

**POWERED
BY TRUST**

Academy
Safran Helicopter Engines

**ENGINE
TRAINING**
CATALOGUE

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 : Free training under the SBH® contract (Support By the Hour)

 : Approved Type Training

Academy

Safran Helicopter Engines

Our mission statement

"Be the reference training brand striving for aviation safety and Customer satisfaction"

The Academy team and our worldwide network are proud to present our new engine training catalogue.

In addition to our approved training courses, all our customers operating under SBH® contracts now have free access, included in their contract, to a range of value-added training courses.

To find out how to register, please contact one of our training centres in the **Contact us** section of this catalogue.

We hope you enjoy browsing this catalogue.

Pierre Beney
Safran Helicopter Engines Academy Manager

Your clearance for take-off

KEY FIGURES

 **17 training centres worldwide**
(Safran sites, affiliated centres and partners)

 **31 instructors**
on every continent

 **600 training sessions**
per year

 **2,800 trainees**
per year

 **14,000 training hours**
per year

 **98% satisfied customers**

 **No. 1 in Vertical magazine's survey**
for the quality of training provided to our operator customers
for the 7th year running

OUR TRAINING NETWORK





In accordance with the applicable regulations, our approved training courses culminate in a theoretical examination combined with a practical assessment, and result in the issuing of a certificate of recognition.



You can find our range of engines clicking on <https://medialibrary.safran-group.com/Photos/media/474344>

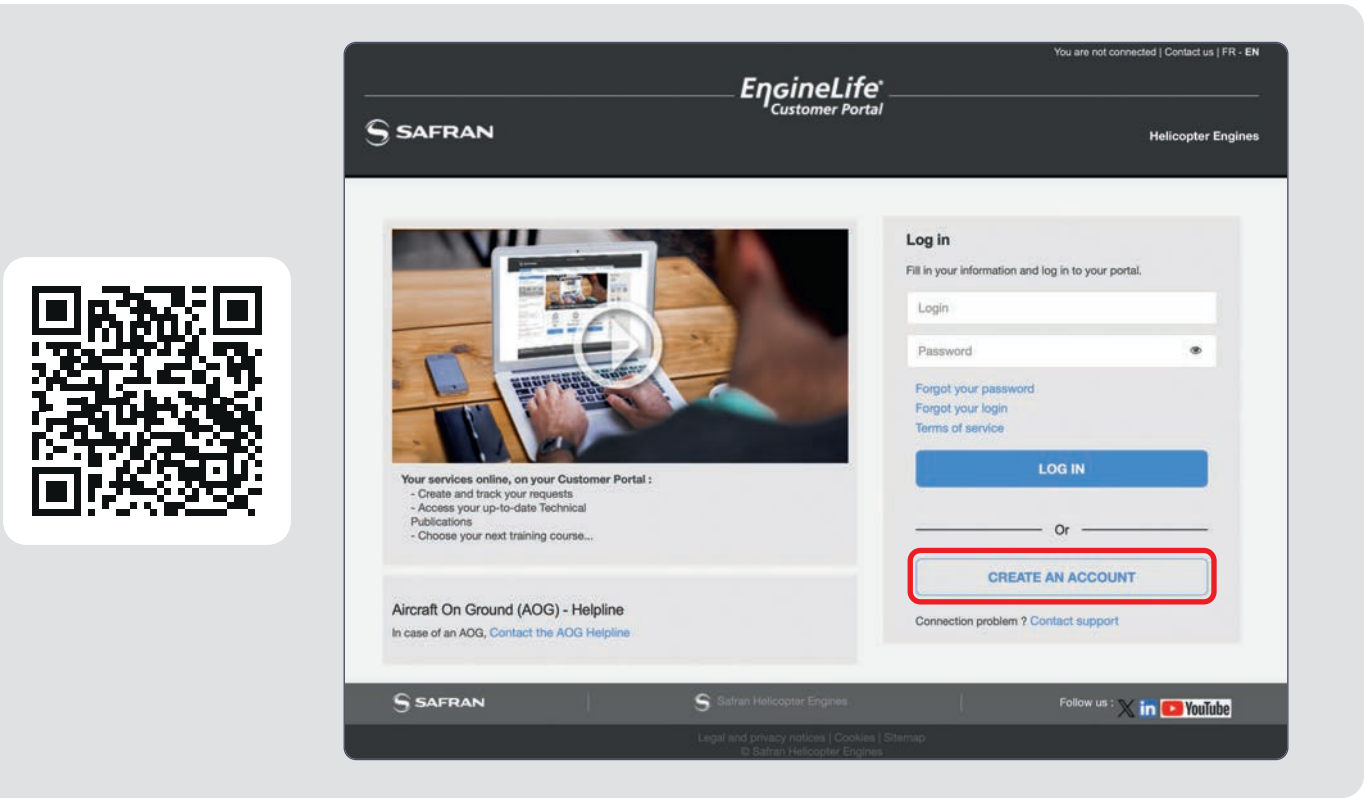


TRAINING PREREQUISITES

EngineLife® Customer Portal account

To enrol on a training course, each trainee must have an account on the EngineLife® Customer Portal with up-to-date personal information.

To create an account, simply go to the website <https://tools.safran-helicopter-engines.com/pg/en/home> and click on **Create an account**. In order to obtain a certificate of recognition for training, the **Date of birth**, **Place of birth** and **Country of birth** fields must be filled in.



Prior technical knowledge

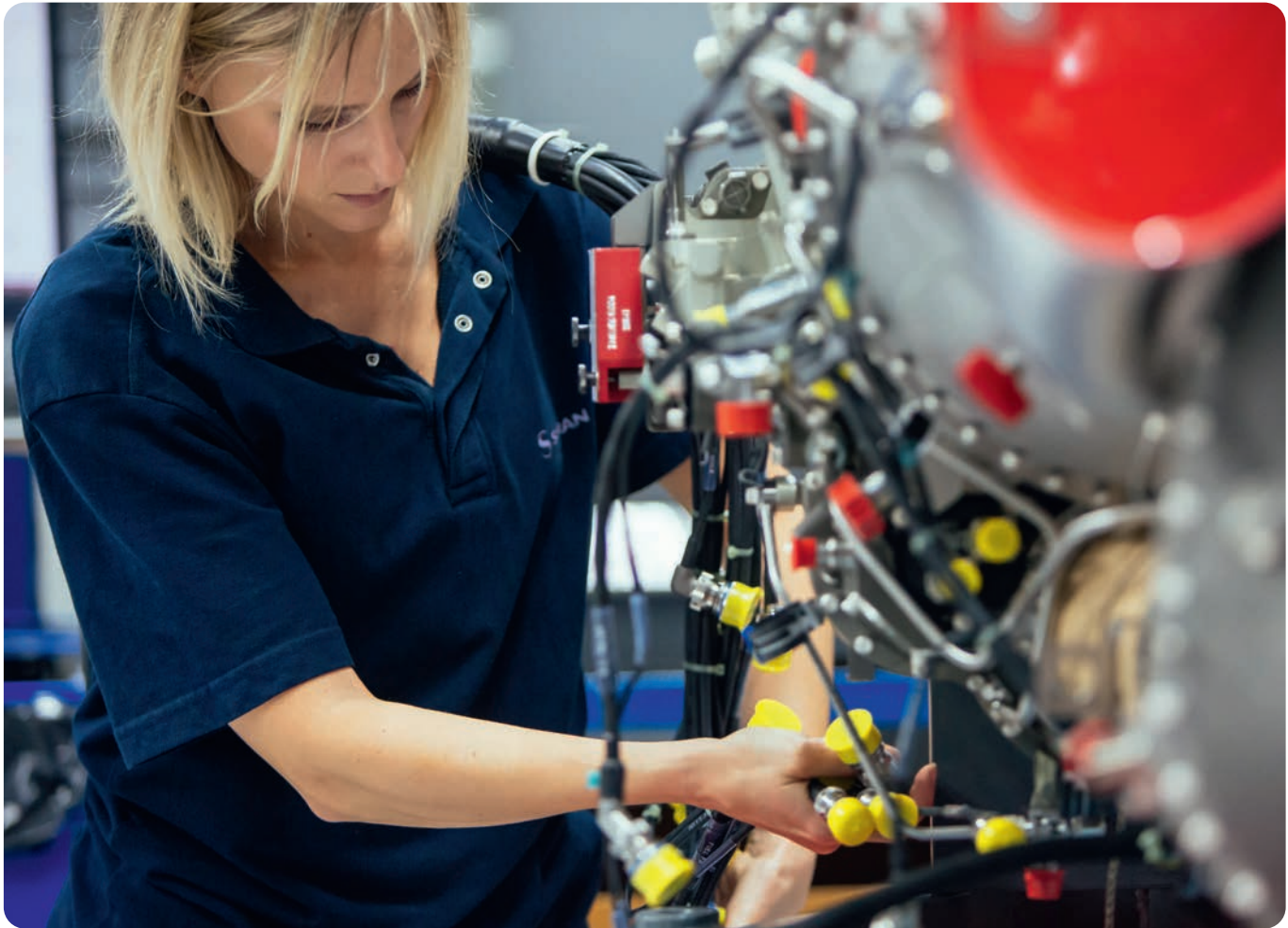
Some courses are subject to prerequisites. Please refer to the **Specific requirements** section of each training course information sheet.

Courses taught in English

Trainees must have a sufficient level of English to fully understand the training provided by the instructor. They must therefore be able to read, write and speak English using technical aeronautical vocabulary.

If necessary, an interpreter can be used during the course. In this case, the course duration will be extended.

If you have any questions, please contact the training centre in your geographic area.



FUNDAMENTALS FOR AVIATION MECHANICS



DURATION

5 days (30 hours)

TYPE

Face-to-face course

PARTICIPANTS

6 maximum

OBJECTIVES

- Be familiar with:
 - The basic techniques for tightening and locking threaded parts
 - The different sealing technologies used on our engines
 - The different adhesives and their applications, and understand the principle of polymerisation
 - The electrical bonding of engines and acquire the concepts of electrical resistance and insulation
- Be familiar with specific technologies
- Know the best practices and the rules for applying standard practices
- Ensure aviation safety on a day-to-day basis

COURSE CONTENTS

- Introduction to basic concepts:
 - Tightening and locking of threaded parts
 - Static and dynamic seals
 - Bonding: basic rules, key points of assembly by bonding
 - Electrical insulation and bonding checks
- Practical work
- Presentation and application of best practices based on the reference documentation

SPECIFIC REQUIREMENTS

- PPE required for practical workshop exercises in accordance with local regulations
- Free training under SBH® contracts according to contractual conditions

STORAGE AND CONDITIONING OF ENGINES, MODULES AND ACCESSORIES

DURATION

1 day (7 hours)

TYPE

Face-to-face course

PARTICIPANTS

6 maximum

OBJECTIVES

- Know, and be able to identify and use:
 - The types of conditioning used for engines, modules and accessories
 - The consumables authorised for conditioning operations
 - The appropriate handling equipment and lifting tools
 - The documents to be completed
 - The reference documents to be applied by the various parties involved
- Know how to condition engines, modules and accessories on and off airframes in accordance with the maintenance reference documentation

COURSE CONTENTS

- Presentation of types of conditioning and constraints to be taken into account
- Definition of the scope of application
- Presentation of different storage situations
- Explanation of storage time limits
- Identifying and carrying out storage tasks

SPECIFIC REQUIREMENTS

- PPE required for practical workshop exercises in accordance with local regulations

FAMILIARISATION (PER ENGINE VARIANT)

DURATION

2 days (12 hours)

TYPE

Face-to-face course

PARTICIPANTS

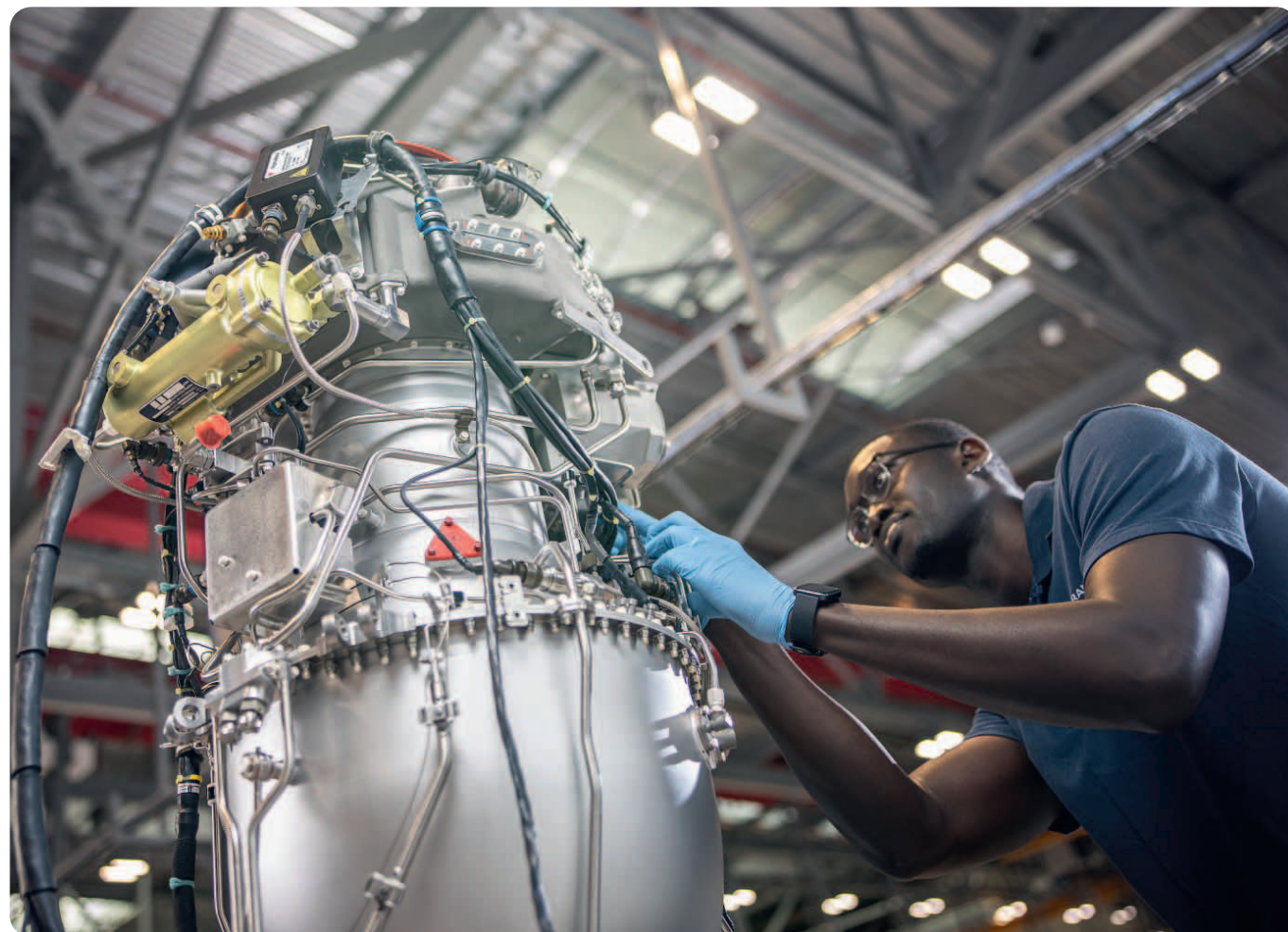
10 maximum

OBJECTIVES

- Be familiar with the engine's architecture and operating principle
- Know how to identify the main components of the engine and its systems
- Know how to identify and locate the main engine accessories and equipment
- Be familiar with the main principles of maintenance and the associated documentation

COURSE CONTENTS

- Engine overview
- Explanation of engine operation
- Presentation of systems and their main components
- Presentation of the maintenance principle



TYPE TRAINING COURSES

1ST LINE MAINTENANCE - INITIAL (PER ENGINE VARIANT)



DURATION

5 days (30 hours)

TYPE

Face-to-face course

PARTICIPANTS

10 maximum

OBJECTIVES

- Be familiar with the engine and its systems
- Know how to identify and locate the engine components
- Be able to use the engine documentation
- Be able to carry out 1st line maintenance tasks and troubleshooting procedures in accordance with the Maintenance Manual and within a context of aviation safety

COURSE CONTENTS

- Engine overview (performance, characteristics and limitations)
- Operation of the engine, its systems and its components
- Maintenance principle and practical work (scheduled or unscheduled maintenance tasks: removal / inspection / installation of engine accessories and equipment)
- Presentation of the engine installation and identification of its interfaces with the airframe
- Troubleshooting exercises (practical examples)
- Practical work evaluation and theoretical exam leading to certification

SPECIFIC REQUIREMENTS

- PPE required for practical workshop exercises in accordance with local regulations

2ND LINE MAINTENANCE (PER ENGINE TYPE)



DURATION

2 to 4 days
(12 to 24 hours
depending on
engine type)

TYPE

Face-to-face course

PARTICIPANTS

5 maximum

OBJECTIVES

- Acquire the knowledge and skills needed to carry out 2nd line maintenance tasks
- Maintain, improve and supplement the knowledge acquired during 1st line maintenance training
- Be able to carry out 2nd line maintenance tasks in accordance with the Maintenance Manual and within a context of aviation safety

COURSE CONTENTS

- Introduction to 2nd line maintenance
- Reminder of 1st line maintenance principles, engine architecture and engine systems
- Carrying out 2nd line maintenance tasks according to the Maintenance Manual (e.g. removal / inspection / installation of engine modules)

SPECIFIC REQUIREMENTS

- Prerequisites:
 - must have completed the "1st line maintenance - Initial" training course for at least one of the engine variants concerned
 - must hold a valid authorisation to use lifting equipment
- PPE required for practical workshop exercises in accordance with local regulations

3RD LINE MAINTENANCE (PER ENGINE TYPE)

DURATION 3 days to 2 weeks (18 to 60 hours depending on the Maintenance Technical Instructions performed) TYPE Face-to-face course PARTICIPANTS 3 maximum	OBJECTIVES - Acquire the knowledge and skills needed to carry out 3rd line maintenance tasks - Maintain, improve and supplement the knowledge acquired during 1st and 2nd line maintenance training - Be able to carry out 3rd line maintenance tasks in accordance with the Maintenance Technical Instructions or Deep Maintenance Manual, and within a context of aviation safety COURSE CONTENTS - Introduction to 3rd line maintenance - Carrying out 3rd line maintenance tasks in accordance with the Maintenance Technical Instructions or Deep Maintenance Manual (e.g. removal / inspection / installation of internal components of engine modules) SPECIFIC REQUIREMENTS - Prerequisites: - must have completed the "1st line maintenance - Initial" and "2nd line maintenance" training courses for the engine type concerned - must hold a valid authorisation to use lifting equipment - PPE required for practical workshop exercises in accordance with local regulations - The certificate of recognition issued is limited in time and subject to renewal
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REFRESHER AND TROUBLESHOOTING SPECIALISATION
(PER ENGINE VARIANT)



DURATION 2 or 3 days (12 or 18 hours depending on engine variant) TYPE Face-to-face course PARTICIPANTS 6 maximum	OBJECTIVES - Reinforce the knowledge acquired during the 1st line maintenance course in order to improve efficiency, particularly when performing corrective maintenance tasks - Be familiar with and know how to apply a troubleshooting method COURSE CONTENTS "Refresher" section: - Revision of the main characteristics of the engine and its systems - Reminder of the displays and indications provided by the helicopter "Troubleshooting specialisation" section: - Broadening of technical knowledge - Presentation of a troubleshooting methodology - Practical exercises concerning: Particles - Failure codes - Engine power checks - Vibrations - Miscellaneous failures SPECIFIC REQUIREMENTS - Prerequisite: must have completed the "1st line maintenance - Initial" training course for the engine variant concerned - PPE required for practical workshop exercises in accordance with local regulations - Free training under SBH[®] contracts according to contractual conditions For ARRIEL 2B-2B1-2D engine variants only, this training course is entitled "Difference, Refresher and Troubleshooting Specialisation" and also includes an explanation of the main differences between the 2B-2B1 and 2D engine variants
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ADVANCED BORESCOPE INSPECTION (PER ENGINE TYPE)



DURATION 2 or 3 days (12 or 18 hours depending on engine type) TYPE Face-to-face course PARTICIPANTS 6 maximum	OBJECTIVES - Broaden knowledge and skills relating to borescope inspections - Know how to analyse, interpret, record and monitor changes in findings - Improve proficiency in performing the borescope inspection tasks defined in the Maintenance Manual COURSE CONTENTS - Introduction to borescope inspection - Description and operation of the different types of borescopes - Borescope selection criteria - Practical recommendations and human factors - Identification of damage - Damage evaluation - Recording and monitoring damage - Reminder of engine architecture - Performing the borescope inspection tasks defined in the Maintenance Manual SPECIFIC REQUIREMENTS - Prerequisite: must have completed the "1st line maintenance - Initial" training course for at least one of the engine variants concerned - PPE required for practical workshop exercises in accordance with local regulations - Free training under SBH[®] contracts according to contractual conditions
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SCHEDULED INSPECTION SPECIALISATION
(PER ENGINE VARIANT)



DURATION 2 or 3 days (12 or 18 hours depending on engine variant) TYPE Face-to-face course PARTICIPANTS 6 maximum	OBJECTIVES - Reinforce the knowledge acquired during the 1st line maintenance course: - Identification of main engine components - Knowledge of the different engine systems and their operation - Prepare for an upcoming scheduled inspection COURSE CONTENTS - Principles of scheduled inspections - Principles of 1st line maintenance - Revision of engine architecture and systems - Performing the scheduled inspection tasks in accordance with the Maintenance Manual SPECIFIC REQUIREMENTS - Prerequisite: must have completed the "1st line maintenance - Initial" training course for the engine variant concerned - PPE required for practical workshop exercises in accordance with local regulations - Free training under SBH[®] contracts according to contractual conditions
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SPECIFIC COURSES

PILOT-FOCUSED ENGINE COURSE



DURATION

2 days (12 hours)

TYPE

Face-to-face course

PARTICIPANTS

6 maximum

OBJECTIVES

- Learn more about the engine that powers the helicopter
- Understand the different engine limitations in the Flight Manual
- Understand the engine-related emergency procedures in the Flight Manual
- Understand the engine-related normal procedures in the Flight Manual
- Understand engine performance calculations
- Know how to optimise engine operation (washing, consumption of hours/cycles/creep-damage, etc.)

COURSE CONTENTS

- Presentation of the engine
- Presentation and discussion of:
 - Engine limitations in the Flight Manual
 - Engine-related emergency procedures in the Flight Manual
 - Engine-related normal procedures in the Flight Manual
- Presentation of engine performance calculations
- Advice on engine operation (washing, consumption of hours/cycles/creep-damage, etc.)

SPECIFIC REQUIREMENTS

- Recommendations:
 - be a pilot or pilot-under-training on a helicopter powered by the engine variant concerned
 - be a member of flight crew on a helicopter powered by the engine variant concerned
- Free training under SBH® contracts according to contractual conditions

ECU AND EDR MAINTENANCE OPERATIONS AND DATA ANALYSIS

DURATION

1 day (between 4 and 8 hours depending on engine type (ARRIEL 2, ARRIUS 2 and/or MAKILA 2))

TYPE

Face-to-face course

PARTICIPANTS

4 maximum

OBJECTIVES

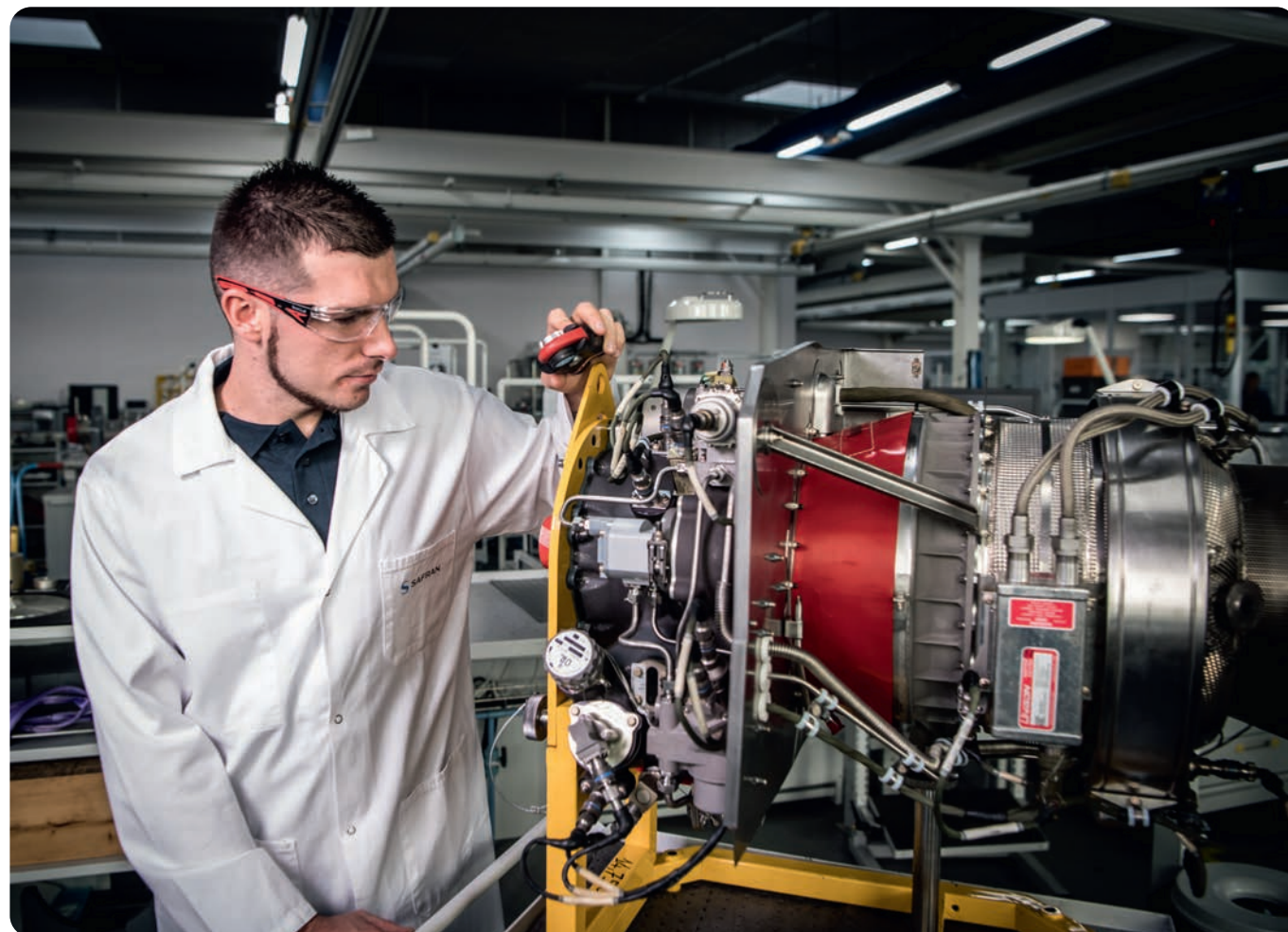
- Be able to extract data (DUMP) from ECU and EDR memories
- Know how to analyse extracted data for troubleshooting purposes

COURSE CONTENTS

- ECU & control system overview
- Extraction of ECU and EDR data using the appropriate maintenance tools (POLYBOX + maintenance harnesses + TL software)
- Data analysis using a PC and TL software

SPECIFIC REQUIREMENTS

- Training given on helicopter and/or in a workshop equipped with an ODIAG diagnostic tool or ECU test bay and a PC with administrator rights
- An ECU and/or EDR must be made available
- PPE required for practical workshop exercises in accordance with local regulations



AUXILIARY POWER UNIT COURSES

OPERATION AND 1ST LINE MAINTENANCE (PER ENGINE VARIANT)

DURATION

2 days (14 hours)

TYPE

Face-to-face course

PARTICIPANTS

8 maximum

OBJECTIVES

- Be familiar with the engine's operation, systems, interfaces and installation
- Know how to locate and identify engine components and associate their functions with them
- Understand the maintenance concepts and the principles of troubleshooting
- Be able to carry out 1st line maintenance procedures

COURSE CONTENTS

Theory section:

- General presentation of the engine (performance, characteristics)
- Presentation of the engine's interfaces and its installation on its platform
- Functional description of the engine, its systems and its components
- Description of maintenance principles and concepts
- Use of technical maintenance documentation, failure detection, troubleshooting procedures

Practical work in the workshop:

- Locating components on the engine
- Performing 1st line maintenance procedures (removal / installation of LRUs)
- Checks and inspections
- Troubleshooting exercises in accordance with Maintenance Manual procedures

This course is available for the Saphir 20 model 095, the Saphir 100 model 329, and the eAPU60 model 342

OPERATION AND 1ST + 2ND LINE MAINTENANCE (PER ENGINE VARIANT)

DURATION

4 days (28 hours)

TYPE

Face-to-face course

PARTICIPANTS

6 maximum

OBJECTIVES

- Be familiar with the engine's operation, systems, interfaces and installation
- Know how to locate and identify engine components and associate their functions with them
- Understand the maintenance concepts and the principles of troubleshooting
- Be able to carry out 1st line maintenance procedures

COURSE CONTENTS

Theory section:

- General presentation of the engine (performance, characteristics)
- Presentation of the engine's interfaces and its installation on its platform
- Functional description of the engine, its systems and its components
- Description of maintenance principles and concepts
- Use of technical maintenance documentation, failure detection, troubleshooting procedures

Practical work in the workshop:

- Locating components on the engine
- Performing 1st and 2nd line maintenance procedures (removal/installation of LRUs and SRUs)
- Checks of hot sections, inspections and borescope inspections
- Troubleshooting exercises in accordance with Maintenance Manual procedures

This course is available for the Saphir 20 model 095, the Saphir 100 model 329, and the eAPU60 model 342



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