Programme

29th SFTE

European Chapter Symposium 2018

TU Delft
Delft University of Technology

NLR Dedicated to innovation in aerospace

The Fewer Aircraft To Flight Test,
The More Reason To Share Experience


NLR
PH-LAB


J-066

Introduction

The 29th SFTE European Chapter Symposium will be held at Delft University of Technology, at the premises of Faculty of Aerospace Engineering in Delft, The Netherlands from the 29th to the 31st of May 2018. The organization of the symposium is co-managed by the Netherlands Association of Aeronautical Engineers NVvL, the Delft University of Technology and the Netherlands Aerospace Centre NLR.

The theme of the symposium is:

The Fewer Aircraft To Flight Test, The More Reason To Share Experience

Chuck Yeager said: ”Flight testing is potentially dangerous”. The flight test engineer is challenged to meet the test objectives without compromising flight and system safety. Preparing a flight test programme requires a solid understanding of the flight tests to be performed, regulatory knowledge, limitation of the aircraft and means to deal with risk analyses and mitigation within his flight test organization. Reducing the number of prototype aircraft available to certify new aircraft types is adding more challenges for an already ambitious flight test programme.

Papers reflecting these challenges will be favoured in the evaluation of papers.
The organization committee wishes you a fruitful and enjoyable stay in The Netherlands.

Organisation committee

The symposium is managed by a team with the following members:

- Paul Koks (chairman)
- Henk Jentink (chair of the Technical Programme Committee)
- Christoph Hermans on behalf of the Netherlands Association of Aeronautical Engineers NVvL
- Joris Melkert on behalf of the Faculty Aerospace Engineering
- Daniëlle Saris Event Solutions Delft University of Technology

Technical Programme Committee

The papers for the technical programme were selected from a number of submitted abstracts by the Technical Programme Committee with the following members:

- Henk Jentink: Scientist, Netherlands Aerospace Centre NLR and chairman of the Technical Programme Committee
- Tjebbe Haringa: (Retired Lt-Col) Experimental Test Pilot, Netherlands Aerospace Centre NLR
- Capt T.J. Adrichem: Flight Test Engineer, Royal Netherlands Air Force – F-16 Flight Test Office
- Hans Mulder: Research pilot, Delft University of Technology
- Dirk van Os: Chief Engineer, Fokker Services B.V.

The organisation was supported by the staff of NLR, Netherlands Association of Aeronautical Engineers NVvL, Delft University of Technology and SFTE (EC) board members.

Keynote speakers

The committee is proud to introduce three professionals from the world of aeronautics which will deliver the Keynote address at the start of this symposium. The Keynote speakers at the 29th SFTE EC symposium are:

Hugues van der Stichel

Captain Hugues van der Stichel, Airbus Experimental Test Pilot, will provide a Keynote. The title of his presentation is "Flight Testing the Airbus A350". The prototype A350 first flew in June 2013 from Toulouse, France. The Type Certificate from the European Aviation Safety Agency EASA was received in September 2014. For approximately 18 months, test pilots and engineers tested both versions of the aircraft (900 and 1000) on the ground and in-flight. Several thousand flying hours were conducted, extreme climatic zones were visited and every day operation with airlines was simulated.

Colonel Marco Kievit

Colonel Marco Kievit is currently Team Lead of the F-35 Program within the Netherlands Defence Materiel Organization and is responsible for all F-35 related procurement activities. Colonel Kievit started his career in the Royal Netherlands Air Force in 1981 at the Royal Military Academy in Breda. After completing his Aeronautical Engineer study in 1985 he was appointed officer and fulfilled positions within the operational branch, materiel branch and staff functions in and outside the Netherlands.

Mark van Venrooij

Mark van Venrooij is Vice President of the Aerospace Systems Division (120FTE) and member of the Board of Directors of the Netherlands Aerospace Centre NLR. Before he became Vice President of the Aerospace Systems Division in 2016, Mark van Venrooij was head of the Defence Operations Department. Mark started his career at NLR as R&D engineer in the field of Military Operational Analysis. He graduated from the Delft University of Technology at the Faculty of Aerospace Engineering in 1991, specializing in Flight Mechanics and Aircraft Design.

Day 1 - Tuesday May 29th			
Faculty of Aerospace Engineering lecture room B			
8:30-10:00	Registration and welcome coffee		
Plenary session (10:00 – 12:00)			
10:00-10:10	**Welcome and opening statements** *President of the Netherlands Association of Aeronautical Engineers – C. Hermans*		
10:10-10:20	**Opening session** *President of the Society of Flight Test Engineers European Chapter - J. Fernández Orío*		
10:20-12:00	10:20 – 10:50 **Keynote 1** *Royal Netherlands Air Force Head F-35 Project office – Col M. Kievit* The F-35 Program: Providing the 5th generation fighter aircraft for the RNAF	10:50 – 11:30 **Keynote 2** *Airbus Experimental Test Pilot – H. van der Stichel* **Flight testing the Airbus A350**	11:30 – 12:00 **Keynote 3** *Netherlands Aerospace Centre NLR – M. van Venrooij* The Future of Flight Test Research: Expect the unexpected
12:00-12-10	**Group photo**		
12:10	*Lunch – Buffet*		
Session 1 "Flight Test Challenges" – Chair: L.C. Eveleens (NLR)			
14:00	1. **Fewer Aircraft to Flight Test: Contemporary challenges for flight test of military aircraft.** *AIRBUS Defence and Space – R. Bischoff*		
14:30	2. **Control Room Lessons Learned – A Perspective From F-35A Testing.** *Delft University of Technology (TUD) – J. Newcamp*		
15:00	*Break*		
15:30	3. **Performance Class 2 with Defined Limited Exposure for Offshore operation: use case and perspectives.** *Airbus helicopters – O. Voinchet, C. Ockier*		
16:00-18:00	*Reception at Faculty bar "The Atmosphere" of Aerospace Engineering*		

Day 2 - Wednesday May 30th	
Faculty of Aerospace Engineering lecture room B	
09:00	*Morning coffee*
Session 2 "Data Analysis, finding the Limits" – Chair: J.J. Fernández Orío (INTA)	
9:30 10:00	1. **BMAD: big data manoeuvre automatic detection.** *Airbus Defence & Space – F. Coll Herrero, M. Arevalo Nogales, M.I. Delgado Babiano* 2. **Innovative in-flight aircraft noise measurements.** *Netherlands Aerospace Centre NLR – H.W. Jentink, M-J.P. van der Meulen, R.S. Tump, H.H. Brouwer*
10:30	*Break*
11:00 11:30	3. **Design of experiment in Flight-Testing as an element of higher education for aerospace Engineers.** *University of the West of England – J. Bakunowicz* 4. **Dynamic Fighter Aircraft Robust Power Management Flight Testing.** *Netherlands Aerospace Centre NLR – B.J.G. Eussen, M.A. Hordijk, J. van Muijden*
12:00	*Lunch – Buffet*
Session 3 "Programmes finding the edge" – Chair: I. Rüdinger (DLR)	
13:30 14:00 14:30	1. **Smart flight test approach for a new military version of a legacy commercial aircraft program.** *Leonardo – D. Reviglio, E. Margarito* 2. **Now flying long range: the A321LR flight test campaign.** *Airbus – J. Fawcett* 3. **Airlander 001 Flight Test Programme.** *Hybrid Air Vehicles– A. Barber*
15:00	*Break*
Session 4 "Systems on the Edge" – Chair: J. Melkert (TUD)	
15:30 16.00	1. **A400M flares trajectories without on-board cameras.** *Airbus Defence & Space – I. López Herreros, F. Coll Herrero* 2. **Flight Tests on fault-tolerant autopilot control laws in laboratory aircraft Citation II.** *Delft University of Technology (TUD) – A.C.in 't Veld, T.J.Mulder*
16:30	**SFTE EC Annual Business Meeting & Closing speeches**
20:00- 23:00	*Symposium Dinner at restaurant Van der Dussen (aperitif starting at 19:30) Including Dinner speech and Best Paper Award ceremony.*

Technical Tour

Day 3 - Thursday May 31th	
Aula Delft University of Technology	
7:30	Departure by bus to Leeuwarden Air Force Base (from Aula)
10:00-12:00	**Morning programme**
12:00	*Lunch – Buffet*
13:00-14:30	**Afternoon programme**
14:45-17:45	*Return bus to Aula of the Delft University of Technology (Scheduled stop at Schiphol Airport at approx. 16:30 PM)*

Leeuwarden Air Force Base (AFB) is being used as a military air base from 1940 onwards. Leeuwarden together with Volkel and Gilze Rijen are the Main Operating Bases for the Royal Netherlands Air Force. Leeuwarden is one of two air base operating the F-16 fighter aircraft. At present Leeuwarden AFB is home for the 322 TACTES(S) Fighter Squadron and three support squadrons (920 thru 922) involved with maintenance, logistics, air traffic control and airfield services.

The Air Base is the location of the Fighter Weapons Instructor Training and the annual multinational NATO exercise "Frisian Flag". Leeuwarden AFB is also the location for the F-16 Flight Test Office. The instrumented F-16 test aircraft J-066 “Orange Jumper” is operated from Leeuwarden AFB.

Technical tour

Leeuwarden Air Force Base
Keegsdijkje 7,
8919 AK Leeuwarden

A technical tour will be organized to Leeuwarden Air Force Base as part of the program. Bus transport will be arranged for the tour. The bus will depart from the Aula at 07:30 AM and is scheduled to return to the Aula of the University at 17:30 PM. Due to unforeseen delays caused by heavy traffic in the rush hour we cannot guarantee this schedule!

To be allowed to enter the Air Base a security check is mandatory. Please bring the ID that you supplied during the registration. **Without ID no access**.
On Leeuwarden Air Force Base it is prohibited to take photographs.

Departure Technical tour:
Aula and Congress Centre
Delft University of Technology,
Mekelweg 5, 2628 CC Delft

Social events

The first day of the symposium is concluded with a reception at the faculty bar "The Atmosphere".

The symposium dinner is on Wednesday May 30 at restaurant Van der Dussen in the city centre of Delft. The restaurant is open from 19:30 for an aperitif.
Dinner starts at 20:00.
Dress code is tenue de ville.

Conference dinner

Restaurant Van der Dussen,
Bagijnhof 118,
2611 AS Delft

Organisation

The Faculty Aerospace Engineering of the Delft University of Technology is located at the south of the centre of the city. The distance between the city center and the aula is approx. 2 km and the distance between city centre and the faculty is approx. 3,5 km. Travel information is provided in the Travel Information Section.

Symposium location

Delft University of Technology,
Faculty of Aerospace Engineering,
Kluyverweg 1,
2629 HS Delft

Travel information

From Amsterdam Airport (by train)
Arriving at Amsterdam Airport, the Schiphol train station is located directly below the airport. Direct trains to Delft (final destination Vlissingen) leave every 30 minutes from platform 5-6. The journey by train will take approximately 39 minutes. A one-way journey will cost € 9,60 (full fare, 2nd class) and € 16,30 (full fare, 1st class)

Where to buy train tickets?
You can travel on NS (the Dutch Railways) with a single-use chip card that is available from the yellow ticket machines with the blue overhead sign reading 'train tickets'.
You can find the ticket machines near the platforms at Schiphol Plaza. Tickets (for domestic and international travel) are also available at the Ticket- and Service desks at Schiphol Plaza.

When travelling with a single-use chip card, you need to check in at a check-in point before your journey, and to check out at a check-out point after your journey. For more information, please check the NS website.

From Rotterdam The Hague Airport (by bus and train)

Arriving at Rotterdam The Hague Airport there is no direct public transport to Delft. First take bus # 33 (direction Rotterdam Centraal, 20-25 minutes) to go to Rotterdam's central station. A one-way journey will cost € 1,70 for the bus (full fare). The buses stop right next to the departures hall.

Rotterdam central station has fast and regular railway connections to the city of Delft; almost every ten minutes trains to Delft leave from the platforms 8 or 9. A one-way journey will cost € 3,20 (full fare, 2nd class) or € 5,40 (full fare, 1st class) for the train.

The total journey from the airport to Delft station will take approximately 40-50 min.

Where to buy bus and train tickets?

On board of the bus you can purchase the bus ticket to the central station. At Rotterdam's central station you can purchase a single-use chip card from the yellow ticket machines with the blue overhead sign reading 'train tickets'.

Tickets (for domestic and international travel) are also available at the Ticket- and Service desks, which you can find in front of the luggage lockers and the toilets in the public area of the central station.

see e.g. http://en.wikipedia.org/wiki/OV-chipkaart

From Rotterdam The Hague Airport (by taxi)

You can also take a taxi to get to Delft. The taxi stand is located directly in front of the entrance/exit of the airport terminal. The fare to Delft (about 12 kilometers) will take 15-20 minutes (though not at rush hour traffic) and will cost approximately € 33.

SFTE EC and the symposium

For more information about the SFTE EC and the symposium. Please visit our website:
http://sfte-ec.org/

Correspondence & Inquiries

For more information please contact
Netherlands Aerospace Centre NLR
SFTE-EC Symposium 2018.
Attention of Mr. P. Koks.

Contact details:

E: paul.koks@nlr.nl
T: +31 88 5113186
Anthony Fokkerweg 2,
1059 CM Amsterdam, The Netherlands