

Overview of Aviation MRG

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- Annual Emissions
- Tonne Kilometre data

Legal Basis

- Monitoring and Reporting Guidelines are EU Commission Decision under Article 14 of the Directive
- Legally binding.
- Existing MRG 2007/589/EC govern current trading period –stationary installations.
- Decision 2009/339/EC amends the MRG 2007 to include aviation.
- Have to be read together, for the moment there is no consolidated version.

Contents of the amended MRG

- Annex 1- General guidelines and principles
 - amplified for aviation so that it refers to aircraft operators and sources which are not stationary
- Annexes II to XI – general combustion and process industries for stationary installations only
- Annex XII – determination of CO₂ by CEMS
- Annex XIII – Determination of N₂O
- Annex XIV – annual emissions data for aviation
- Annex XV – TKM for aviation.

Annex XIV- Annual Emissions

1. Boundaries and completeness
2. Determination of CO₂ emissions
3. Uncertainty assessment
4. Simplified procedures for small emitters
5. Approaches for data gaps
6. Monitoring plan
7. Reporting format
8. Content of annual emissions report
9. Verification requirements

Boundaries and completeness

- Unique aircraft operator is defined by the call sign for ATC purposes, i.e. by the information in box 7 of the flight plan
 - ICAO flight designatoror
 - aircraft registration marking if the operator has no ICAO designator

Determination of CO₂ emissions

- CO₂ (tonnes) = fuel consumption (tonnes) x emission factor (tonnes CO₂/tonne)
- Units: metric tonnes also written as “t” as in tCO₂/t
- Fuel Consumption:
 - Method A
fuel consumption for flight (t) = fuel in tanks after fuel uplift for the flight (t) – fuel in tanks after uplift for subsequent flight (t) + fuel uplift for that subsequent flight (t)
 - Method B
fuel consumption for flight (t) = fuel in tanks at block-on at the end of the previous flight (t) + fuel uplift for the flight (t) – fuel in tanks at block-on at the end of the flight (t)

Uncertainty assessment

- Tier 1

Fuel consumption over the reporting period is determined with a maximum uncertainty of less than $\pm 5,0$ %.

- Tier 2

Fuel consumption over the reporting period is determined with a maximum uncertainty of less than $\pm 2,5$ %.

Aircraft operators with annual emissions equal to or less than 50,000 tonnes of fossil CO₂ shall apply as a minimum tier 1 for major source streams.

All other aircraft operators shall apply tier 2 for major source streams.

Emission Factors

- Emission factors for standard aviation fuels:
 - Jet kerosene (JetA/JetA1) = 3.15 tCO₂/t
 - Jet gasoline (Jet B) = 3.10 tCO₂/t
 - Aviation Gasoline (Av Gas) = 3.10 t CO₂/t
- For all alternative fuels
 - Must determine emission factor and net calorific value (NCV)

Annex XV – TKM Data

- Introduction
- Boundaries and completeness
- The monitoring plan
- Methodology for calculating TKM data
- Uncertainty assessment
- Reporting
- Content of TKM report
- Verification

What is TKM data?

- Tonne-kilometre = a tonne of payload carried a distance of one kilometre
- Calculated as follows:
$$(\text{Great circle distance (km)} + 95 \text{ km}) \times (\text{mass of passengers and checked baggage (t)} + \text{mass of freight and mail (t)})$$