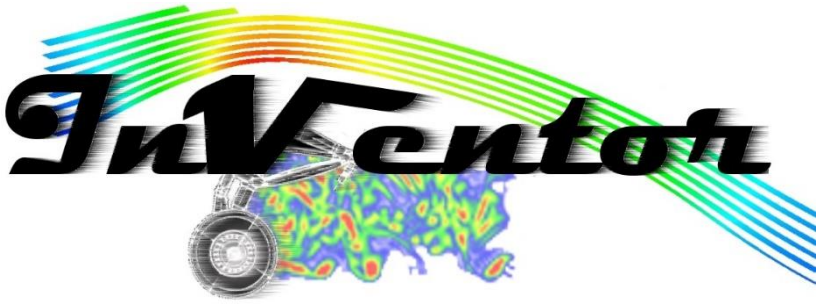
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 860538



D6.5 - FINALIZED WEBSITE

Document author	**Eric Manoha (ONERA)**

Abstract

This deliverables present the finalized structure and content evolution of INVENTOR's public web site

Keywords

H2020 projet – Public web site

Information Table

Project information	
PROJECT ID	860538
PROJECT FULL TITLE	Innovative Design of Installed Airframe Components For Aircraft Noise Reduction
PROJECT ACRONYM	INVENTOR
FUNDING SCHEME	RIA : Research and Innovation Action
START DATE OF THE PROJECT	May, 1st, 2020
DURATION	48 months
CALL IDENTIFIER	LC-MG-1-5-201

Deliverable information	
DELIVERABLE No AND TITLE	D6.5 - Finalized website
TYPE OF DELIVERABLE[1]	R - Report
DISSEMINATION LEVEL[2]	PU - Public
BENEFICIARY NUMBER AND NAME	1 - ONERA
AUTHORS	Éric MANOHA
CONTRIBUTORS	-
WORK PACKAGE No	WP6
WORK PACKAGE LEADER WP LEADER VALIDATION DATE	Eric MANOHA
COORDINATOR VALIDATION DATE	22/11/2021
Coordinator signature	

[1] Use one of the following codes: R=Document, report (excluding the periodic and final reports)
DEM=Demonstrator, pilot, prototype, plan designs
DEC=Websites, patents filing,press & media actions, videos, etc.
OTHER=Software, technical diagram, etc.

[2] Use one of the following codes: PU=Public, fully open, e.g. web
CO=Confidential, restricted under conditions set out in Model Grant Agreement
CI=Classified, information as referred to in Commission Decision 2001/844/EC.

Table of Contents

1 Introduction

This deliverable D6.5 presents the finalized structure and content evolution of the public web site of the H2020 INVENTOR project. This site has been developed by ONERA, and it is practically hosted on ONERA's servers.

The public link to the site is : https://w3.onera.fr/inventor/

The basic structure of the website, presented in details in the Deliverable D6.1, has been built by David Mariette, from ONERA's Communication Management Department, using the Drupal development environment. Then the contents have been added and formatted by Éric Manoha, INVENTOR's Communication Manager.

During the project's lifetime, the website will be maintained by Éric Manoha and supplied with new contents provided by all partners.

The present document describes the evolutions of the website since its creation, and also how it will be fed with new contents in the next months/years.

The next Section 2 lists the pages that contain general information on the project, and thus that have not been modified with respect to the initial version described in Deliverable D6.1.

Section 4 focusses on the description of the contents that have been added to this first version, mainly in the "News", "Events" and "Dissemination" menus.

Finally, section 4 explains how this website will be updated with new contents in the next months.

2 Unchanged menus and pages

The "HOME", "PROJECT", "CLUSTER" and "CONTACT" menus lead to pages that contain general information on the objectives, structure and approaches of the INVENTOR project, but also of its companion projects ENODISE and DJINN, also funded by the European Commission in the framework of the call H2020 MG-1-5-2019, the 3 projects constituting a cluster named "*Advancements in aerodynamics and innovative propulsion systems for quieter and greener aircrafts*".

These informations are actually still valid and have not been modified so far.

3 Modified pages

3.1 "ADVISORY BOARD" menu

In the "PARTNERS" menu, only the "ADVISORY BOARD" page has been updated to introduce its members, who have been selected in the first months of 2021 and invited at the M12 TRM-PMM (Technical Review and Project Management Meeting). A short paragraph describes the role of this Advisory Board, then a table displays the names and affiliations of the 6 members with a small photo. An additional text explains the special status of 2 AB members whose organizations are also partners in the INVENTOR project, since they are coordinating ARTEM and ENODISE.

A screen copy of this page is given in Annex.

3.2 "GENERAL INFORMATION" menu

In the "DISSEMINATION" menu, the "GENERAL INFORMATION" page has been updated with the chronological list of the deliverables already issued from the project.The list mentions the confidentiality status (public/confidential) of each report, and a link to the public deliverables.

A screen copy of this page is given in Annex.

3.3 "CONFERENCE AND WORKSHOPS" menu

In the "DISSEMINATION" menu, the "CONFERENCE AND WORKSHOPS" page has been updated with the titles and authors of communications and abstracts to be submitted to next conferences, issued from the project so far. It should be noted that, so far, no articles have been submitted to peer-reviewed journals.

A screen copy of this page is given in Annex.

3.4 "THESIS" menu

In the "DISSEMINATION" menu, the "THESIS" page has been updated with the references to PhD and post-docs students (title, student's name, affiliation, photo, short resume) who have contributed (or will contribute) to INVENTOR, including a summary of this contribution.

The objective is to offer them more visibility on their experience and domain of expertise, which might help them in their future activities.

A screen copy of this page is given in Annex.

3.5 "NEWS" column and "EVENTS" menu/page

All INVENTOR's pages contain a « NEWS » column on the right side, which gives access to individual news pages, sorted by inverse chronological order and edited in a short title. It should be noted that only the most recent news pages are listed in this column.

These "News" refer to events related to INVENTOR environment, activities and domain of interest with maximal impact in terms of external communication.

These « News » pages can be also accessed in a table via the "EVENTS" menu and page, also sorted by inverse chronological order. A screen copy of this page is given in Annex. In this exhaustive table, all "NEWS" edited since the project start are present and available.

The following "NEWS/EVENTS" have been added since the issue of Deliverable D6.1:

- 08/10/2021 : Flow-through porous fairings assessed on realistic landing gear by DLR
- 30/09/2021 : Flow-through porous fairings down-selected by TU-Delft
- 30/06/2021 : Low noise slat tacks down-selected by NLR
- 30/06/2021 : Flow-through porous fairings characterized by VKI and ONERA
- 03/06/2021 : TRM-PMM 1 at M12
- 13/04/2021 : INVENTOR Flyer release

Screen copies of this News/Event pages are given in Annex.

4 Forthcoming improvements and conclusions

The structure and contents described in Deliverable D6.1 and in the present deliverable D6.5 will be continuously enriched during the project's lifetime, especially via the News menu and pages, that will be used to report (i) major achievements in the framework of the project (test campaigns completion, major computational efforts, meetings, publications) and (ii) external events in relation with the studied domain of airframe and aircraft noise (workshops, conferences, journal articles).

After the project closure, the maintenance of the site will be stopped, but the pages will be maintained on ONERA's servers as long as possible, providing a permanent access to the last version.

5 Annnex : screen copies of modified/added pages

5.1 Advisory Board

Home » Partners » Advisory Board

Advisory Board

INVENTOR's external Advisory Board includes high level experts in the field of airframe noise, coming from various organizations (airlines, research centers and universities). The Advisory Board members will gather periodically during the project during dedicated sessions, possibly in the presence of EC representatives during reporting meetings. They will give recommendations on the strategic orientation of the project and provide expert advice. Advisory Board members' recommendations will be taken into account all along the project implementation. All these measures will allow to efficiently manage the innovations developed in the project.

Advisory Board

		
André CAVALIERI Instituto Tecnologico de Aeronautica, São José dos Campos, Brazil	Karsten KNOBLOCH DLR, Berlin, Germany	Peter JORDAN Pprime, Poitiers University France
		
Kai-Christoph PFINGSTEN Lufthansa Technik, Hamburg, Germany	Christophe SCHRAM VKI, Rhode St. G., Belgium	Michel ROGER Ecole Centrale de Lyon, France

It should be noted that :

- DLR is also a partner in INVENTOR, but Karsten KNOBLOCH personally has no technical activity in the project. He has been invited in this Advisory Board because he is the coordinator of ARTEM (Aircraft noise Reduction Technologies and related Environmental iMpact), an on-going EC project which adresses aircraft (and airframe) noise reduction technologies.
- VKI is also a partner in INVENTOR, and Christophe SCHRAM has technical activities in the project, namely on the characterization of porous surface treatments for slat noise reduction. He is also the coordinator of ENODISE (ENabling Optimized DISruptivE Airframe-Propulsion Integration Concepts), the companion project of INVENTOR and DJINN in the cluster "Advancements in aerodynamics and innovative propulsion systems for quieter and greener aircrafts". His participation to INVENTOR's Advisory Board results from commitments to maximize interactions between projects in this cluster.

5.2 General information

General information

INVENTOR's page on CORDIS site :

European Commission | CORDIS EU research results

INVENTOR's Issued Deliverables

Issue Date	Number	Title	Public/Confidential
01/10/2021	D2.5	Report on specifications for experimental (AAWT/UoB) and numerical studies on porous slat noise in WP4	PU
01/10/2021	D2.9	Report on specifications of Business Jet Aircraft Platform and certification assessment in WP5	CO
01/09/2021	D1.4	TRM-PMM 1 Minutes	CO
01/09/2021	D2.2	Report on specifications on flow through fairings and surface materials to be characterised in WAABLIEF/VKI, B2A/ONERA and A-Tunnel/TUD for WP3 and WP4	PU
01/08/2021	D2.3	Report on specifications for preliminary experimental (AWT/NLR) and numerical studies on slat track noise in WP4	PU
01/06/2021	D2.1	Report on specifications on acoustic reduction objectives	PU
01/03/2021	D1.3	Quality Assurance Plan and Risk Register	CO
01/03/2021	D6.2	Project identity materials and communication plan	CO
01/03/2021	D6.3	PEDR	CO
01/02/2021	D1.8	Protection of personnal data	CO
01/02/2021	D7.1	POPD - Requirement No. 1	CO
01/12/2020	D6.1	Basic structure of the project website	PU
01/07/2020	D1.1	Kick-off Meeting Minutes	CO
01/07/2020	D1.2	Project management plan	CO

5.3 Conferences and Workshops

Innovative Design of Installed Airframe Components For Aircraft Noise Reduction

HOME | PROJECT | CLUSTER | PARTNERS | DISSEMINATION | EVENTS | CONTACT

Home » Dissemination » Conferences and Workshops

Conferences and Workshops

AIAA-CEAS Aeroacoustics Conference - Southampton (UK) - June 14-17, 2022

Active and Passive Low Noise technologies for Landing Gear Noise Reduction
- Gareth J. Bennett, Jiang Lai and Gordon O'Brien (Trinity College Dublin - I)
- Daniele Ragni, Alejandro Rubio Carpio (Delft University of Technology - NL)
- Michael Pott-Polenske (DLR, D)

Parametric study of the effect of slat track geometry on noise emissions
- Evelien van Bokhorst and Johan C. Kok

5.4 PhDs and Post-Docs

PhDs and Post-Docs

PhDs

Jian Lai (Trinity College Dublin)

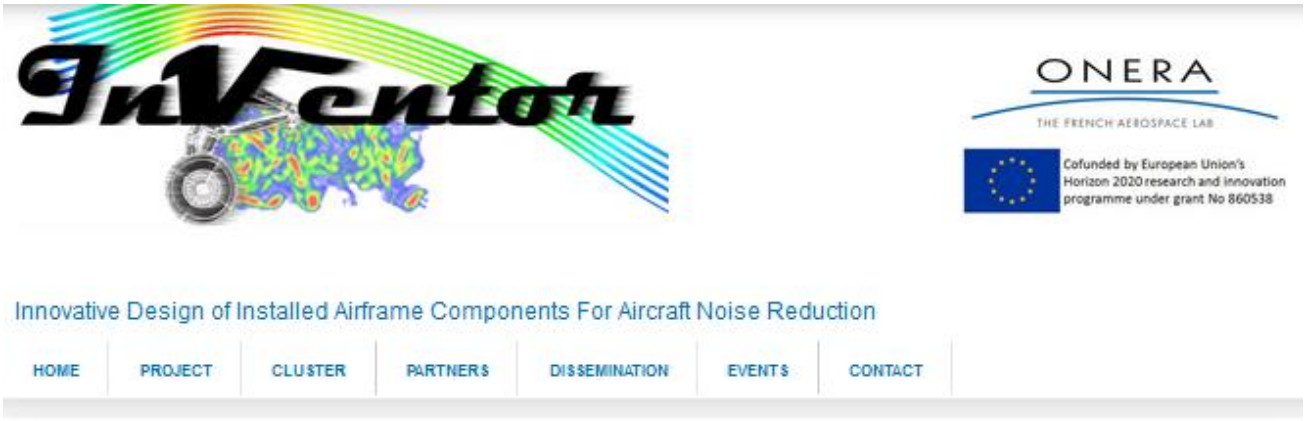
Post-Docs

Alejandro Rubio Carpio (TU-Delft)

Name	Alejandro Rubio Carpio	
Partner	Delft University of Technology	
Contract	Post-doctoral researcher (01/11/2020 - 01/12/2021)	
Subject in INVENTOR	◦ Aeroacoustic characterization of a landing-gear equipped with porous fairings in an open-jet wind tunnel facility ◦ Numerical reproduction of the landing-gear experiments employing the commercial LBM solver PowerFLOW© ◦ Design and manufacture of porous materials for landing gear and slat noise control.	
Short resume	◦ MSc degree in Aerospace engineering at the Polytechnic University of Valencia (Spain) in 2015. ◦ Research Master in Fluid Dynamics at the von Karman Institute for Fluid Dynamics (Belgium) in 2016 : experimental study on the noise generation in modern high-bypass ratio turbofans. ◦ PhD degree in Aeroacoustics in 2021 at Delft University of Technology (the Netherlands) : innovative porous materials for low-noise wind turbine applications.	

Name	Jiang Lai	
Partner	Trinity Colllege Dublin	
Contract	PhD	
Subject in INVENTOR	Numerical simulations of landing gear steady and unsteady flow for the design of active noise reduction technologies based on blown air curtain	
Short resume		

5.5 Events



Home » Events

Page de base *Events* has been updated.

Events

View Edit

Date	Event
08/10/2021	Flow-through porous fairings assessed on realistic landing gear by DLR
30/09/2021	Flow-through porous fairings down-selected by TU-Delft
30/06/2021	Low noise slat tacks down-selected by NLR
30/06/2021	Flow-through porous fairings characterized by VKI and ONERA
03/06/2021	TRM-PMM 1 at M12
13/04/2021	INVENTOR Flyer release
10/07/2020	Press Release
25/06/2020	ENODISE Kick-Off Meeting
24/06/2020	INVENTOR Kick-Off Meeting
23/06/2020	DJINN Kick-Off Meeting
22/06/2020	Joint Kick-Off Meeting DJINN-INVENTOR-ENODISE

NEWS

08/10/2021
Flow-through porous fairings assessed on realistic landing gear by DLR

30/09/2021
Flow-through porous fairings down-selected by TU-Delft

30/06/2021
Low noise slat tacks down-selected by NLR

30/06/2021
Flow-through porous fairings characterized by VKI and ONERA

03/06/2021
TRM-PMM 1 at M12

5.6 INVENTOR Flyer release

Key Objectives

The primary goal of INVENTOR is to better understand the physics of noise generated by landing gears and high-lift devices, thanks to a combined approach relying on specific experiments and advanced numerical methods. The ultimate goal is to decrease the external noise from business jet and short-medium range transport aircraft through the development of innovative low-noise installed landing gears and high-lift components as well as new promising noise reduction technologies, thus contributing to the achievement of the Flightpath 2050 goals pursued by ACARE SRIA on aviation noise, i.e., to reduce perceived noise emission of flying aircraft by 65%.

Examples of business jet (top : Falcon F7X) and small-medium range transport aircraft (bottom : A320) at approach, with landing gears and high lift devices deployed

Reducing aircraft noise levels in airport areas is a challenging priority, since noise pollution poses a high risk to human health, topping priorities of policy makers and, thus, driving significant industrial challenges for aircraft manufacturers.

Aircraft are especially noisy during approach and landing, when engines are operated at low regime, with the consequence that high-lift devices (slats, flaps) and landing gears are the dominant noise sources in these flight configurations.

INVENTOR project will study the physics of noise generated by landing gears and high-lift devices at landing/approach and develop innovative low-noise installed landing gear and high-lift components and noise reduction technologies, in order to lower external noise from business jet and short-to-medium-range transport aircraft.

Created with mapchart.net

INVENTOR : 16 partners from 7 EU countries :

- 3 industrial stakeholders (IND),
- 6 universities (UNI),
- 5 research centers (REC),
- 2 small-medium size enterprises (SME)

Cofunded by European Union's Horizon 2020 research and innovation programme under grant No 860 538. More info : https://cordis.europa.eu/project/id/860538

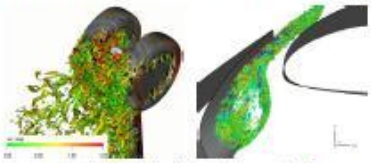
Project Coordination

Eric MANOHA
Head of Computational AeroAcoustics Research Unit (Aerodynamics, Aeroelasticity and Acoustics Department)
ONERA, Office National d'Etudes et de Recherches Aérospatiales (FRANCE)
eric.manoha[at]onera[dot]fr

Approach

- Select the most promising active and passive noise reduction technologies and low-noise designs for landing gears and high lift devices
- Assess them via experiments in small/middle/large scale facilities :
  - from generic airframe components to full generic aircraft model,
  - including realistic aerodynamic/acoustic installation effects.
- Use/improve up-to-date Computational Fluid Dynamics and Computational AeroAcoustics techniques to simulate these configurations
- Validate the numerical tools against the experimental databases
- Assess results at aircraft level
- Extrapolate results at full scale

Landing gear architectures (left) and slat actuation and de-icing systems (right) studied in INVENTOR



Numerical simulations of unsteady flow (noise sources) of generic landing gear (left) and slat region (right)

InVentor

INnoVative DEsign of INstalled Airframe ComponenTs For Aircraft NOise Reduction

To decrease the external noise from business jet and short-medium range transport aircraft through the development of low-noise installed landing gears and high-lift components

Duration
May 2020 – April 2024

For more info
https://w3.onera.fr/inventor/home

INVENTOR partners

AIRBUS
SAFRAN LANDING SYSTEMS
DASSAULT AVIATION
University of Southampton
RWTH AACHEN UNIVERSITY
Trinity College Dublin
University of BRISTOL
CHALMERS
nlr
TU Delft
ONERA THE FRENCH AEROSPACE LAB
DLR
von KARMAN INSTITUTE FOR FLUID DYNAMICS
CERFACS
ERDYN Anticipate Act Assess
upstream CFD

5.7 TRM-PMM 1 at M12

Home » TRM-PMM 1 at M12

TRM-PMM 1 at M12

03/08/2021
TRM-PMM 1 at M12

INVENTOR Technical Review and Project Management Meeting 1

TRM - PMM 1 at Month 12

3rd and 4th of June 2021

The first combined Technical Review and Project Management Meeting, to be held at Month 12, was organized on 3rd and 4th of June, 2021.

Due to the covid constraints on meetings and travels, this meeting was again held on virtual format, thanks to a webex link organized by ERDYN. This meeting was the first opportunity, since the kick-off meeting about on year ago, to gather the full INVENTOR consortium, with an attandance of 43 persons. Moreover a specific session was organized with the recently appointed Advisory Board and all workpackage leaders.

AGENDA

Day 1 - 03 June 2021

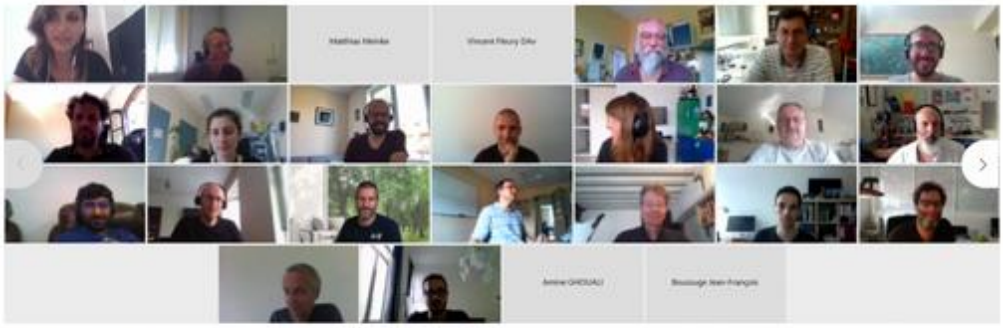
Time	Content	Speakers
10:00-10:15	Welcome and ONERA presentation	Eric Manoha, ONERA
10:15-11:00	WP1 Presentation - Project Management	Pinar Temel, ERDYN
11:00-12:30	WP2 presentation - Specifications	Vincent Fleury, DAV
12:30-13:30	Lunch break	
13:30-15:00	WP3 presentation - Noise reduction of Main Landing Gears	Amine Ghouali, SLS
15:00-15:30	Coffee Break	
15:30-17:00	WP4 presentation - Noise reduction of Innovative High Lift Devices	Michael Pott Pollenske, DLR
17:00-17:15	Conclusion - End of day 1	Eric Manoha, ONERA

Day 2 - 04 June 2021

Time	Content	Speakers
10:00-10:15	Welcome and launch of day 2	Eric Manoha, ONERA
10:15-10:30	WP5 presentation - Noise reduction assessment at aircraft level	Aline Scotto, AI-FR
10:30-11:30	WP6 presentation - Communication, Dissemination and Exploitation	Eric Manoha, ONERA
11:30-12:00	Conclusion – End of day 2 for the consortium	Eric Manoha, ONERA
12:00-13:00	Lunch break	
14:00-16:00	Advisory Board Meeting (with the participation of AB members, WP leaders and coordinator).	Eric Manoha, ONERA WP leaders

ATTENDANCE

ONERA	Renaud Davy Thomas Le Garrec Eric Manoha (Coordinator) Fabien Méry Frédéric Moens Laurent Sanders Marc Terracol Paul Viquier
Airbus-F	Johanna Chappuis Jérôme Huber Aloïs Sengissen Aline Scotto (WP5 leader) Nicolas Molin
Airbus-UK	Christophe Perkins
Dassault	Vincent Fleury (WP2 leader)
Safran LS	Antoine Boillot Amine Ghouali (WP3 leader)
DLR	Michael Pott Pollenske (WP4 leader) Jan Delfs
CERFACS	Jean-François Boussuge
Southampton. U.	David Angland
TCD	Gareth Bennett Jiang Lai
NLR	Evelien van Bokhorst Johan Kok Marthijn Tuinstra
RWTH Aachen	Miro Gondrum Matthias Meinke Sutharsan Satcunanathan
Chalmers	Shia-Hui Peng Lars Davidson
VKI	Christophe Schram Yakut Cansev Kucukosman Riccardo Zamponi
U. of Bristol	Mahdi Azarpeyvand
TU Delft	Daniel Ragni Francesco Avallone Alejandro Rubio Carpio
Upstream CFD	Charles Mockett Thilo Knacke Marian Fuchs
Erdyn	Pinar Temel (WP1 leader)



5.8 Flow-through porous fairings characterized by VKI and ONERA

Home » Flow-through porous fairings characterized by VKI and ONERA

Flow-through porous fairings characterized by VKI and ONERA

30/06/2021

Flow-through porous fairings characterized by VKI and ONERA

Flow-through porous fairings for landing gear noise reduction : experimental characterization in WAABLIEF (VKI) and B2A (ONERA) windtunnels

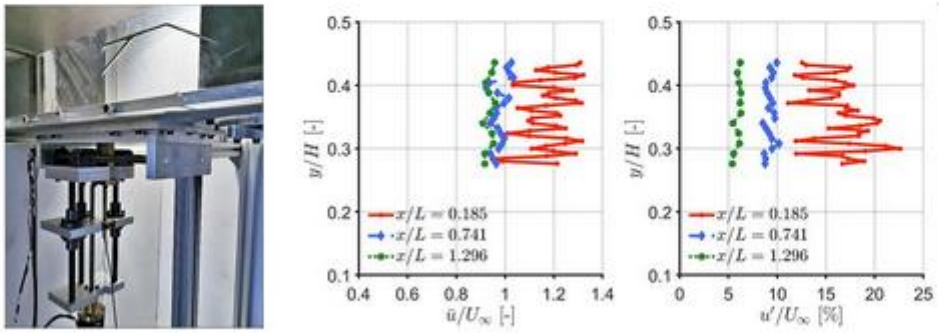
INVENTOR focusses on porous flow-through fairings implemented in front of landing gear to decrease noise. Targeted concepts are wiremeshes, perforated plates and metallic wool. One of the objectives is to numerically simulate these fairings in CFD/CAA solvers, which requires to experimentally characterizing how they modify the mean flow velocity and the turbulence intensity and structure. Such characterization has been achieved in two combined facilities, WAABLIEF at VKI and B2A at ONERA.

More than 20 samples have been tested in WAABLIEF (VKI) at mid-velocity (25 m/s) with a hotwire probe and PIV, providing mean-velocity and turbulence-intensity profiles, integral length scales and 2-point correlation lengths, upstream and downstream the samples.

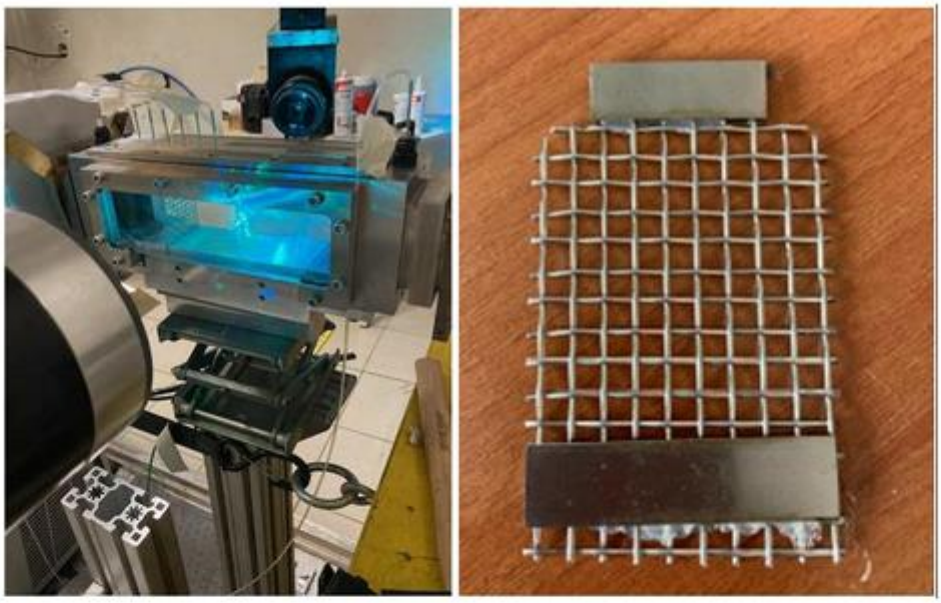
In parallel, the same fairings (as smaller samples) have been tested in B2A (ONERA) with LDV at slightly higher velocity (36 m/s) for pressure drop characterization. Then a selection of these samples has been subject to fine aerodynamic surveys with LDV.

All the collected information will be helpful for calibrating the models in the CFD/CAA solvers, as currently developed by ONERA, RWTH and Chalmers.

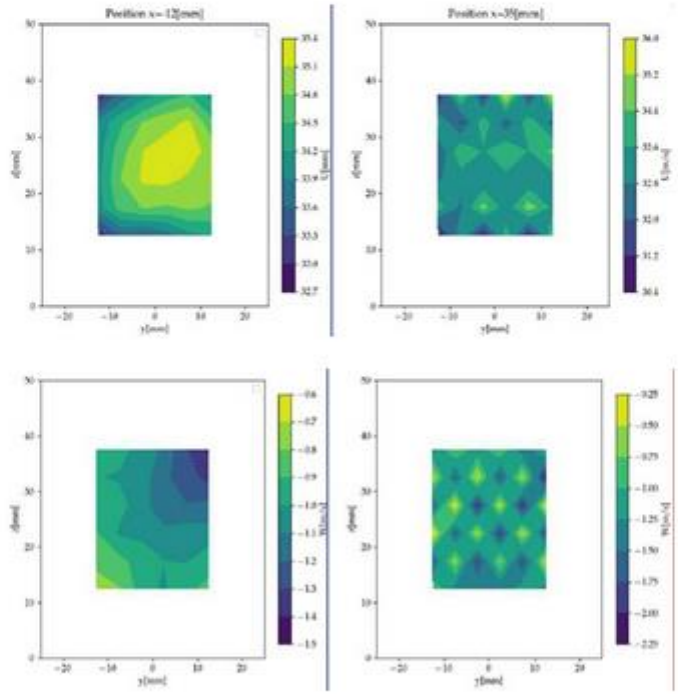
WAABLIEF facility – Wiremesh sample



WAABLIEF facility : hotwire set-up (left) - Mean velocity/turbulence intensity intensity traverse profiles at 3 distances downstream the wiremesh sample (right)



B2A facility – Wiremesh sample



B2A facility : LDV measurements of axial (top) and transverse (bottom) mean velocity upstream (left) and downstream (right) the wiremesh

5.9 Low noise slat tacks down-selected by NLR

Home » Low noise slat tacks down-selected by NLR

Low noise slat tacks down-selected by NLR

30/06/2021

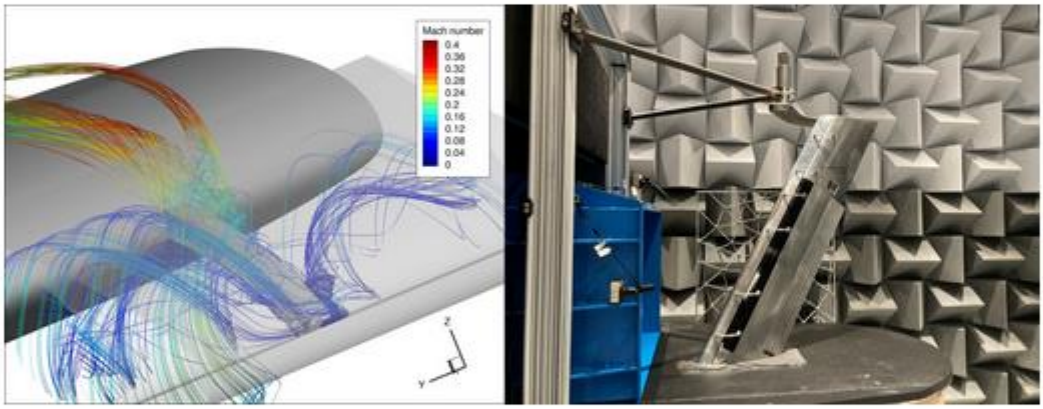
Low noise slat tacks down-selected by NLR

Low noise slat tacks : experimental acoustic down-selection by NLR in in AWT facility

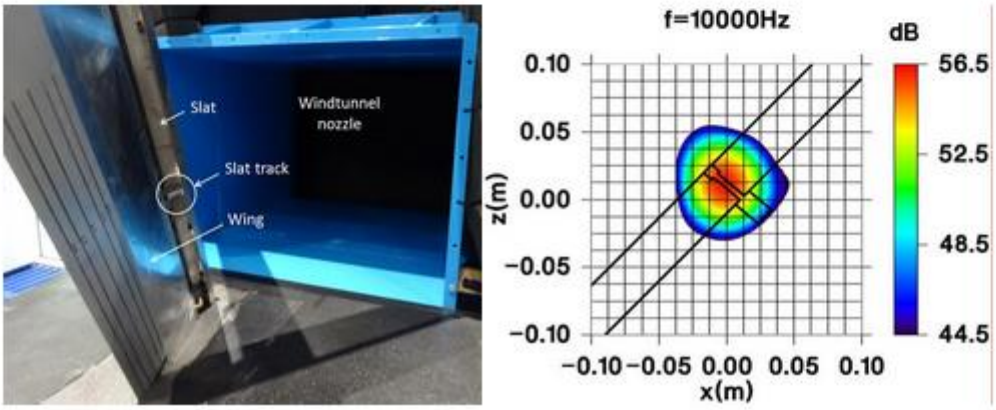
INVENTOR focusses on reducing the noise generated by the slat tracks. The global goal is to better understand the mechanism of slat track noise generation and to assess alternative low noise slat track designs. In a preliminary activity, numerical simulations of the complex mean flow in the slat track area have been achieved, suggesting possible noise generation mechanisms. Then a number of low noise designs have been derived and tested on a 2D high lift wing with a 30° sweep in the AWT aeroacoustic facility at NLR.

Farfield acoustic spectra were obtained from the integration, in the slat track area, of noise maps obtained with a 64-microphone array installed in the flyover plane, showing that this small noise source has a significant contribution to the global airframe noise. First tests on a generic slat track also revealed the influence of the wing cavity and the panel door.

The collected information will help selecting the best low noise slat tracks for further aerodynamic/acoustic tests in ONERA's F2 facility on a full slat/wing/flap airfoil, in combination with surface porous materials implemented in the slat cove.

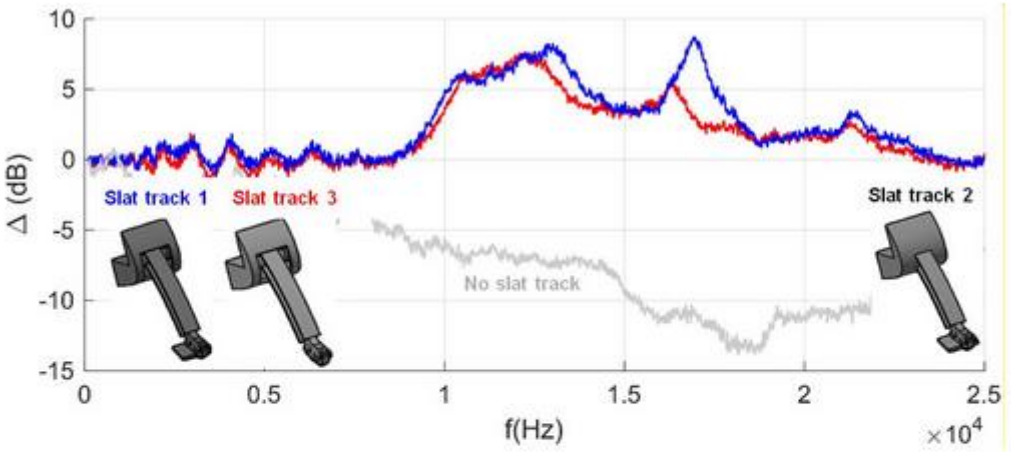


RANS numerical simulation of the mean flow (left) and test set-up (right)



Slat track location (left) – Noise map at frequency 10 kHz

Slat track location (left) – Noise map at frequency 10 kHz



Power integrated spectra of baseline slat tracks. Values are relative to the power integrated spectrum of slat track 2. Influence of the wing cavity (slat track #1) and the panel door (slat track #3)

5.10 Flow-through porous fairings down-selected by TU-Delft

Flow-through porous fairings down-selected by TU-Delft

30/09/2021

Flow-through porous fairings down-selected by TU-Delft

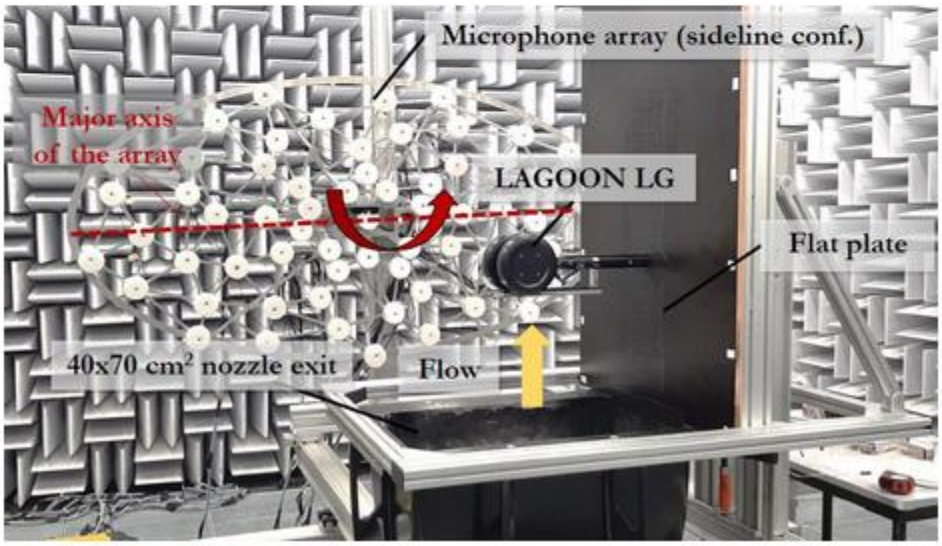
Porous flow-through fairings for landing gear noise reduction: experimental down selection by TU-Delft in A-Tunnel facility

INVENTOR focuses on the use of porous flow-through fairings upstream the landing gear axle for noise mitigation purposes. Targeted concepts are wiremeshes, perforated plates, metallic wool and synthetic foams. One of the objectives is to select the fairings that provide the best noise reduction. To this aim, the fairings that have been precisesly characterized in WAABLIEF and B2A, have been subsequently tested in the aeroacoustic A-Tunnel facility at TU-Delft on a scaled 2-wheel landing gear model. Such model is representative of nose landing gears employed in short/medium range commercial and business aircraft and, as such, includes realistic elements such as brakes and torque link.

Far-field acoustic spectra were obtained from the integration of noise maps obtained with a 64-microphone array installed in sideline and flyover positions with respect to the landing gear. Additional mean flow oil visualizations were achieved.

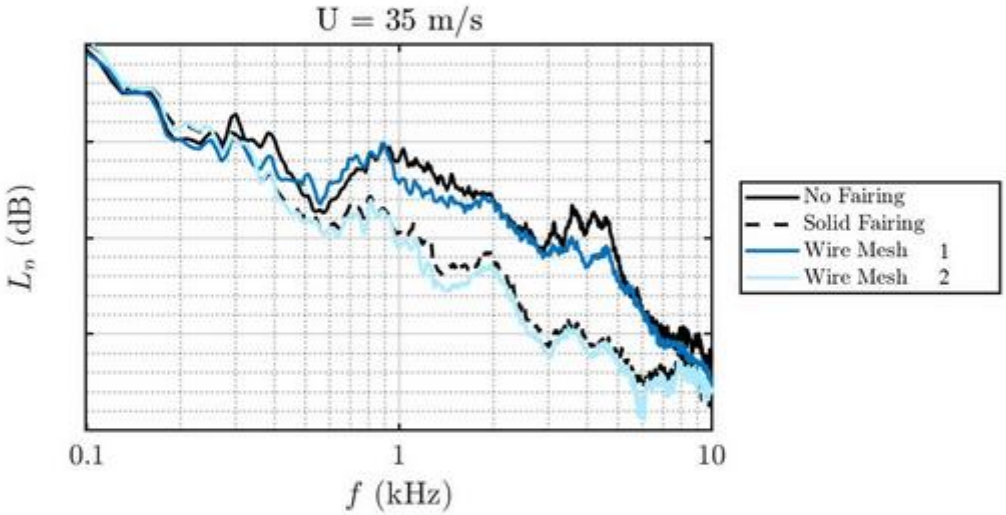
Finally, PIV and hotwire measurements have been achieved on a selection of samples. These data will be used:

- To select the most promising porous fairings; these will be further characterized in aeroacoustic tests at DLR (AWB windtunnel) on a realistic landing gear model with similar scale
- To validate CFD/CAA numerical simulation of the fairing action on landing gear noise reduction.

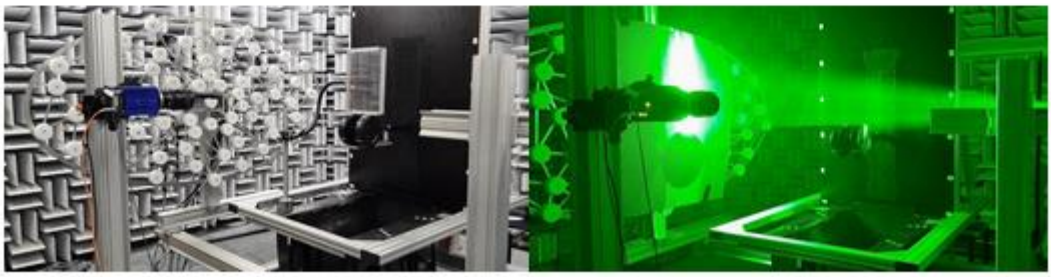


A-Tunnel set-up

Left : Simplified landing gear equipped with a wiremesh fairing – Right : flow visualization



Farfield noise spectra measured without fairing (reference), with a solid fairing and with two different wiremeshes



A-Tunnel : PIV set-up

5.11 Flow-through porous fairings assessed on realistic landing gear by DLR

Home » Flow-through porous fairings assessed on realistic landing gear by DLR

Flow-through porous fairings assessed on realistic landing gear by DLR

08/10/2021

Flow-through porous fairings assessed on realistic landing gear by DLR

Porous flow-through fairings for landing gear noise reduction: experimental acoustic assessment by DLR in AWB windtunnel

INVENTOR focusses on porous flow-through fairings implemented in front of landing gear to decrease noise. Targeted concepts are wiremeshes, perforated plates and metallic wool. A large range of planar samples of different fairings have been first characterized in two facilities at VKI and ONERA, then acoustically down selected at TU-Delft with a simplified (but representative) 2-wheel landing gear (link to NEWS).

The next step is to test the best porous fairings with 3D shape adapted to realistic models of 2-wheel main landing gear. A first set of such tests has been achieved in the aeroacoustic facility AWB at DLR.

Farfield acoustic spectra were obtained from a linear row of microphones, whereas noise maps were computed from measurements with a 96 microphone array in the flyover direction.

A second windtunnel entry with more porous fairings is planned in 2022. The information collected through both test campaign will lead to the selection of the best fairings for further tests:

- on a full scale 2-whell main landing gear in S2A in April 2022 and
- on small scale full aircraft models in DNW-NWB in 2023.

Test set-up in AWB : trailing arm 2-wheel landing gear on a streamlined support