

Helicopter Community Noise: Operational Aspects

Airbus Helicopters Perspective

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Negative response to helicopter noise: How do we improve the situation?

Presented by Airbus Helicopters at AHS Forum 69 Noise Panel

- Design quieter helicopters
- Field quieter helicopters
- Fly these helicopters quietly
- Tell people about it

Zoom on **operational aspects** for AHS Forum 70

Behind this simple strategy are many complex topics involving several stakeholders

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Flying ‘neighborly’

- **Flying neighborly implies coordinated efforts from:**
  - OEM’s
  - Operators
  - Pilots and flight instructors
  - Heliport / airport operators
  - Procedure designers
  - Legislators
  - Land use planning authorities
  - Community representatives

- **There are many levels of possible pilot guidance**
  1. Generic **recommendations**, basic training, awareness
  2. Aircraft specific **guidance**, such as recommended flyover height
  3. Dedicated **routes or corridors**
  4. Aircraft and site specific **noise abatement procedures**

1. Generic Recommendations, Basic Training, Awareness

- **Information should be basic and generic to most aircraft**
  - Common sense guidance can bring quick gains
    - Flying higher, avoiding sensitive areas, avoiding sharp maneuvers, etc
  - Too detailed information could contradict operational requirements

- **Raising awareness in the pilot community is key**
  - Simplified rotorcraft noise training increases engagement around this issue
  - HAI noise abatement training CD is a good example, it should be further encouraged

- **Generic recommendations can be found in the HAI Fly Neighborly Guide, HAI website, and in some Flight Manuals**
  - The information should be reviewed on a regular basis
  - OEM's should harmonize the content and ensure consistency

Need for harmonization between OEM's and HAI (+ AHS?)

2. Aircraft specific guidance

- **Simple aircraft-specific guidance can be given for operations in sensitive areas**
  - Recommended height above ground, cruise speed, rate-of-descent, etc
  - For recommended height, an agreed metric & threshold should be defined
    - This could be based on the Sound Efficiency Rating developed within the AHS *ad hoc* noise working group in 2010-2011 (see next slide)

- **This specific height guidance will 'reward' quiet helicopters**
  - Today's 'Fly Higher' recommendation is valid, but it doesn't encourage OEM's to reduce noise by design since it is based on weight alone

Need for harmonization between OEM's and HAI (+ AHS?)

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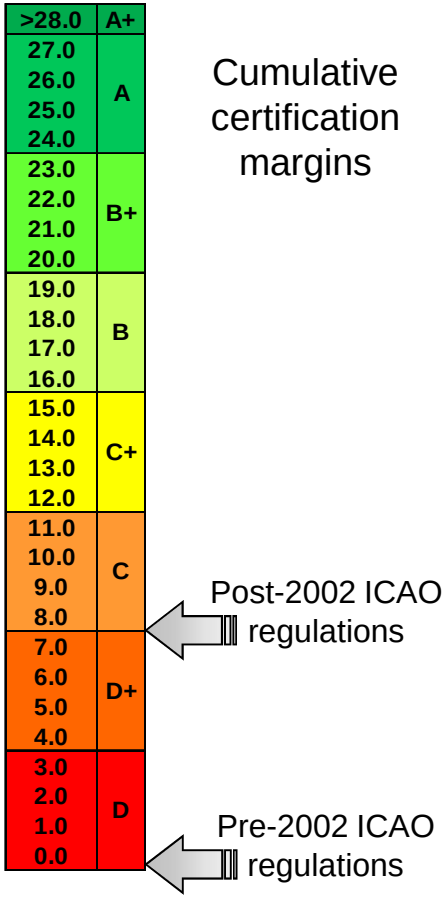
2. Aircraft specific guidance – Sound Efficiency Rating (SER)

- **Initial Airbus Helicopters proposal**
  - Simplified presentation, based on familiar scales
  - Use only certified data
  - Scale should be challenging (margin for improvement)

- **AHS working group created based on AH proposal**
  - Multiple meetings held with main stakeholders
  - Revised rating scale proposed by the Working Group
  - Working Group stopped before final recommendations
  - Airbus Helicopters acknowledged the work of the AHS group and modified its rating scale



3. Dedicated routes or corridors

- **Avoiding overflight of noise sensitive areas has been shown to reduce complaints**
  - Demographic data and a ‘complaint log’ can be used to determine routes
  - Requires trial-and-error studies, and significant commitment from operators
  - These routes should be discussed with local legislators and communities, and be reviewed on a regular basis
  - Multiple routes can be defined an used alternatively to limit the repetition
  - Simplified on-site measurements can be used for communication purposes

- **OEM’s and operators should be proactive in defining these routes**
  - Good knowledge of rotorcraft noise generation and propagation is required
  - This could help to preempt imposed corridors

Need for closer link between technical community and operators on this issue

4. Aircraft and site specific noise abatement procedures

- **Highest level of complexity**
  - Most applicable to reduction of noise in approach phase
  - Must take into account environmental constraints (demography, winds, etc)
  - Ideally should take into account the noise characteristics of specific h/c
  - Noise objectives should be carefully defined (targeted metric and level)
    - Need to better understand what drives annoyance
  - Procedures must be safe, repeatable, robust to environmental conditions
  - Complex noise abatement procedures work well in research environment, but are not yet mature enough to be deployed operationally

- **OEM's, technical community, operators, local legislators, and communities should work together**
  - Population density and Land Use Planning are key factors
  - Resulting procedure is a complex trade-off between stakeholders
  - OEMs should support operators (training, piloting aid, on-site expertise)

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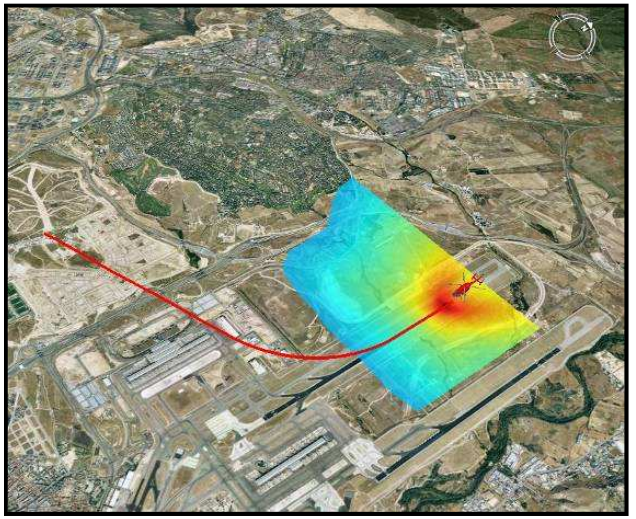
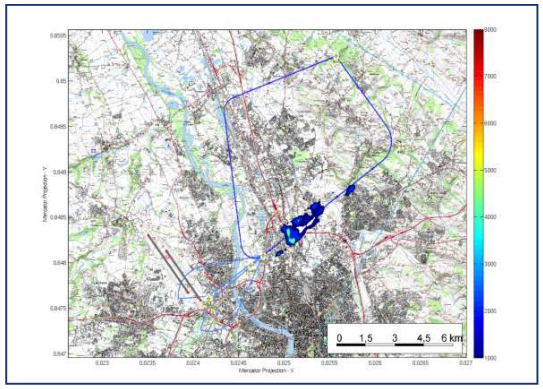
4. Aircraft and site specific noise abatement procedures - Airbus Helicopters innovations

- **Airbus Helicopters has invested heavily on noise abatement:**



  - 3 key projects:
    - **FRIENDCOPTER**
      - VFR procedures
      - Noise exposure tool HELENA
      - Measurement means
    - **OPTIMAL**
      - Steep SNI approaches with SBAS/GBAS guidance in real environment



    - **CLEAN SKY**
      - Automated IFR optimized approaches in real environment
      - Validation through dedicated flight tests

(See F. Guntzer presentation in Acoustics II session, Wed. afternoon)

VFR: Visual Flight Rules
SNI: Simultaneous Non-Interfering

IFR: Instrument Flight Rules
S/GBAS: Satellite/Ground Based Augmentation System

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Concluding remarks – Airbus Helicopters' way forward

Airbus Helicopters supports the proposed AHS noise initiative

- **Flying neighborly**
  - Short term: closer link between the tech community and operators on rotorcraft noise
    - OEM's, HAI, and AHS should work together on simple guidance (e.g., FN Guide)
  - Mid- to long-term: implement noise abatement routes and procedures
  - Encourage communication between AHS Technical Committees
    - Acoustics, Operations, Test & Evaluation, Crew Stations & Human Factors, Avionics & Systems

- **Designing quieter helicopters**
  - Keep noise reduction as a key driver, including the best compromises
  - Include mature technology on upgrades, e.g., Fenestron on EC145T2
  - Bet on innovative technology
  - Work with research centers and universities on better modeling
  - Strive toward a technology leap!

- **Communication**
  - Implement proactive environmental communication → Be transparent
  - Provide a simple and realistic message

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