



Identification of the installation/facility:

Country: The Netherlands

Location (city): Amsterdam and Flevoland

Name of the facility: Flight Test Facilities:

- Research Aircraft - Fairchild Metro II, Cessna Citation II;
- Flight Test Instrumentation;
- Facility for Unmanned Rotorcraft REsearch (FURORE).

Date of construction or of acquisition: start of realization: 1990

Owner: NLR

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Internet site: [Research Aircraft](#), [Flight Test Instrumentation](#), [FURORE](#)

Technical characteristics:

1 - Type of infrastructure

Wind tunnel	<input type="checkbox"/>
Propulsion bench	<input type="checkbox"/>
Structures facility	<input type="checkbox"/>
Material facility	<input type="checkbox"/>
Simulator (ex. Flight simulator, tower, ...)	<input type="checkbox"/>
Flight test bed (aircraft, embedded facilities, ...)	<input checked="" type="checkbox"/>
Supercomputers	<input type="checkbox"/>
Other	<input type="checkbox"/>

2 - Main technical characteristics

See internet site.

To perform measurements during flight tests, NLR operates an extensive set of instruments. This set is continuously adapted to new requirements, possibilities and market-driven demands. Already for some time, a shift can be seen from large standard systems to smaller generic systems that can be adapted easily to changing requirements, with emphasis on fast availability of measurement data.

The continued research and development of the Avionic Flight Test Facilities (AFTF) will be normative in this context.

Often, the need arises for special measuring equipment or facilities to support research, a demonstration or an experiment. Research on noise and emission, ATM concept demonstrations, and atmospheric research (volcanic ash) are examples.

In addition to these measurement facilities used during tests in, at or on flying platforms, there are the test and integration facilities used in the laboratory (T&I Facilities for Flight Test); they are an important part of the total flight testing facility.

The facilities for flight testing comprise:

- Avionic Flight Test Facilities (AFTF);
- Integrated NLR Data Environment for Flight Test (INDEFT);
- Test & Integration facilities for Flight-Tests (TIFT);



- Future Aircraft Systems Testbed (FAST);
- Data Acquisition equipment and Calibration Laboratory (DACLAB).

3 - Research domains which can be addressed (refer to ACARE taxonomy <http://www.acare4europe.com/docs/ASD-Annex-final-211004-out-asd.pdf>)

Aircraft Avionics, Systems & Equipment: Cockpit Systems, Visualisation & Display Systems; Navigation/Flight Management/Autoland; Sensors Integration; Communications Systems; Identification; Avionics Integration; Optics - Optronics - Lasers - Image processing and data fusion; Aircraft Security; Electrical Power Generation & Distribution.

Flight Mechanics - Performance: Analytical

Integrated Design & Validation (methods & tools): Flight/Ground Tests; Autonomous operation; Development of synthetic environment & virtual reality tools; Real Time Simulators.

Air Traffic Management: Flow and capacity Management; Communication System; Navigation System; Avionics; Airport Traffic Management.

Innovative Concepts & Scenarios: Unconventional configurations and new aircraft concepts.

4 - Main (or specific) associated measurement techniques

Human-in-the-loop as well as Hardware-in-the-loop.

NLR's Facility for Unmanned Rotorcraft REsearch (FURORE) offers a range of platforms that can be used as flying test bed for R&D purposes, the largest one being a double engine RUAS equipped with two independent flight control systems, a take-off mass of approximately 90 kg and 30 kg of payload at one hour mission duration. An autopilot allows for autonomous flight and navigation along pre-programmed paths; manual control can override autopilot anytime for safety and also is normally used for landing. These platforms can be used as test bed for a wide range of applications like aerial surveillance and sense-and-avoid.

NLR is about to gain approval for our own light UAS to be operate from our Flevoland site.

5 - Operational status

- Fully operational

6 - Picture available



Cessna Citation II and Fairchild Metro II



Generic Flight Test Instrumentation System



NLR GC-201 unmanned helicopter (FUORE)

Financial elements:

Replacement cost (M€uros)

- | | |
|---------------|-------------------------------------|
| Less than 10 | <input type="checkbox"/> |
| 10 to 30 | <input checked="" type="checkbox"/> |
| 30 to 60 | <input type="checkbox"/> |
| 60 to 100 | <input type="checkbox"/> |
| More than 100 | <input type="checkbox"/> |

Practices concerning:

Access policy: the research aircraft and FUORE are available to customers on a contract basis.

When using the elements of the Flight Test Instrumentation System in a specific project context, the value of the overall system is calculated. This results in a fixed utilisation rate reimbursing the cost for support and maintenance.

Origin of information ('signature'): author and date

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