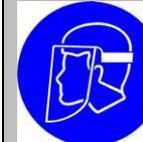
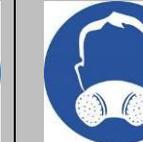
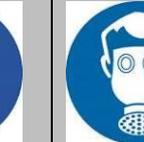


Standard Operating Procedure SOP-012	Revision 0
ELECTRICAL SAFETY (Inc. Energy Isolation-Process and Electrical)	

<b>1. Activity</b>	<b>Electrical Safety (Inc. Energy Isolation-Process and Electrical)</b>	
<b>2. Associated Risk and Environmental Impact Assessment</b>	RA-012 Electrical Safety	
<b>3. Control measures</b>		
1) Ensure you have <u>ALL PPE in proper working condition</u>	3) A supervisor is appointed to take responsibility for the whole operation, inform involved personnel and control SIMOPS (Simultaneous operations).	4) All emergency response equipment to be on site
2) Refer to SOP-010 LOTO and SP-027 Permit to Work		

4. PPE							
							
✓		✓					
<b>Helmet, EN 397, EN50365</b>	[specify type]	<b>Safety Goggles EN 166</b>	[specify type]	[specify type]	[specify type]	[specify type]	[specify type]
							<i>other</i>
	✓		✓	✓			
[specify type]	<b>Long sleeves coverall EN 340</b>	[specify type]	<b>Insulations gloves, EN 60903</b>	<b>Safety leather boots, EN ISO 20345 S5, S3</b>	[specify type]	[specify type]	[specify type]

5. Forms & Attachments
<a href="#">F01-17 Energy and Equipment Isolation Form</a>
<a href="#">F01-18 Isolation Permit</a>

6. Pre-job checks	
1) Equipment should be earthed to prevent electrocution.	4) Check Emergency arrangements.
2) Intervention to electrical appliances is strictly forbidden.	5) Supply suitable and sufficient lighting equipment if needed during power isolations
3) Ensure electrical equipment manual before using	6) Ensure there is an adequate communication system with involved personnel

## 7. Execution

- 1)** Only qualified person are allowed to work on or near exposed electrically energized parts.  
 All electrical energy sources must be locked out when any employee is exposed to direct or indirect contact with parts of fixed electrical equipment or circuits



### 2) Safe Practices

- Operators of electrical equipment, tools, systems, components, etc., should read and be familiar with the contents of the owner's manual and manufacturer's recommendations and precautions for electrical safety, including maintenance and service
- Do not disable or bypass any safety features such as ground fault circuit interrupters, interlocks, etc. Do not overload outlets
- Maintain three-feet of clearance in front of electrical breaker boxes, emergency shut-offs, and electrical throw switches at all times to facilitate access in the event of an emergency
- Re-locatable power taps, power strips, etc., should be used solely for low power applications and within the manufacturer guidelines for the device. Higher power items such as microwaves, coffeepots, heat guns, etc., should be plugged directly into a permanently installed outlet



### 3) Outlets and Fuses

- Electrical outlets that are outdoors or near sinks or other sources of water must be equipped with a ground fault interrupter. A ground fault outlet is easily identified by a "test" and "reset" button on the outlet between the plug receptacles. A ground fault circuit is more difficult to identify because it usually requires visual inspection of the circuit breaker.
- Make sure fuses are properly rated



#### 4) Equipment design, Approval and installation

- Equipment maintenance must be done by trained and knowledgeable personnel. If the equipment is a plug-in item, it should be unplugged prior to servicing. If it is hard-wired, or if the equipment has other sources of stored hazardous energy (i.e., pneumatic, hydraulic, etc.), appropriate Lockout/Tagout (LO/TO) procedures must be used prior to maintenance
- Do not use/energize non-classified equipment/tools in an electrically classified location. In general, do not use unclassified electrical tools or equipment around flammable liquids, solvents, adhesives, gases, or combustible dusts
- Make sure all electrical equipment is properly grounded. Grounding of plug-in tools or equipment is generally accomplished with a three-prong plug used in a three-prong outlet. Two-prong equipment does not provide a ground and can present a shock hazard to the user unless it is double insulated. Double insulated tools have the symbol 
- When using equipment on wet floors or near other sources of water, protection must be provided with a ground fault circuit interrupter that is built into the equipment/tool, extension cord, outlet, or circuit



#### 5) Extension Cords

- Select properly rated extension cords of the appropriate length and gauge of wire to accommodate the amp rating of the equipment to which it is supplying power. Remember, if the gauge of the wire remains the same, the amperage rating will decrease with increasing cord length
- Always use 3-wire extension cords for tools with 3-prong plugs. Never remove the ground prong
- Inspect extension cords for damage prior to each use.
- Remove damaged extension cords from service. Examples of damage include detachment of the plug from the sheath, cracked or worn insulation or plug, etc.
- When using extension cords outdoors, use only extension cords labeled for outdoor use and in combination with protection provided by a Ground Fault Interrupter (GFI) (either built into the cord, the outlet, or the circuit).
- Do not use multiple extension cords in series



(plugged end-to-end). Use one cord of the proper cord length.

- Do not run extension cords through open doorways or windows, holes in walls, underneath carpet, on overhead piping or other structures, or suspended over counter tops. If absolutely necessary to run a cord temporarily along the floor, use a runner or tape the cord down so that it does not become a trip hazard.
- Never use nails or staples to attach or hang an extension cord.
- After use, inspect the cord for damage. If there is no damage, neatly coil the cord and store in a designated area.

#### 6) SAFE ELECTRICAL ISOLATION PROCEDURE.

- Before starting the Safe Isolation Procedure, remember to seek permission from a relevant responsible person, because there might be certain vital services that must not be interrupted at any time. There might be a permit to work system in place to which you will need to comply.
- Identify the point of isolation for the system or circuit. • Lock off • Place warning label • keep the key to the lock with yourself.
- Select the correct and mains approved test equipment • Ensure that it works correctly by testing on the proving unit.
- Test the outgoing side of the means of isolation (Main Switch, MCB, Fuse, etc.) to make sure it is dead. • Depending on the type of the supply you will need to complete the following tests:
- Single Phase installations test to confirm that there is no voltage between: - Line and Neutral - Line and Earth - Neutral and Earth.
- 3 Phase installations test to confirm that there is no voltage between: - L1 and L2 - L1 and L3 - L1 and Neutral - L1 and Earth - L2 and L3 - L2 and Neutral - L2 and Earth - L3 and Neutral - L3 and Earth - Neutral and Earth
- Re-test the test equipment on the proving unit.
- When isolating the main source of energy it is also essential to isolate any secondary sources such as standby generators, uninterruptible power supplies (UPS) and microgenerators.



#### 8. After work checks

None

Issued	Checked	Approved
<i>Panagiotis Manolopoulos</i> <i>Senior Site Manager</i>  <i>Signature</i>  <i>Date 28/07/2016</i>	   <i>Signature</i>  <i>Date 28/07/2016</i>	   <i>Signature</i>  <i>Date 28/07/2016</i>