

## Implementation Schedule for Active Noise Abatement Measures

The following is an overview of measures already implemented during the years 2011 through 2014 with an outlook to measures planned for 2015 and afterwards.



Improving departure procedures

Dedicated Runways Operations - DROps

Segmented Approach

Increased use of westerly operations

Conversing Lufthansa's Boeing 737 fleet

Optimizing CDA procedures

Engine test-run facility



Raising downwind approach route by 1,000 feet

The following measures have been tested since 2012:

Raising approach angle up to 3.2°

Providing Aircraft Preconditioned Air Units

Flying around the cities of Offenbach and Mainz

Dedicated Runways Operations – DROps early morning



More frequent Continuous Decent Operations

Modulating noise-related charges

Dedicated Runway Operations -, DROps early morning – becomes standard

The following measures have been tested since 2013:

Raising altitude for starting final approach up to 5,000 feet

TaxiBot tractors/e-taxi



First installations of vortex generators into Lufthansa's A320 family

Introducing Ground Based Augmentation System (GBAS) permitting precision approaches

Modified Arrival Routes (first phase)

Flying around the cities of Offenbach and Mainz becomes standard

Approach angle raised to 3.2° becomes standard

Altitude raised up to 5,000 feet for starting final approach becomes standard



Introducing noise respite periods

Modified Arrival Routes (second phase)

Rise of altitudes up to 6,000 feet for starting final approach

GBAS continuance

Monitoring of use of reverse thrust in case of high load levels

Developing steeper approach procedures

Point Merge examination

Examination of a new "ultra long" departure route

Examination of adaptation of an "AMTIX short" departure route

Withdrawal of Lufthansa's B737 fleet and replacement by quieter aircraft

Ongoing development and increase of Continuous Climb Operations (CCO)