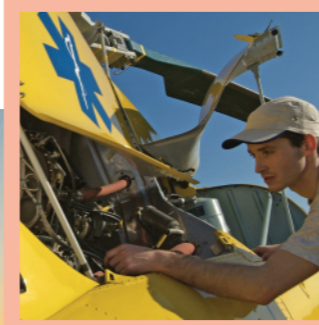


**POWERED
BY TRUST**

www.safran-helicopter-engines.com



HELICOPTER ENGINES



Safran Helicopter Engines Academy

Training Catalogue



TAM-TAM Design / Crédit photos : @Safran - @Remy Bertrand - @Studio Pons - @Cyril Abad (CAPA Pictures) - @Akbus Helicopters - @Patrick Pema - @Jérôme Sigalas - @Laurry Flyg - @DR



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A WORD FROM THE EDITOR

Dear partners,

As many of you already know, our long-established network, Turbomeca Training, is changing to become the Safran Helicopter Engines Academy. Through this new brand, our aim is to continue to improve our understanding of your training needs today, as well as to anticipate your needs for tomorrow.

Our ambition is therefore to accompany you in developing your activity through a wider range of training and support courses that closely match your expectations and are fine-tuned to your different professions: maintenance personnel, pilots and managers. Having a thorough knowledge and understanding of your engines is key to your future success. Here at the Academy, we are convinced that flight safety and economic performance are intrinsically linked to the quality of training.

With this in mind, we are updating both the format and the content of our Training Catalogue. In order to give you greater visibility and to express the direction we want to take for our future developments, we have classified the courses we offer in one of three categories:

- **“Approved”**: includes all regulatory training courses in a traditional format. This category is the cornerstone of our Catalogue.
- **“Advanced”**: corresponds to a category of training courses with high added-value. Additions are certain to be made to this category because it is considered “THE” category for the Academy’s strategic positioning for the future.
- **“Expert”**: groups together training courses linked to highly specific “expert” professions or activities.

We are of course going to continue to rely on a strong, passionate and locally-based network to provide you with all these training courses in the best possible conditions for the continuity of your activity. The quality of our training must become a seal of approval. For you, it must be a guarantee of the growing skill and performance of your personnel, with a direct impact on the development of your activity.

On behalf of all the members of the Safran Helicopter Engines Academy and our affiliated network, I look forward to welcoming you on one of our courses, and remain at your disposal to give a personalised response to your specific needs.

Don't forget that you can also find us on the Customer Portal website!
tools.safran-helicopter-engines.com

Pierre Beney

APPROVED TRAINING COURSES

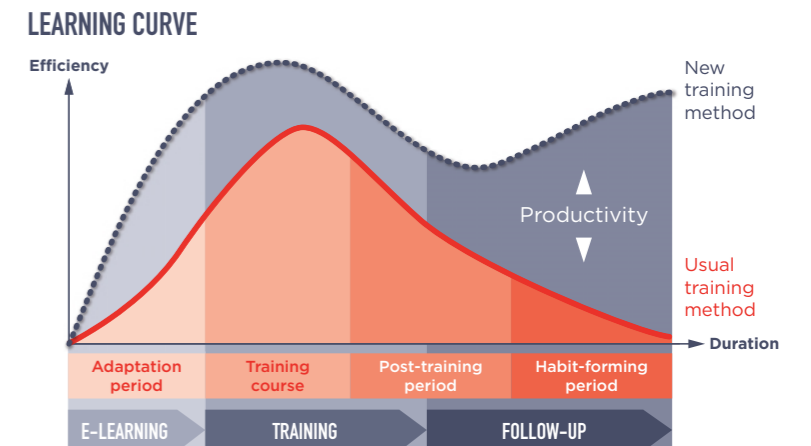


All these training courses culminate in a combined practical assessment and theoretical examination as per applicable regulations. Our affiliated partners in the Safran Helicopter Engines Academy network can all provide you with training under these approvals worldwide in specific conditions which fall under these regulations. Only service providers with the Safran Helicopter Engines Academy logo are recognised by Safran Helicopter Engines as capable of providing you with training which complies with our know-how and quality guarantees. For other approvals, our partners will facilitate the procedures to have your training recognised by the local civil aviation authorities.

MAKING TRAINING A SUSTAINABLE ADDED VALUE

We have implemented a training philosophy based on the continuous reinforcement of acquired skills.

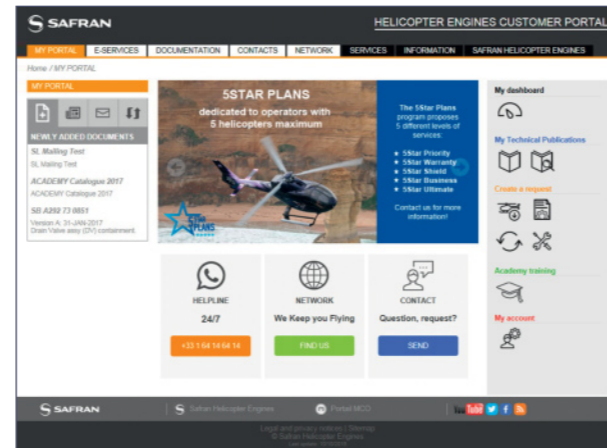
We give you an edge in terms of training time, to optimise your actual attendance time and implement skills maintenance so that your skills are sustained at the highest level for the longest possible time.



CUSTOMER PORTAL: A DEDICATED TRAINING AREA FOR YOU

It includes:

- > The Safran Helicopter Engines Academy philosophy.
- > The Training service offer.
- > Information on the Safran Helicopter Engines Academy network.
- > E-learning modules.
- > Scheduled training courses for your area.
- > A pre-registration form.



Join the Customer Portal community to benefit from all of the information and functionalities in the dedicated training area.

→ Simply go to your Customer Portal (TOOLS) homepage and click on “create an account”.

MANDATORY PREREQUISITES TO ATTEND A COURSE

To be enrolled on a training course, all trainees must have an active Customer Portal account with their personal information updated. Trainees who do not have an active Customer Portal account must create one by logging on to tools.safran-helicopter-engines.com

Note: The “Date of birth”, “Place of birth” and “Country of birth” fields must be completed in the Customer Portal user account as this information is required to automatically generate the different training documents. Please indicate in the “Comments” field that you will be attending a training course to accelerate the Customer Portal account validation process.



> INTRODUCTORY MODULES (CLASSROOM SESSIONS)

Duration

2 days (12 hours)

Participants

10 maximum

Public

General

Price

Contact us

ENGINE FAMILIARISATION

OBJECTIVES:

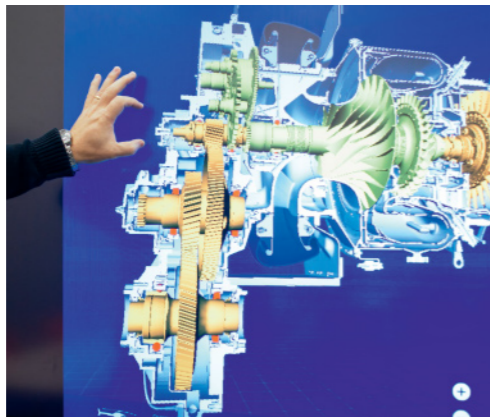
- Identify the different engine and system components.
- Gas turbine engines: know the general operating principles of an engine.
- Know the maintenance principles.

COURSE CONTENTS:

- Description of the engine.
- Description of the systems.
- Presentation of the operating principles.
- Presentation of maintenance principles and associated documents.

ADVANTAGES OF THIS MODULE

- Improve internal communication by making everybody aware of Safran Helicopter Engines technologies.
- Obtain specific training adapted to your needs.
- Access to specialisation training not associated with a training course.



> INTRODUCTORY MODULES (FREE E-LEARNING)

Duration

2 hours

Public

General

Price

Free

GENERAL INFORMATION ON GAS TURBINE ENGINES

OBJECTIVES:

- Know the basic operating principles of gas turbine engines.
- Identify engine components.

COURSE CONTENTS:

- Revision of basic principles.
- Propulsion principles.
- Main turbine components.
- Performance and characteristics.
- Engine systems.
- Maintenance principles.
- Design and manufacture.

ADVANTAGES OF THIS MODULE

- Save time by training yourself in basic engine principles via e-learning.
- Train at your own pace, wherever you want, whenever you're available.



YOUR CUSTOMER PORTAL:
tools.safran-helicopter-engines.com



> INTRODUCTORY MODULES (CLASSROOM SESSIONS)

Duration

3 days (18 hours)

Participants

7 maximum

Public

Newly appointed or experienced maintenance managers

Price

Contact us

MAINTENANCE MANAGER BASICS **NEW**

OBJECTIVES:

- Know the basic principles and concepts required to manage a helicopter activity.
- Understand proactive maintenance methods.
- Identify the different elements of a maintenance management plan.
- Have a basic understanding of the Safety Management System.

COURSE CONTENTS:

- Safran Helicopter Engines presentation.
- Proactive maintenance methods.
- Direct Maintenance Costs & Direct Operating Costs.
- Maintenance management plan.
- Introduction to best practices.
- Introduction to Safety Management System.

ADVANTAGES OF THIS MODULE

- Access to exclusive training developed to help maintenance managers run an engine fleet effectively.



> APPROVED MAINTENANCE COURSES • FOR TYPE RATING QUALIFICATION

Duration
5 days (30 hours)
Participants
10 maximum
Public
Experienced aeronautical technicians
Price
Contact us

1st LINE MAINTENANCE (“0 LEVEL”)

OBJECTIVES:

- Know your engine and its systems.
- Know how to identify and locate LRUs on your engine.
- Perform Safran Helicopter Engines 1st line maintenance procedures (LRU removal/ installation, inspections).
- Perform troubleshooting with reference to the Maintenance Manual.

PROGRAMME CONTENTS:

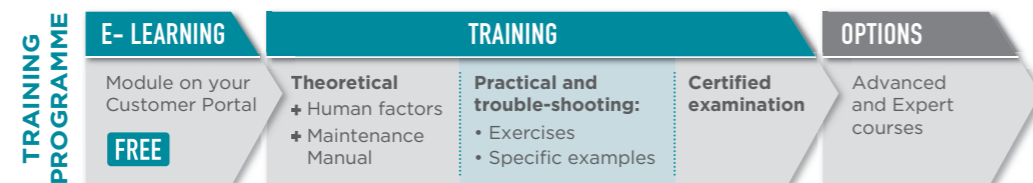
- FREE** | **E-learning**
- Gas turbine engines: basic principles.
 - Technical publications.
 - Engine logbook, New engine logbook.
 - On-line self-assessment tests.

Classroom training

- General presentation of the engine (performance, characteristics).
- Description of engine operation, systems and components.
- Principles of maintenance (concept, logistics) and practical work.
- Troubleshooting exercises (practical examples).
- Certified examination.

ADVANTAGES OF THIS TRAINING PROGRAMME

- Access to free e-learning modules.
- Test your knowledge on-line.
- Integrate specific options into your initial training course and customise your training.



> APPROVED MAINTENANCE COURSES • FOR TYPE RATING QUALIFICATION

Duration
Arrius: 2 days (12 h) Arriel: 3 days (18 h) Makila: 4 days (24 h) RTM322: 3/4 days
Participants
5 maximum
Public
1 st line qualified aeronautical technicians
Price
Contact us

2nd LINE MAINTENANCE (“I LEVEL”)

OBJECTIVES:

- Identify the engine modules and components.
- Perform all the maintenance procedures defined in the Maintenance Manual concerning the engine SRUs and modules.

PROGRAMME CONTENTS:

- FREE** | **E-learning**
- Gas turbine engines: basic principles.
 - Engine Power Check.
 - Engine logbook, new engine logbook.
 - On-line self-assessment tests.

Classroom training

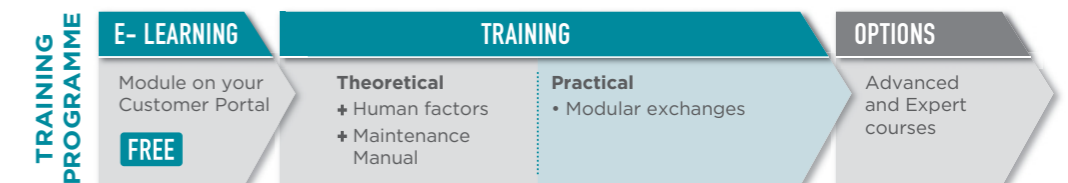
- Revision of 1st line maintenance principles.
- Procedures as per the Maintenance Manual.
- Practical examples in the workshop.

FREE | **Follow-up**

- Safran Helicopter Engines network support via the Field Representatives for 2nd line maintenance to be performed on customer premises.
- At the customer's request.

ADVANTAGES OF THIS TRAINING PROGRAMME

- Access to free e-learning modules.
- Test your knowledge on-line.
- Integrate specific options into your initial training course and customise your training.





> ADVANCED COURSES FOR OPTIMUM EFFICIENCY AFTER 1ST LINE MAINTENANCE QUALIFICATION

Duration

4 hours

Public

General

Price

Free

Duration

4 hours

Public

General

Price

Free

ENGINE LOGBOOK (free e-learning)

OBJECTIVES:

- Know the role of the engine logbook.
- Know how to use the engine logbook.

COURSE CONTENTS:

- Role and composition of the engine logbook.
- Notions of safety and availability.
- Module management.
- Accessory management (with or without a log card).
- Modification management.
- Technical events on an engine.

NEW ENGINE LOGBOOK (free e-learning)

OBJECTIVES:

- Know the role of the new engine logbook.
- Know how to use the new engine logbook.

COURSE CONTENTS:

- Role and composition of the new engine logbook.
- Notions of safety and availability.
- Module management.
- Accessory management (with or without a log card).
- Modification management.
- Technical events on an engine.

ADVANTAGES OF THIS MODULES

- Save time by training yourself in basic engine principles via e-learning.
- Train at your own pace, wherever you want, whenever you're available.

> ADVANCED COURSES FOR OPTIMUM EFFICIENCY AFTER 1ST LINE MAINTENANCE QUALIFICATION

Duration

2 hours

Public

General

Price

Free

ENGINE POWER CHECK - **NEW** (free e-learning)

OBJECTIVES:

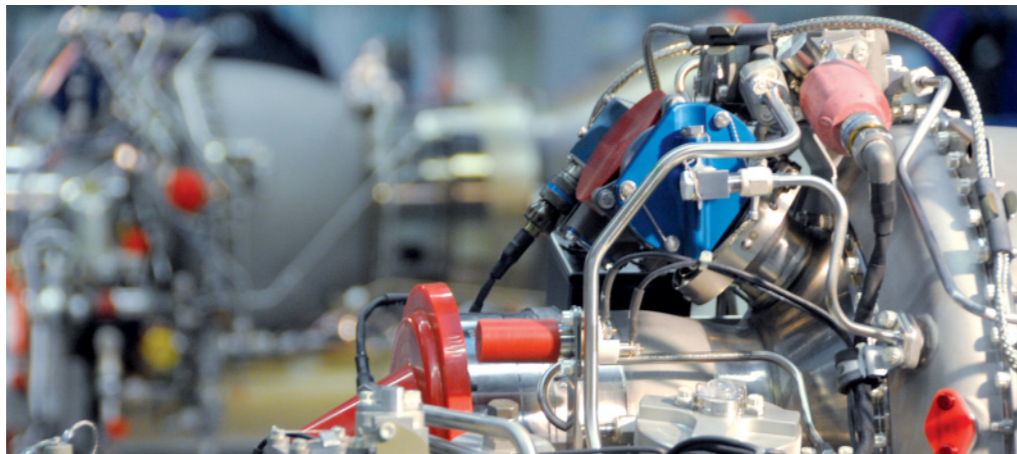
- Know the technical different types of EPC and contributing factors.
- Know how to perform trend monitoring and troubleshooting.

COURSE CONTENTS:

- Engine limitations and control system families.
- General principles of an EPC.
- Performing an EPC in the field.
- The “Enemies” of the EPC.
- EPC trend monitoring.

ADVANTAGES OF THIS MODULE

- Train at your own pace, wherever you want, whenever you're available.
- Perform a valid EPC and target troubleshooting.



> ADVANCED COURSES FOR OPTIMUM EFFICIENCY AFTER 1ST LINE MAINTENANCE QUALIFICATION

Duration

2 days (12 hours)

Participants

10 maximum

Public

1st line qualified
aeronautical
technicians

Price

Contact us

FUEL AND CONTROL SYSTEMS PER ENGINE TYPE

OBJECTIVES:

- Identify the main fuel system and engine control system components.
- Know how the systems operate.
- Perform troubleshooting associated with these systems.

COURSE CONTENTS:

- Presentation of the operating principles.
- Detailed study of the fuel, engine control and monitoring systems.
- General information on the technological evolution of Safran Helicopter Engines' power plants.

ADVANTAGES OF THIS MODULE

- Obtain specific training adapted to your needs, taking your real situations as a basis for advanced study.
- Access to specialisation training not associated with a training course.



YOUR CUSTOMER PORTAL:
tools.safran-helicopter-engines.com



> ADVANCED COURSES FOR OPTIMUM EFFICIENCY AFTER 1ST LINE MAINTENANCE QUALIFICATION

Duration

2 days (12 hours)

Participants

6 maximum

Public

1st line qualified
aeronautical
technicians

Price

Available for
ARRIUS 1 and
MAKILA 2.
Other versions
under request.

REFRESHER AND TROUBLESHOOTING COURSE **NEW**

OBJECTIVES:

- Maintain the skills acquired during the Safran Helicopter Engines 1st line maintenance training course.
- Acquire a troubleshooting methodology.

COURSE CONTENTS:

- Update knowledge of maintenance principles updates and upgrades.
- Fleet situation and engine developments.
- Practical examples of troubleshooting based on real cases.

ADVANTAGES OF THIS MODULE

- Maintain and improve the skills acquired during the initial training course.
- Obtain customised training (content adapted to trainees' specific needs).
- Comply with your local authorities requirements.



> ADVANCED COURSES FOR OPTIMUM EFFICIENCY AFTER 1ST LINE MAINTENANCE QUALIFICATION

Duration

3 days (18 hours)

Participants

6 maximum

Public

1st line qualified
aeronautical
technicians

Price

Contact us

BORESCOPE INSPECTION BEST PRACTICES PER ENGINE TYPE

OBJECTIVES:

- Acquire the knowledge and skills of a borescope inspection specialist.
- Analyse and interpret results.
- Report and follow up results.
- Carry out all the borescope inspection procedures defined in the Maintenance Manual of a specific engine version.

COURSE CONTENTS:

- Introduction to borescope inspection.
- Description and operation of the different families of borescopes.
- Criteria for choosing borescopes.
- Practical recommendations and human factors.
- Damage identification.
- Damage assessment.
- Damage reports and follow-up.
- Refresh knowledge of the engine architecture.
- Borescope inspections using the Maintenance Manual.

ADVANTAGES OF THIS MODULE

- Become a borescope inspection specialist.
- Improve your borescope inspection skill for a particular engine type.
- Follow a specific course adapted to your needs with concrete examples.
- Benefit from an advanced module that is not linked to a programme.

> ADVANCED COURSES SPECIALISATION COURSES BEYOND FUNDAMENTAL

Duration

2 days (12 hours)

Participants

5 maximum

Public

Makila 1A-1A1
1st line qualified
aeronautical
technician is
recommended

Price

Contact us

MAKILA 1A-1A1 ECU MAINTENANCE

OBJECTIVES:

- Acquire the knowledge and the skills of a Makila 1A-1A1 ECU specialist.

COURSE CONTENTS:

- Identify the ECU components and understand their function.
- Know how to determine an ECU configuration using the IETP (Interactive Electronic Technical Publications) and the Log Cards.
- Know and understand all the Maintenance Manual tasks related to ECU checks.
- Perform an ECU workshop serviceability check with the test set.
- Practical examples of troubleshooting based on real cases.

ADVANTAGES OF THIS MODULE

- Have an in-depth understanding of the ECU to be more efficient in ECU checks and troubleshooting.

YOUR CUSTOMER PORTAL:
tools.safran-helicopter-engines.com



> EXPERT COURSES • FOR MAXIMUM PROFICIENCY IN SPECIFIC TASKS

Duration

3 days (18 hours)

Participants

6 maximum

Public

1st line qualified aeronautical technicians

Price

Available for ARRIEL 2B1/2D/2S1/2S2.

Other versions under request.

ON-SITE SCHEDULED INSPECTIONS SUPPORT **NEW**

OBJECTIVES:

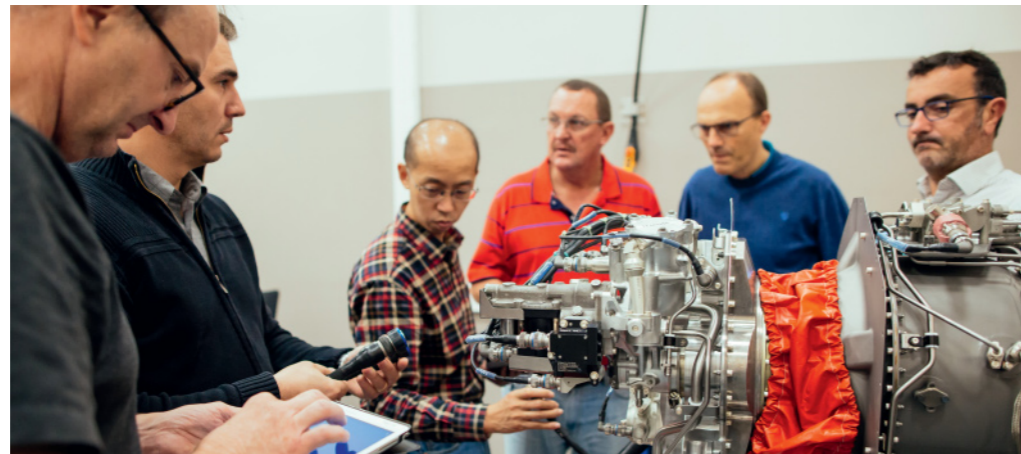
- Maintain the skills acquired during 1st line maintenance training.
- Prepare for an upcoming periodic inspection.

COURSE CONTENTS:

- Refresh knowledge on the principles of scheduled inspections.
- Carry out the preventive maintenance tasks defined in the Maintenance Manual for a specific engine version (except those tasks involving a ground run).

ADVANTAGES OF THIS MODULE

- Maintain and improve the skills acquired during the initial training course.
- Obtain customised training (content adapted to trainees' specific needs).



> EXPERT COURSES • FOR MAXIMUM PROFICIENCY IN SPECIFIC TASKS

Duration

2 days (12 hours)

Participants

7 maximum

Public

Pilots

Price

Contact us

FLY YOUR ENGINE TOO (pilot specific engine course)

OBJECTIVES:

- Know the basic principles of the engine and its systems.
- Understand engine safety and reliability.
- Fly your engine efficiently and economically.
- React correctly in the event of an engine incident.

COURSE CONTENTS:

- Presentation of engines and systems.
- Monitoring system messages in flight.
- Monitoring system messages when not in flight (troubleshooting).
- Specific ground procedures.
- Engine limitations.
- Examples of economical flying with your engine.

ADVANTAGES OF THIS MODULE

- Access to exclusive training developed for pilots to deal with their specific problems.



YOUR CUSTOMER PORTAL:
tools.safran-helicopter-engines.com



> EXPERT COURSES • FOR MAXIMUM PROFICIENCY IN SPECIFIC TASKS

Duration

2 days (12 hours)

Participants

3 to 4

Public

1st line qualified aeronautical technicians on engine with DECU/EECU

Price

Contact us

DECU/EECU DATA DOWNLOADING AND ANALYSIS

Electronic Engine Control Unit

OBJECTIVES:

- Learn how to use maintenance EECU tools.
- Be able to perform maintenance tasks autonomously.
- Be able to identify the data useful for troubleshooting.

COURSE CONTENTS:

- Extraction of data recorded in EECU.
- Updating of data such as counters, conformation values, maintenance flag.
- Making links between cockpit data, DECU/EECU data and the Troubleshooting Book.



> EXPERT COURSES • FOR MAXIMUM PROFICIENCY IN SPECIFIC TASKS

Duration

2 days (12 hours)

Participants

3 to 4

Public

1st line qualified aeronautical technicians on engine with EDR

Price

Contact us

EDR DATA READING

Engine Data Recorder

OBJECTIVES:

- Learn how to use EECU/EDR maintenance tools.
- Be able to perform EECU/EDR maintenance tasks autonomously.
- Be able to identify the data useful for troubleshooting.

COURSE CONTENTS:

- Extraction of data recorded in EECU or EDR.
- Updating of data such as counters, conformation values, maintenance flag.
- Making links between cockpit data, EECU/EDR data and the Troubleshooting Book.



> EXPERT COURSES • FOR MAXIMUM PROFICIENCY IN SPECIFIC TASKS

Duration

1 to 2 days
(6 to 12 hours)

Participants

8 maximum

Public

1st line qualified
aeronautical
technicians

Price

Contact us

VIBRATION CHECKS

4 available courses

OBJECTIVES:

- Acquire a basic knowledge of vibration checks.
- Learn how to use stand-alone overall-level vibration meters (B&K 2513 / B&K 3656-A).
- Learn how to use stand-alone overall-level + filtered-level vibration meters (SEMIA SYNTHAM 2000.4, SEMIA S5000 / SYNTHAM 5000 / B&K 3649).
- Learn how to use on-board overall-level + filtered-level vibration meters (M'ARMS).

COURSE CONTENTS:

- Presentation and operation of tools.
- Installation and use of vibration meters on aircraft (or test bench).
- Downloading and sending of data to Safran Helicopter Engines with B&K BZ-5503 software (provided with B&K 3656-A vibration meter).
- Trouble-shooting and case study.

YOUR CUSTOMER PORTAL:
tools.safran-helicopter-engines.com

> SPECIFIC TRAINING ON-DEMAND

For any queries about training designed specifically to meet your needs, please contact us for a personalised analysis.



FREQUENTLY ASKED QUESTIONS

> How do I create my training project?

- Identify your specific training project needs.
- Check our range of training courses (by reading through the catalogue, either the paper version or online, on your Customer Portal).
- Identify which type of training course is right for your specific needs.
- If none are suitable for you, make a request to your local Safran Helicopter Engines Academy.

> How much will this training project cost me?

- Request the information from your Safran Helicopter Engines Academy Centre.
- You will need to provide the following information:
 - The engine version and type of course you require.
 - The language of the training course.
 - The desired start and finish dates of the course.
 - Your contact details.
- Or you can also make this request online via the Customer Portal website.

> How do I sign up?

- By filling in a pre-registration form on your Customer Portal.
- By fax, email, telephone or post addressed to your local Safran Helicopter Engines Academy Centre, with the following information:
 - The engine version and type of course you require.
 - The language of the training course.
 - The desired start and finish dates of the course.
 - Your contact details.

> What do I need to do to prepare for the training course?

- Follow the e-learning modules (available on your Customer Portal).
- Read the “notifications to attend” sent to you, in which you will find the following information:
 - Date and location of the training course.
 - A site map of the Safran Helicopter Engines Academy Centre.
 - General organisation of the course (arrival, transport, meals).

> Will Safran Helicopter Engines offer support after the training course?

- The Field Representatives network is available 24/7 to answer any questions you may have or help you find a solution to your issue.

> How can I provide training to give several employees the same skill-set?

- Request an estimate from your local Safran Helicopter Engines Academy Centre for an on-site training course.

> Why do I need to have a Customer Portal account before attending this course?

- To have your certificate at the end of the course.
- To benefit from the dedicated on-line services that will help you stay informed (Service Bulletins, e-learning...).



MANDATORY PREREQUISITES TO ATTEND A COURSE

To be enrolled on a training course, all trainees must have an active Customer Portal account with their personal information updated.

Trainees who do not have an active Customer Portal account must create one by logging on to tools.safran-helicopter-engines.com

Note: The “Date of birth”, “Place of birth” and “Country of birth” fields must be completed in the Customer Portal user account as this information is required to automatically generate the different training documents.

Please indicate in the “Comments” field that you will be attending a training course to accelerate the Customer Portal account validation process.

> Where can I find the contact details of the Training Centres?

- Search “Your contacts” section on your Customer Portal.

NOTES

A series of horizontal dotted lines for taking notes.

THE SAFRAN HELICOPTER ENGINES ACADEMY NETWORK

 Safran Helicopter Engines **Academy**



Wherever you are, we're just round the corner:
tools.safran-helicopter-engines.com