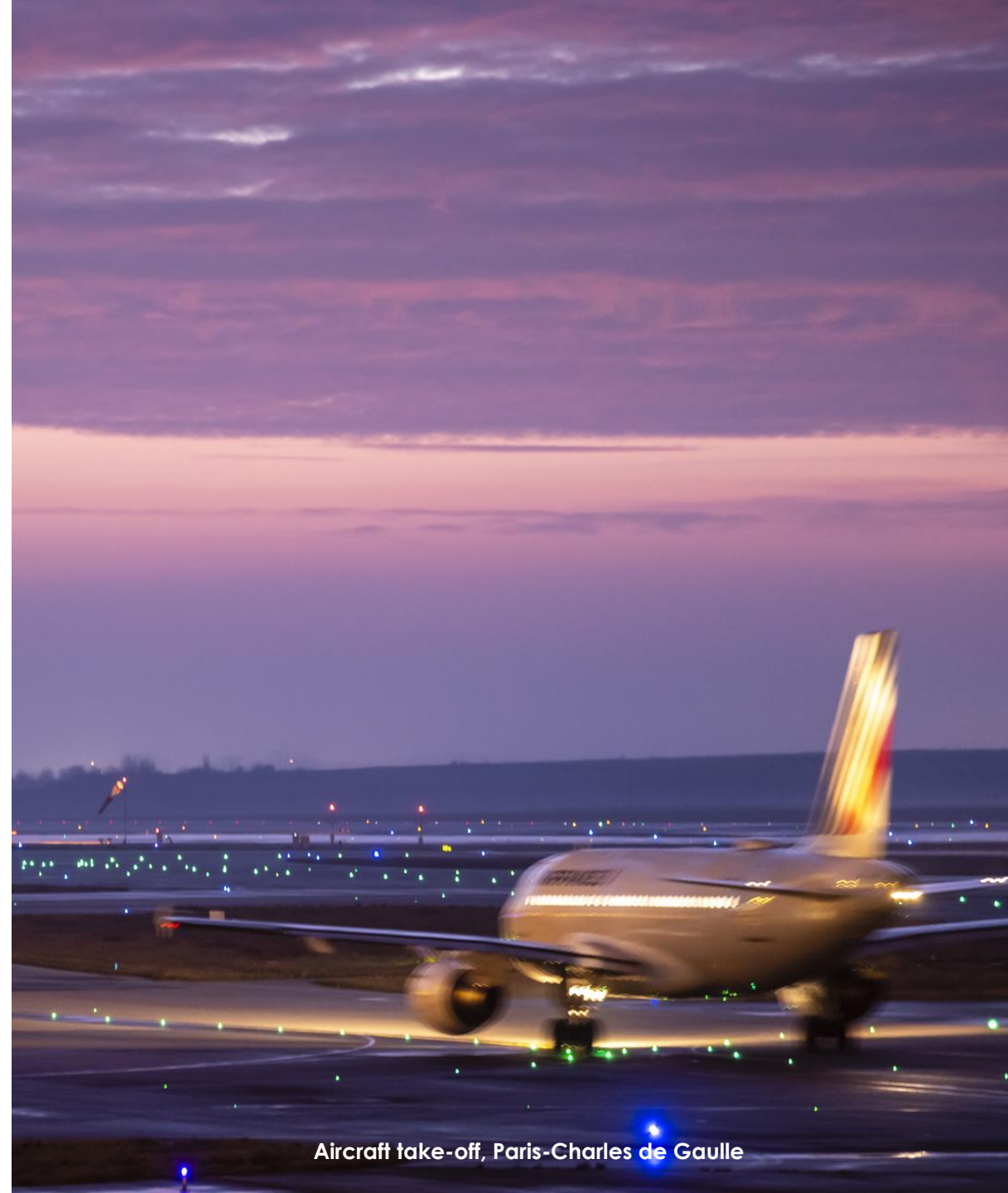
AT PARIS-CHARLES DE GAULLE

Groupe ADP is responsible of de-icing operations in dedicated areas close to the runways, to reduce the time between the end of the aircraft's treatment and its take-off.



AT PARIS-ORLY

Aircraft are de-iced directly at their parking point. The airlines are responsible for these operations. They entrust this service to their ground handling companies. Groupe ADP supplies glycol to these service providers.



Aircraft take-off, Paris-Charles de Gaulle

KEY DATA



Paris-Charles de Gaulle



1st French airport

1st European airport*

76.2 millions passengers handled in 2022



6.8 millions m² surface area

4 runways

100 km aircraft taxiways

20 de-icing areas

2 550 m³ glycol stocks



171 snow removal machines

50 de-icing (included 17 hybrids)

80 km service road

KEY DATA



Paris-Orly



2nd French airport

13th European airport*

31.9 millions passengers handled in 2019



889 ha surface area

3 runways

30 km aircraft taxiways

103 aircraft parking point

540 m³ glycol stocks



77 snow removal machines

45,5 km service road



Briefing prior to snow-clearing exercise, Paris-Charles de Gaulle

WINTER SEASON PERFORMERS



Groupe ADP ensures snow clearing in every aeronautical zone and keeps passengers and stakeholders informed of air traffic conditions via its communication channels.



The French Civil Aviation Authority (Direction Générale de l'Aviation Civile) authorizes or refuses aircraft to take off or land. It is responsible for air traffic control and can ask airlines to adapt their flight schedules according to weather conditions.



Thanks to teams located at the airport, Meteo France communicate weather forecasts to those working at the hub. This organisation enables forecasts to be updated in real time.



Airlines inform and assist their customers in the event of flight delays or cancellations. The weather at origin and destination airports can also have an impact on flight schedules: delays or cancellations may therefore be announced.



Snow train in action, Paris-Orly

GROUPE ADP COVERS ITS WINTER COAT



Did you know?

60 meters

This is the average width of a runway, 6 times wider than a two-lane freeway.

113 soccer fields

That's the amount of runways to be cleared of snow at Paris-Charles de Gaulle.

248 machines

Groupe ADP snow-clearing fleet

Snow removal on runways and snow trains

In the event of snowfall or icy conditions, it is essential to keep runways and taxiways clear of snow. While cars can adapt their speed to weather conditions on a road, a plane taking off or landing must reach a speed of 200 km/hour in all circumstances. It is therefore imperative that runways are treated to ensure the safety of passengers and crew. To achieve this, Groupe ADP deploys its "snow trains". These are all the machines that will be used simultaneously to clear the runways as quickly as possible.

How many machines make up a "snow train"?

The composition of a "snow train" varies according to several criteria: the type of snow, its height, the ground temperature, the direction of the wind, but also the area to be treated. A "snow train" is made up of several vehicles. For example, a command vehicle followed by 2 support vehicles, 11 high-performance snowploughs, 4 trucks for spreading de-icing products (liquid and solid formate) and 2 "snow blowers". A slipperiness test vehicle closes the operation. This tool measures the runway's skid resistance. The initial results characterizing the runway's condition ("runway condition code") are transmitted to the DGAC, the only authority competent to authorize take-offs and landings. A conductor escorts and checks the alignment of the entire "snow train" and ensures that it is operating correctly. In addition, probes placed on the runways enable us to check their condition in real time, and intervene if necessary to treat them.

How are runways cleared of snow?

In addition to the take-off and landing runways, Groupe ADP teams are also responsible for clearing and treating more than a hundred kilometers of taxiways at Paris-Charles de Gaulle and Paris-Orly, enabling aircraft to reach the runways or their parking points.

How long does it take to clear a runway of snow?

The average time varies according to the length of the runway. Long runways can be cleared in 25 to 35 minutes, while short runways take 15 to 20 minutes. Of course, this is an average and may vary according to weather conditions. During the snow-clearing operation, runway traffic is interrupted, and airport capacity is reduced, which can have an impact on airlines' flight schedules.

What about aircraft parking stands?

Paris-Charles de Gaulle can have up to 336 aircraft parking stands, Paris-Orly up to 103. Groupe ADP clears snow from these stands when they are free. If these stands are occupied by an aircraft, it is the airline or, by delegation, its ground handler who clears the snow. Groupe ADP is equipped with light machines to clear snow from these smaller areas. Some of these machines can be made available to airlines.



Snow removal from a runway, Paris-Charles de Gaulle

An A320 for year-round training



Paris-Charles de Gaulle is one of the few airports to have its own aircraft, enabling airport firefighters and de-icing personnel to train under real conditions, whereas most airports in Europe are equipped with mock-ups.

Did you know?

This is where the various departments put into practice the entire training: aircraft de-icing, but also coordination of de-icing with other with the other de-icers working on the aircraft. De-icing is carried out from top to bottom and front to back. The second part of the operation is anti-icing, which may be necessary in the event of snowfall or freezing rain. To be effective, this operation must be carried out within 3 minutes of de-icing.

SNOW PLAN GOES GREEN

Greening the winter service fleet

With the acquisition of 17 new hybrid de-icers, Groupe ADP is putting its environmental investment into practice. The new machines can handle around 15 aircraft on all-electric power, with the internal combustion engine then taking over if necessary.

Optimising resources, reducing emissions

This new generation of de-icers saves up to 80% in fuel and glycol consumption compared with older machines.



2018-2019 winter service consumption before COVID

Fuel consumption in 2018 for 1 de-icer	5 500 liters
Projected hybrid consumption for 1 de-icer	1 100 liters
Total CO2 saved for 17 machines	194 T/year





Aircraft de-icing in a dedicated area, Paris-Charles de Gaulle

How many de-icing bays are there at Paris-Charles de Gaulle ?

With 20 de-icing bays, our winter service team is able to de-ice 12 aircraft simultaneously, ensuring traffic continuity.

How long does it take to de-ice an aircraft?

Operation processing time varies according to aircraft type and weather conditions at the time of de-icing. In average, it takes 10 to 15 minutes for a medium or large aircraft. It can take twice as long in case of sticky snow. In any case, our equipment enables us to carry out up to 50 de-icing operations per hour.



Did you know?

2 550 m3

Glycol storage capacity at Paris-Charles de Gaulle, equivalent to around a week's autonomy.

13 minutes

Average time needed to de-ice a medium or large aircraft.

How is aircraft de-icing carried out?

At Paris-Charles de Gaulle, Groupe ADP has a fleet of 50 de-icing machines. Two to six de-icers are required, depending on the type of aircraft. Operators spray the fuselage and wings of the aircraft with a mixture of glycol and water. Once de-icing is complete, the aircraft has a "protection time", enabling it to return to the runway. To avoid any further de-icing of the aircraft, operations must be synchronized with runway snow-clearing operations, so that aircraft can take off quickly on a clear runway and avoid having to pass through the de-icing area again.

What stocks of de-icing products are available for the winter?

In order to cope with particularly harsh and long winters, Groupe ADP has substantial stocks of de-icing products. Stocks at Paris-Charles de Gaulle represent 2,550 m3 and 540 m3 at Paris-Orly. These reserves enable our platforms to ensure several days of treatment without supplies in the event of heavy snow. Real-time inventory monitoring tools enable us to replenish our stocks as and when required.

SEASON PERFORMERS SHARE THEIR THOUGHTS



Alain Gabry

Paris-Charles de Gaulle Head
of winter maintenance



Marc Garcia

Paris-Orly winter maintenance
Manager

Is winter maintenance prepared in the same way at Paris-Charles de Gaulle as at Paris-Orly?

A. Gabry: We prepare for the season all year round! The process is the same at both our platforms: during the summer period, we update our snow plan, carry out maintenance on our machines and installations, buy new machines and train our volunteers. From October onwards, we organize training exercises to be ready when the first snowflakes arrive.

M. Garcia: I'd like to stress the importance of the numerous simulation exercises. They are essential for testing the correct application of our strategies and procedures. Carrying out these drills reinforces our responsiveness and efficiency in guaranteeing the safety of passengers and crews in the event of a winter event.

How does the ADP Group manage to keep air traffic flowing smoothly during a snowy period?

A. Gabry: Paris-Charles de Gaulle airport benefits from the presence of Météo France teams at the heart of the hub, enabling us to be operational as quickly as possible. When a winter event is expected, we are in direct contact with a Météo France manager. This agility is necessary to anticipate our needs in terms of snow removal, apron de-icing and aircraft de-icing.

M. Garcia: Collaboration is the key to winter service. Groupe ADP works closely with all the players involved: the French Civil Aviation Authority (Direction Générale de l'Aviation Civile), the airlines and, of course, Météo France, both at Paris-Charles de Gaulle and Paris-Orly. Controlled organization and collective commitment are the key to a successful winter plan.

How does climate change affect the winter plan?

M. Garcia: The vagaries of the weather can force us to intervene early in the winter season, or on the contrary, to postpone our interventions. Even though the weather is getting drier and we are experiencing fewer snow events, we are prepared all year round to mobilize as soon as necessary.

SEASON PERFORMERS SHARE THEIR THOUGHTS



**Céline
Bianchi-Galeuzzi**

Head of filming and winter
service volunteer (Paris-
Charles de Gaulle)

Can you introduce yourself?

C. Bianchi-Galeuzzi : I've been working for Groupe ADP for 30 years. I started out as a station agent, and in 2005 I joined the flight forecasting unit (CPV). In 2010, I joined the Communications department. Today, I'm part of the filming and shooting team, dealing mainly with feature films, advertising films and everything to do with marketing shots.

What are your missions on snow duty?

C. Bianchi-Galeuzzi : I'm head of trains at Terminal 2 A, B, C, D, E and F. My team and I are responsible for de-icing the aprons where aircraft are parked during passenger boarding and deplaning, refuelling and maintenance. I have a light vehicle, and my role is to take all the snow removal equipment to the aircraft parking stands. I supervise three tractors: a liquid spreader, a solid spreader containing de-icing products and a Boschung Pony. This small vehicle is used to clean the hydrants used to supply kerosene to the aircraft, the footbridges and the head of the baggage area.

Why did you decide to volunteer for snow duty?

C. Bianchi-Galeuzzi : I decided to join the winter service because I wanted to keep my foot in the operational door. It's a real asset for filming, as it allows me to be more out in the field, and to circulate on aprons and aircraft taxiways thanks to a runway license (Permis M). Before I got this license, I only had access to service roads, which are quite far from the runways. Now, I have more possibilities when it comes to filming, for example, I can do a shoot with an on-board camera in the car. What's more, working in the winter service allows me to forge links. I meet colleagues from different departments within the Group, as well as different service providers operating at the airport. The winter service is a big family, where different professions and profiles come together.



Press Contact

Head of Communication

Justine Léger

Head of Medias and Réputation

01 74 25 23 23

relationpresse@adp.fr

www.groupeadp.fr

 @GroupeADP

Passenger Communication

www.parisaeroport.fr



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ADP Group - Aéroports de Paris, a public limited company with capital of 296,881,806 euros.

Head office: 1 rue de France - Tremblay en France 93290.

Registered under SIREN number 552 016 828 RCS Bobigny

Writing : Tiphaine Paucot-Landelle – Erwan Le Quilliec

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