CIVIL AVIATION DIRECTORATE
AIRWORTHINESS INSPECTORATE

NEW TRAINING METHODS AND TRAINING TECHNOLOGIES FOR AIRCRAFT MAINTENANCE TRAINING

SIGNIFICANT CHANGES

	PRIOR TO JUNE 2020	CURRENTLY
THEORETICAL TRAINING	CLASSROOM	CLASSROOM / VIRTUAL CLASSROOM
KNOWLEDGE EXAMINATIONS	CLASSROOM WITH INVIGILATOR PRESENT	CLASSROOM WITH INVIGILATOR PRESENT
PRACTICAL TRAINING	CLASSROOM + PRACTICAL TRAINING ON REAL AIRCRAFT	CLASSROOM + PRACTICAL TRAINING ON REAL OR VIRTUAL AIRCRAFT
PRACTICAL ASSESSMENTS	PRACTICAL TASKS IN CLASSROOM AND ON REAL AIRCRAFT	PRACTICAL TASKS IN CLASSROOM AND ON REAL OR VIRTUAL AIRCRAFT

TM CAD Policy
on distance learning training

- AMC 147.A130(a) has recently been amended by the issue of ['Annex IV to ED Decision 2020/002/R Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Annex IV (Part-147) to Commission Regulation (EU) No 1321/2014 Issue 2 — Amendment 2'](#) issued on 13th March 2020.

Although from the wording it appears that the AMC 147.A.130(a) apply to Part-66 basic training, the concepts and definitions remain the same and are applicable to aircraft and engine type training.

- EASA document "**Guidance for allowing virtual classroom instruction and distance learning**" providing guidelines in relation to the Covid-19 pandemic has been revised and issued on 18th August 2020.

- **The Airworthiness Inspectorate has issued Working Instructions Bulletin 02/2020 now at revision 2 dated 14 September 2020**

AVAILABLE FOR OUR MAINTENANCE TRAINING ORGANISATIONS on TM CAD CENTRIK PLATFORM

Virtual Classroom Instruction

mitigation measures and main issues
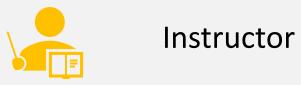
Level of communication

Equipment and tools

Instructor

New Training Methods & Training Technologies for Aircraft Maintenance Training

TABLE 1 : TRAINING TOOLS

	Training Tools	Description
1	Slideshow presentation	A structured presentation of slides
2	Manuals	Comprehensive and controlled publication of a particular topic.
3	Computer (Desktop PC, laptop, etc)	An electronic processing device that can hold and display information in various media.
4	Mobile devices (such as, but not limited to, tablets, smart phones, etc.)	A mobile electronic processing device that can hold and display information in various media.
5	Videos	Electronic media for broadcasting moving visual images.
6	MSTD — Maintenance simulation training device	A training device that is intended to be used in maintenance training, examination, and/or assessment for a component, system or entire aircraft. The MSTD may consist of hardware and software elements.
7	Mock-up	A scaled or full-size replica of a component, system or entire aircraft that preserves (i.e. is an exact replica of) the geometrical, operational or functional characteristics of the real component, system or entire aircraft for which maintenance training is delivered with the use of such a replica.
8	Virtual reality	A computer-generated three-dimensional (3D) environment which can be explored and possibly interacted with.

TABLE 1 : TRAINING TOOLS
(cont)

	Training Tools	Description
9	MTD — Maintenance training device	Maintenance training device is any training device other than an MSTD used for maintenance training and/or examination and/or assessment. It may include mock-ups.
10	Real aircraft	A suitable aircraft whose condition allows teaching a selection of maintenance tasks that are representative of the particular aircraft or of the aircraft category.
11	Aircraft component	A suitable aircraft component used to teach specific maintenance tasks off-the-wing.
12	Augmented reality	An enhancement (modification, enrichment, alteration or manipulation) of one's current perception of reality elements of a physical, real-world environment following user's inputs picked up by sensors transferred to rapid streaming computer images. By contrast, virtual reality replaces the real world with a simulated one.
13	Embedded training	A maintenance training function that is originally integrated into the aircraft component's design (i.e. a centralised fault display system).
14	Classroom	A physical, appropriate location where learning takes place.
15	**Virtual Classroom**	**A simulated, not physical, location where synchronous learning takes place.**
16	**Virtual Aircraft**	**A simulated, not physical, aircraft that may be used in theoretical training, practical training, examination or assessment.**

TABLE 2 : TRAINING METHODS

TRAINING METHOD	DESCRIPTION	INSTRUCTOR CENTRED (1)	STUDENT CENTRED (2)	BLENDED TRAINING (3)
Assisted learning (mentoring)	Assisted learning or mentorship represents an ongoing, close relationship of dialogue and learning between an experienced /knowledgeable instructor and a less experienced/knowledgeable student in order to develop experience/knowledge of students.	X	X	X
Computer-based training (CBT)	CBT is any interactive means of structured training using a computer to deliver a content.	X	X	X
Demonstration	A method of teaching by example rather than explanation.	X		X
Distance learning asynchronous	Distance learning reflects training situations in which instructors and students are physically separated. It is asynchronous if the teacher and the students do not interact at the same time.		X	X
Distance learning synchronous (DLS)	Distance learning reflects training situations in which instructors and students are physically separated. It is synchronous if the teacher and the students interact at the same time (real time).	X		X

TABLE 2 : TRAINING METHODS (cont.)

TRAINING METHOD	DESCRIPTION	INSTRUCTOR CENTRED (1)	STUDENT CENTRED (2)	BLENDED TRAINING (3)
e-learning	Training via a network or electronic means, with or without the support of instructors (e-tutors).	X	X	X
Lecturing (instructor-led/face to face	Practice of face-to-face delivery of training and learning material between an instructor and students, either individuals or groups.	X		X
Mobile learning (M-learning)	Any sort of learning that happens when the student is not at a fixed, predetermined location, using mobile technologies.	X	X	X
Multimedia-based training(4)	Any combined use of different training media.	X	X	X
Simulation	Any type of training that uses a simulator imitating a real-world process or system.	X	X	X
Web-based training (WBT)	Generic term for training or instruction delivered over the internet or an intranet using a web browser.	X	X	X

Example 1
TABLE 3 : COMBINATION OF TRAINING METHODS AND TOOLS AND THEIR USE
FOR DISTANCE LEARNING SYNCHRONOUS (DLS) IN A VIRTUAL CLASSROOM (15) or VITUAL AIRCRAFT (16)

TRAINING METHOD	TRAINING TOOLS	THEORETICAL ELEMENTS			PRACTICAL ELEMENTS	OJT	LEARNING OBJECTIVES		
See Table 2	See Table 1	Level 1	Level 2	Level 3			KNOWLEDGE	SKILLS	ATTITUDE
DLS	1, 2, 3, 4, 5, 8, 15, 16	X	X	X(1)	X(1)		X(1) Type Unlimited	X(1)	X(1) Only Type

(1) Limited suitability. It means that the respective training method may be used but with limited results, thus requiring the support of a complementary training method to fulfil the learning objectives.

Example 2
TABLE 3 : COMBINATION OF TRAINING METHODS AND TOOLS AND THEIR USE
FOR SIMULATION IN A VIRTUAL CLASSROOM (15) or VITUAL AIRCRAFT (16)

TRAINING METHOD	TRAINING TOOLS	THEORETICAL ELEMENTS			PRACTICAL ELEMENTS	OJT	LEARNING OBJECTIVES		
See Table 2	See Table 1	Level 1	Level 2	Level 3			KNOWLEDGE	SKILLS	ATTITUDE
Simulation	1, 3, 4, 6, 7, 8, 9, 10, 12, 14, 15(1), 16	X	X	X(1)	X		X	X	X Only Type

(1) Limited suitability : It means that the respective training method may be used but with limited results, thus requiring the support of a complementary training method to fulfil the learning objectives.

ANY QUESTIONS?

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