

Munich Airport Aircraft De-icing Plan

Winter Season 2018/2019



Content

1	Introduction	2
2	De-icing areas for jet-aircraft	2
3	De-icing areas for propeller driven aircraft.....	2
4	Aeronautical stations for de-icing.....	3
5	De-icing notification	3
6	De-icing of jet-aircraft.....	4
7	De-icing of propeller driven aircraft.....	6
8	De-icing of general aviation aircraft	8
9	Special de-icing requirements and icing conditions.....	8
10	Fluids	8
11	Environment.....	8
12	Access to de-icing areas.....	9
13	Activation De-icing Area Opposite	10

1 Introduction

This document describes the operational procedures for the de-icing of aircraft during the annual de-icing period. These procedures are intended to provide safe, orderly and efficient de-icing of aircraft and access of aircraft and airline vehicles to the designated de-icing areas (DA). These procedures have been agreed on between operations department of the "Flughafen München GmbH" (FMG), "EFM - Gesellschaft für Enteisen und Flugzeugschleppen am Flughafen München mbH" (EFM) (responsible for aircraft de-icing) and "Deutsche Flugsicherung GmbH" (DFS) (responsible for air traffic control, ATC).

The regulations and procedures established in this De-icing Plan do not replace the de-icing procedures published in the German Aeronautical Information Publication Germany (AIP) part Munich. This plan is intended to be primarily used by all airline operations staff for further information and has been published in order to ensure that all regulations and procedures for de-icing aircraft at Munich Airport are applied.

This plan will be reviewed annually and published every October prior the new de-icing season starts.

Any variations must be authorised in writing by FMG Operations and EFM before implementation.

2 De-icing areas for jet-aircraft

At Munich Airport special areas are assigned for de-icing of aircraft. The locations and designations of the de-icing areas are depicted in the AIP Germany, part Munich, aerodrome charts. At each runway head de-icing areas are assigned for de-icing of jet aircraft and ATR 42/72 with operative propeller braking. All de-icing services with the exception of taxi de-icing, engine, underwing, belly, fan-blade and gear de-icing will be carried out on these areas only.

The de-icing areas are within the area of responsibility of Air Traffic Control (ATC).

Pilots do not need to notify ATC about requested de-icing. ATC coordinates and assigns de-icing areas with regard to individual start-up of departing flights upon notification of the de-icing coordinator.

EFM "München De-icing" does not assign departing aircraft to de-icing areas and does not have any influence on start-up sequence.

3 De-icing areas for propeller driven aircraft

With exception of ATR 42/72 with operative propeller braking (see "2 De-icing areas for jet-aircraft") propeller driven aircraft are de-iced on ramp 1, 2, 3, 5, 6, 7, 8, 9, 12 and 13 on their respective parking positions.

4 Aeronautical stations for de-icing

The following frequencies (usage of aircraft's upper VHF antenna is required) are used for the de-icing coordinator and the de-icing areas:

Installation	Call Sign	Frequency (MHz)
De-icing Coordinator	„München De-Icing Coordinator"	121.990
RWY 26R / DA 15	„De-Icing North 15"	121.590
RWY 26R / DA 14	„De-Icing North 14"	121.740
RWY 26R / DA 13	„De-Icing North 13"	121.840
RWY 26L / DA 15	„De-Icing South 15"	121.660
RWY 26L / DA 14	„De-Icing South 14"	121.790
RWY 26L / DA 13	„De-Icing South 13"	121.890
RWY 08R / DA 2 (additional deicing area for 26L)	„De-Icing South 2"	121.680
RWY 08L / DA 1	„De-Icing North 1"	121.590
RWY 08L / DA 2	„De-Icing North 2"	121.740
RWY 08L / DA 3	„De-Icing North 3"	121.840
RWY 26R / DA 15 (additional deicing area for 08L)	„De-Icing North 15"	121.640
RWY 08R / DA 1	„De-Icing South 1"	121.790
RWY 08R / DA 2	„De-Icing South 2"	121.660
RWY 08R / DA 3	„De-Icing South 3"	121.890
RWY 26L / DA 15 (additional deicing area for 08R)	„De-Icing South 15"	121.680
Apron	„De-Icing Ramp"	121.880

5 De-icing notification

If a de-icing treatment is required the de-icing coordinator shall be notified by the respective handling agent, airline operator or pilot in command as early as possible, but not later than 20 minutes prior estimated off-block time (EOBT). Engine fan-blade and propeller de-icing treatment shall be requested at least 25 minutes prior estimated off-block time (EOBT). The notification shall include flight-number, aircraft-type and parts of aircraft (e.g. wing, underwing, gear etc.) to be de-iced. Clear-ice conditions on wing and special checks (e.g. hands on or tactile check) shall be reported to the de-icing coordinator with de-icing

notification also. This notification is automatically transferred to ATC to build up the pre-departure sequence.

For the de-icing notification the following communication channels shall be used:

Telephone (airport phone: 98666; external phone: 089/975-98666) or aeronautical station with call sign "München De-icing Coordinator" on frequency 121.990 MHz. This notification is mandatory and cannot be transmitted via "ATC".

If the de-icing coordinator is not notified of the required de-icing treatment in advance, a delay of this individual departing aircraft may be expected because ATC will put this flight at the end of the de-icing sequence or de-icing areas may not be in operation and equipment not readily available.

For propeller driven aircraft (with exception of ATR 42/72 with operative propeller braking) the expected arrival time of the de-icing truck for treatment shall additionally be communicated by pilot in command on notification.

6 De-icing of jet-aircraft

Radio contact shall be established with the de-icing team when advised by ATC via the respective frequency of "München De-icing" (see "4 Aeronautical stations for de-icing"). Taxiing onto de-icing area is not permitted without instruction of the responsible de-icing teamchief. Aircraft shall come to a stop with the cockpit abeam the groundmarking "DE-ICING HOLD" on left side of the aircraft.

When taxiing onto the de-icing area assigned, pilot shall make sure, that the auxiliary power unit (APU) is switched off*, flaps and slats are retracted and bleed air system is closed. The de-icing operation will commence after the pilot has confirmed, that parking brake is set and aircraft is ready for de-icing. If a take-off delay is expected, which exceeds the hold-over time, pilot shall notify the de-icing teamchief to stop de-icing until further notice.

De-icing is performed with aircraft engines running.

During de-icing the pilot shall maintain constant listening watch on the respective ATC frequency. After completed de-icing and transmission of the anti-icing code by the de-icing teamchief, pilot shall report ready for taxi to ATC. When informing ATC about completion of de-icing treatment, ATC will try to ensure take-off within the respective hold-over time.

Note:

*) Pilots may be requested by their responsible ground engineer to switch off engines temporarily for a further physical hands on check. A switch off of the auxiliary power unit (APU) is not required for said way of after-anti-icing check. Permission to restart engines does not need to be obtained from ATC again.

7 De-icing of propeller driven aircraft

De-icing of propeller driven aircraft is performed with engines switched off. Such aircraft are de-iced on their respective parking positions on the aprons. Prior to de-icing, the pilot shall verify the respective TSAT on ATC-frequency of "München Delivery". The TSAT value shall be confirmed with the team chief and the aircraft de-icing shall be completed with reaching the TSAT value. After completing de-icing, the pilot shall immediately request start-up clearance. The remaining hold-over time shall also be reported to ATC.

Note: For aircraft type ATR 42/72 following regulation applies:
These aircraft shall be de-iced with running engines and propeller braking according to the procedure for jet aircraft on de-icing areas at runway heads (see "6 De-icing of jet-aircraft"). For ATR 42/72 propeller brake must be operative.

Munich Airport Aircraft De-icing Plan – Winter 2018/2019

For communication with the de-icing team chief on the aprons the following phraseology shall be used:

Cockpit:	Team chief
<p><i>Lufthansa 410</i>, parking break set and ready for treatment</p> <p><i>Lufthansa 410</i>, roger</p>	<p>Good morning (good evening) <i>Lufthansa 410</i>, this is De-icing truck <i>E20</i>,</p> <p><i>Lufthansa 410</i></p> <p>We will use type I.</p> <p>or</p> <p><u>If type IV fluid is used:</u></p> <p><i>Lufthansa 410</i></p> <p>We will use type I for de-icing and type IV Clariant Safewing MP IV LAUNCH 100% for anti-icing.</p> <p><i>Lufthansa 410</i>, confirm parking brake is set and aircraft is ready for treatment.</p> <p><i>Lufthansa 410</i>, de-icing commences. You are blocked by de-icing vehicle. Monitor this frequency. I will call you back.</p>

If second de-/anti-icing with extended flaps is necessary

<p><i>Lufthansa 410</i>, clear for flaps</p>	<p><i>Lufthansa 410</i>, first treatment is completed</p> <p><i>Lufthansa 410</i>, flaps clear, second treatment commences. I will call you back when ready.</p>
--	--

After completion of de-/anti-icing

<p><i>Lufthansa 410</i>, aircraft de-/anti-iced; anti-icing with type I, 15.10 LT</p> <p><i>Lufthansa 410</i>, aircraft de-/anti-iced; anti-icing with type IV 100%, 15.10 LT</p> <p><i>Lufthansa 410</i>, roger, good bye</p>	<p><i>Lufthansa 410</i>, post de-icing/anti-icing check is completed. If tactile check performed by EFM: Tactile check completed. Aircraft de-iced/anti-iced; anti-icing with type I, 15.10 LT</p> <p><u>If type IV fluid was used:</u></p> <p><i>Lufthansa 410</i>, post de-icing/anti-icing check is completed. Aircraft de-iced/anti-iced; Aircraft anti-iced with type IV Clariant Safewing MP IV LAUNCH 100%, 15.10 LT</p> <p>Aircraft is clear of de-icing vehicle; good bye.</p>
--	---

After "local area contamination removal" or treatment of the lower side of the wing and/or horizontal stabilizer

	<p><i>Lufthansa 410</i>, de-icing only. Aircraft is clean. Holdover times do not apply</p>
--	--

8 De-icing of general aviation aircraft

De-icing of General Aviation fixed wing propeller driven aircraft and helicopters on ramps 7, 8, 12 and 13 is performed with engines switched off. Prior to de-icing, the pilot shall verify on ATC-frequency of "Clearance Delivery" the respective TSAT. The TSAT value shall be confirmed with the team chief and the aircraft de-icing shall be completed with reaching the TSAT value. After completing de-icing, pilot shall immediately request start-up clearance. The remaining hold-over time shall also be reported to ATC

Note: For General Aviation jet-aircraft following regulation applies:

These aircraft shall be de-iced with running engines according to the procedure for jet aircraft on de-icing areas at runway heads (see "6 De-icing of jet-aircraft").

9 Special de-icing requirements and icing conditions

- Taxi, underwing, belly and gear de-icing can only be performed on apron parking stand upon request with engines off.
- Engine Nbr. 2 check for three-engine aircraft before engine-start can only be performed on apron parking stand upon request. EFM will only provide cherry picker, the actual check must be performed by carrier's staff or agent.
- De-icing of engine fan blades and propellers can only be performed on apron parking stand. EFM performs de-icing of fan blades with hot air only; contaminations of propellers are removed by the use of heated de-icing fluid or hot air.
- Clear-ice conditions on wings shall be reported to the de-icing coordinator with de-icing notification.
- After anti-icing checks by the carrier itself shall be performed on de-icing area (see "12 Access to de-icing areas").
- With freezing precipitation at OAT below 0 °C only two-step procedure is performed as follows:
 - 1st step ISO type I fluid
 - 2nd step type IV fluid

10 Fluids

De- and anti-icing is performed with heated and pre-mixed (55/45%) ISO/SAE type I fluid (Clariant Safewing MP I 1938 ECO). To prolong the hold-over time as a second step unheated and undiluted SAE type IV fluid (Clariant Safewing MP IV LAUNCH) is used.

EFM does not use alkali organic salt-based fluids for de-/anti-icing of aircraft.

11 Environment

De-icing/anti-icing fluid is a chemical product with environmental impact. Any unnecessary spillage must be avoided. An engine run up on the de-icing area after the completion of the de-icing/anti-icing treatment is strictly prohibited.

12 Access to de-icing areas

All remote de-icing areas are belonging to the area of responsibility of Air Traffic Control (ATC).

In order to perform the after anti-icing-check or flight control check required by the airline, a limited authorized group of airline technical staff is allowed to operate within area of competency of ATC. All personnel having to operate on and in vicinity of de-icing areas during aircraft de-icing operation must hold a permission issued by operations department of FMG (airport phone: 111; external phone: 089/975-111).

Essential precondition for this permission is that all involved personnel have undergone specific training at FMG Staff Training Centre (phone: 089/975-43332). Communication between pilot and airline ground engineer shall be established with official airline VHF frequency or aircraft ground communication.

Vehicles operating on and in the vicinity of de-icing areas during aircraft de-icing operation must be equipped with a transponder and carry a yellow beacon on top of the vehicle.

13 Activation De-icing Area Opposite

Starting winter season 2013/2014, an additional de-icing area is available per runway and take-off direction except for departures on runway 26R (see below).

These areas are located at the opposite end of the runway in use. Due to their location, it requires an increase of taxi times.

The areas may be used from aircraft up to ICAO Code "C" aircraft.

With the introduction of this measure, the throughput of aircraft to be de-iced is expected to increase by at least 20%.

The notification procedure for de-icing of jet aircraft remains unaffected. Whenever the additional de-icing area is activated, apron de-icing cannot be performed. All aircraft have to be de-iced on the remote de-icing areas.

Air Traffic Control (ATC) assigns the areas according to the existing procedure (see 6 "De-icing of jet aircraft").

EFM GmbH initiates and coordinates the activation.

FMG

Flughafen München GmbH

Munich Airport

EFM

Gesellschaft für Enteisen und Flugzeug-
schleppen am Flughafen München mbH

Aircraft De-icing and Towing Services



Alexander Hoffmann
Vice President Airport Operations



Jürgen Ohrner
Head of Operational Services