Aerodrome Safety

Roads, Vehicles & Equipment

22nd January 2024

ASDRVE_OSI_018

Version 2.0

Operational Safety Instruction

Aircraft Fixed Electrical Ground Power Operating Procedures and Conditions of Use

It is the responsibility of all employers to ensure that relevant OSIs are brought to the attention of their staff. However, individuals remain responsible for their own actions and those who are in any doubt should consult their Supervisor or Manager.

1. Introduction

1.1 Aircraft Fixed Electrical Ground Power (FEGP) is installed on most stands at Heathrow Airport, which is an environmentally friendly system using electricity provided by the National Grid. It is suitably modified for use on aircraft, thereby avoiding the need for on-site diesel generators or continuous running of aircraft Auxiliary Power Unit (APU).

1.2 The hierarchy of FEGP, Ground Power Unit (GPU) and APU usage at Heathrow Airport and the relevant procedures associated with GPU noise control as set out in ASEnv_OSI_061 Ground Noise at Heathrow – Approval, Control Process and Safety of Engine Ground Running must be observed and followed.

1.3 This Operational Safety Instruction (OSI) should be read in conjunction with the reference documents as stipulated therein.

1.4 This OSI has been fully reviewed. Therefore, no red bar is added at the side of the document to indicate where changes are made.

1.5 For pre-conditioned air rules and procedures at Heathrow Airport, please read ASEnv_OSI_055 Pre-conditioned Air Rules and Procedures for details.

1.6 ASGrOps_OSI_018 Aircraft Fixed Electrical Ground Power Operating Procedures and Conditions of Use v1.0 is hereby cancelled.

2. Definitions

Abbreviation	Description
AC	Alternating Current
AOT	Airside Occurrence Ticket
APU	Auxiliary Power Unit
FEGP	Fixed Electrical Ground Power
GPU	Ground Power Unit
HAL	Heathrow Airport Limited
Hz	Hertz
MARS	Multiple Aircraft Ramp System
MCA	Multi-Choice Apron
OSI	Operational Safety Instruction
PBB	Passenger Boarding Bridge
VDC	Voltage Direct Current

3. FEGP Equipment and Systems

3.1 HAL provides the following types of FEGP units to supply electrical power to the aircraft when it is parked with the APU switched off. The FEGP types provided may vary in different stands. For detailed operation procedures, please refer to the technical support information provided by HAL Airside Engineering. Enquiries should be made by telephone at 0208 745 6030.

3.1.1 Fixed cubicle cable carriers:

It is an apron-mounted mobile and multi-link device equipped with single-core flexible cables running down its entire length from the power supply point and terminating in the carrier receptacle (the bucket). The FEGP bucket incorporates a ‘Start/Stop’ push button, ‘400Hz Power Available’ and ‘Power On’ indicator lamps. On a double or triple-plug cable carrier, there are appropriate sets of buttons and indicator lamps for individual cable indication/operation.

3.1.2 Cable coils:

A PBB-mounted system is available on certain stands that are assigned for MARS or MCA operation to reduce ground-level obstruction. A control box mounted to the PBB bogie houses the power 'Start/Stop' and cable coil 'Up/In - Down/Out' drive push buttons, '400Hz Output On' and 'Common Error' indicator lamps.

3.1.3 28V VDC adaptors:

An electrical power converter is designed for use by smaller aircraft that run on 28V. It converts the output from the FEGP to a voltage that is suitable for certain types of aircraft.

3.2 The FEGP provides AC power for aircraft, at 115/200 volts, 400 Hz, three-phase supply with a 28 volts AC interlock safety circuit. Each unit has a single cable connection which will reach the forward part of an aircraft when it is in a parked position.

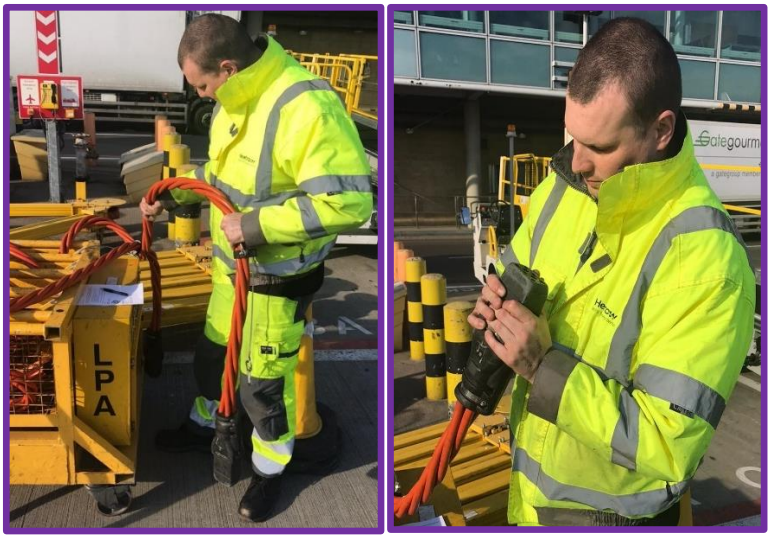
3.3 Both fixed cubicle cable carrier and cable coil systems are supplied with a cable restraining device (the lanyard) to take the weight of the cable. It must be used whilst the FEGP is connected to the aircraft. If the lanyard is found missing or faulty, please follow the fault reporting procedures as outlined in Section 7 of this OSI.

4. FEGP Operating Procedures

Some general rules and procedures associated with FEGP operations are covered in this section but are not exhaustive. Operators must also refer to the individual company training material, operating procedures and the technical support information provided by HAL Airside Engineering while operating the FEGP.

4.1 All companies must ensure that their operators are properly trained and competent to operate the FEGP according to Section 9 of this OSI.

4.2 Before using the FEGP, the operator must conduct a check to ensure serviceability, including visually inspecting the plug end (such as water ingress and exposed conductors), checking for signs of corrosion, overheating and pin damage as well as the protective sheathing for signs of wear and damage. All emergency buttons must also be checked and released before use.



4.3 If there is a fault message appearing in the FEGP system or a caution sign is fitted to indicate unserviceability, an alternative method should be used to provide ground power to the aircraft, such as GPU. In case a fault message is displayed, it must be reported to HAL Airside Engineering according to Section 7 of this OSI.

4.4 In the event that the aircraft's nose wheel is off the designated stopping position (either undershoot or overshoot), the FEGP cable coil can be used as long as the airbridge can safely reach the aircraft, without any undue strain on the cable.

4.5 Prior to connecting the FEGP, the operator must ensure that the aircraft has come to a complete stop with all engines and anti-collision lights switched off and secured by aircraft chocks unless the APU of the aircraft is unserviceable.

4.6 In the event that the aircraft's APU is unserviceable, a single engine is required to maintain the necessary electrical power supply. The operator must ensure that the aircraft has come to a complete stop and sufficient communication has been developed with the flight crews to engage the parking brake before connecting the FEGP to the aircraft. The operating company must provide sufficient training to their staff and have an operating procedure and a risk assessment in place for such an operation.

4.7 In addition to the 4.6 above, the operating company must appoint a specifically trained ramp supervisor who has the overall responsibility and ensure all personnel present in the vicinity are aware of such operation.

4.8 In case an emergency situation occurs while the FEGP is being used, such as a spark coming out from the lead, the emergency stop button must be pressed to isolate the FEGP in the first instance

4.9 The FEGP cable coil plug is fitted with an interlock device which prevents the PBB from being retracted whilst the FEGP is powered on. However, it is the responsibility of the PBB operator to visually check that the FEGP cable coil plug has been disconnected and retracted prior to the removal of PBB, and not to rely solely on the interlock device.

4.10 Before disconnecting from the aircraft, the FEGP must be completely switched off**.** Failure to do this could cause electrical arching that poses a significant safety hazard to personnel and places the FEGP into fault.

4.11 After disconnection, all FEGP cables must be properly stowed, and the FEGP unit must be fully retracted into the designated equipment area ('box') with all-wheel brakes applied to prevent causing safety hazards to other airport users. The FEGP must **not** be left extended on the stand, as shown below:

5. Use of GPU provided by External Supplier

5.1 All companies must ensure that their operators are properly trained and competent to operate the type of GPU they are operating.

5.2 All GPUs must be operated according to the individual company's standard operating and/or safety procedures, including but not limited to pre-use checks and fault handling. Any manufacturer's safety procedures and/or recommendations must also be observed and followed.

5.3 The operator must always follow the hierarchy of FEGP, GPU and APU usage at Heathrow Airport and the relevant procedures associated with GPU standards as set out in ASEnv_OSI_061 Ground Noise at Heathrow – Approval, Control Process and Safety of Engine Ground Running.

5.4 For safety reasons, extra caution should be taken for the use of GPU while aircraft refuelling is in progress. For details, please refer to OSI ASGrOps_OSI_019_Fuelling of Aircraft.

5.5 Should any company intend to bring a GPU airside, the requirements for GPU as detailed in the OSI ASDRVE_OSI_008 Vehicles and Equipment Airside – Requirements must be observed.

6. General Safety Precautions

6.1 To ensure the safety of the operator as well as the aircraft, and to maintain the equipment in good operational order, the following rules **must be strictly adhered to**:

6.1.1 Any part of the FEGP, including fixed cubicle cable carriers, cable coil and the 28V VDC adaptors, must not be used to gain elevated access. These are not designed to be used as a platform and do not have the safe load-bearing capacity for this function.

6.1.2 The FEGP lead must not be unplugged whilst it is being switched on and supplying electrical power to the aircraft. Failure to comply with this could cause electrical arching that poses a significant safety hazard to personnel and places the FEGP unit at fault.

6.1.3 The FEGP lead must be stowed appropriately. It must not be hung outside of the fixed cubicle cable carriers, cable coil and the 28V VDC adaptors as this will result in them being damaged, which could subsequently expose the electrical conductors.

6.1.4 All FEGP equipment must not be left extended across the aircraft stand whilst not in use. It must be fully retracted and stowed in its designated marked location to keep it safe from collisions.

6.1.5 The FEGP plug must not be dragged over the ground under any circumstance and contact between the FEGP cable and the ground surface should be kept to a minimum to prevent damage.

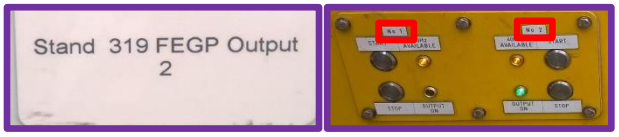
6.1.6 The plug head of the FEGP cable retriever must not be anchored on any point other than where it is intended. If the plugs are positioned over the PBB cable loops, this will cause the cables to stretch and the connections to fail which will take the FEGP and/or PBB out of service.

6.1.7 The operator must not use any FEGP lead that has an exposed electrical conductor. This must be reported to HAL via the fault reporting process as detailed in Section 7 of this OSI.

6.2 Misuse of the FEGP equipment may result in electrical shocking and/or system fault which could endanger personnel and damage aircraft systems. Failure to comply with the requirements as set out in this OSI will be subject to further actions taken by the HAL Airside Operations Department, such as the issuance of an Airside Occurrence Ticket (AOT).

7. Fault Reporting

7.1 In the event of a fault developing in the FEGP, the HAL Aircraft Operations Unit should be informed using phone number 0208 745 6033 or extension phone number 656033. In order to accurately identify the fault, the caller should provide the following information:

	**7.1.1** Stand number
	**7.1.2** Asset number (If available)
	**7.1.3** Lead output number

7.1.4 Error code/fault description displayed (if available)

7.1.5 Name and number of the person faulting the equipment. This will be passed on to the HAL Airside Engineering who may need to contact the person to obtain first-hand information.

7.1.6 Once the service request has been raised, a work order will be generated for HAL Airside Engineering to respond to the fault.

7.2 If the FEGP is found faulty and not able to be reset or repaired, HAL Airside Engineering will tie down the affected output cables to prevent them from being used. The unit will also be isolated from all sources of power supply with a caution sign fitted and the unit locked off as a safety measure.

7.3 Notwithstanding the above, HAL will not attempt to rectify any faults where cables are plugged into the aircraft due to the risk of damage to aircraft systems.

8. Conditions of Use

8.1 Attention is drawn to the liability and insurance provisions of the Condition of Use, Airside Operations Licence/Ground Operations Licence and the Heathrow Byelaws 2014, whichever is applicable.

8.2 Use of the HAL FEGP by an airline, aircraft operator, aircraft owner or handling agent shall constitute their prior acceptance of the conditions set out in this OSI.

8.3 Neither HAL, its servants nor its agents shall be liable for any loss or damage arising directly or indirectly from the unavailability of FEGP other than loss or damage which is solely attributable to wilful misconduct or negligence on the part of HAL, its servants or agents.

8.4 Neither HAL, its servants, nor its agents shall be liable for any loss or damage arising directly or indirectly from the provision or use of FEGP, other than loss or damage which is solely attributable to wilful misconduct or negligence on the part of HAL, its servants or agents.

8.5 The airline, aircraft operator, aircraft owner or handling agent shall indemnify HAL, and shall keep indemnified, HAL, its servants or agents against all actions, claims, proceedings and demands (including those of servants of HAL or of the airline, aircraft operator, aircraft owner or handling agent) in respect of any loss of or damage to property or for personal injury (including injury resulting in death) which may be made against HAL, its servants or agents, arising out of or in connection with the provision or use of the FEGP other than loss, damage or injury which is solely attributable to wilful misconduct or negligence on the part of HAL.

9. Training Requirements

9.1 All operators must be properly trained to operate the type of FEGP or GPU units that they are using. The airline or its handling agent must appoint a manager or supervisor who is competent to provide training in the safe use of the FEGP system to its staff.

9.2 The HAL Airside Engineering would provide technical support on FEGP operations at Heathrow Airport, enquiries should be directed to 0208 745 6030.

9.3 In addition to classroom training, an on-site practical demonstration and assessment shall be conducted to ensure the staff are competent.

9.4 The validity of the operator's qualification to operate FEGP or GPU shall only be valid for **a maximum of three years**. Before the operator is allowed to continue using the FEGP or GPU system, appropriate refresher training and assessment of the operator's competency must be completed and recorded.

9.5 Companies operating all types of FEGP or GPU at Heathrow Airport must maintain all training records (both initial and refresher training). HAL reserves the right to conduct audits on those training records at any time.

10. Enquiries

Any enquiries regarding this OSI should be addressed to the HAL Airside Engineering at 0208 745 6030.

11. Reference

11.1 ASDRVE_OSI_005 Vehicles and Equipment Airside – Operation.
11.2 ASDRVE_OSI_008 Vehicles and Equipment Airside – Requirements.
11.3 ASGrOps_OSI_019 Fuelling of Aircraft.
11.4 ASEnv_OSI_061 Ground Noise at Heathrow – Approval, Control Process and Safety of Engine Ground Running.

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Document Data

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Document History

Revision	Description of Change	Date
V1.0	Initial version	6th July 2012
V2.0	Full review of the document, including the following: • New section on FEGP operating procedures. • New section on general safety precautions. • Updates to FEGP Equipment and Systems, use of GPU, condition of use, fault reporting procedures and training requirements.	22nd January 2024