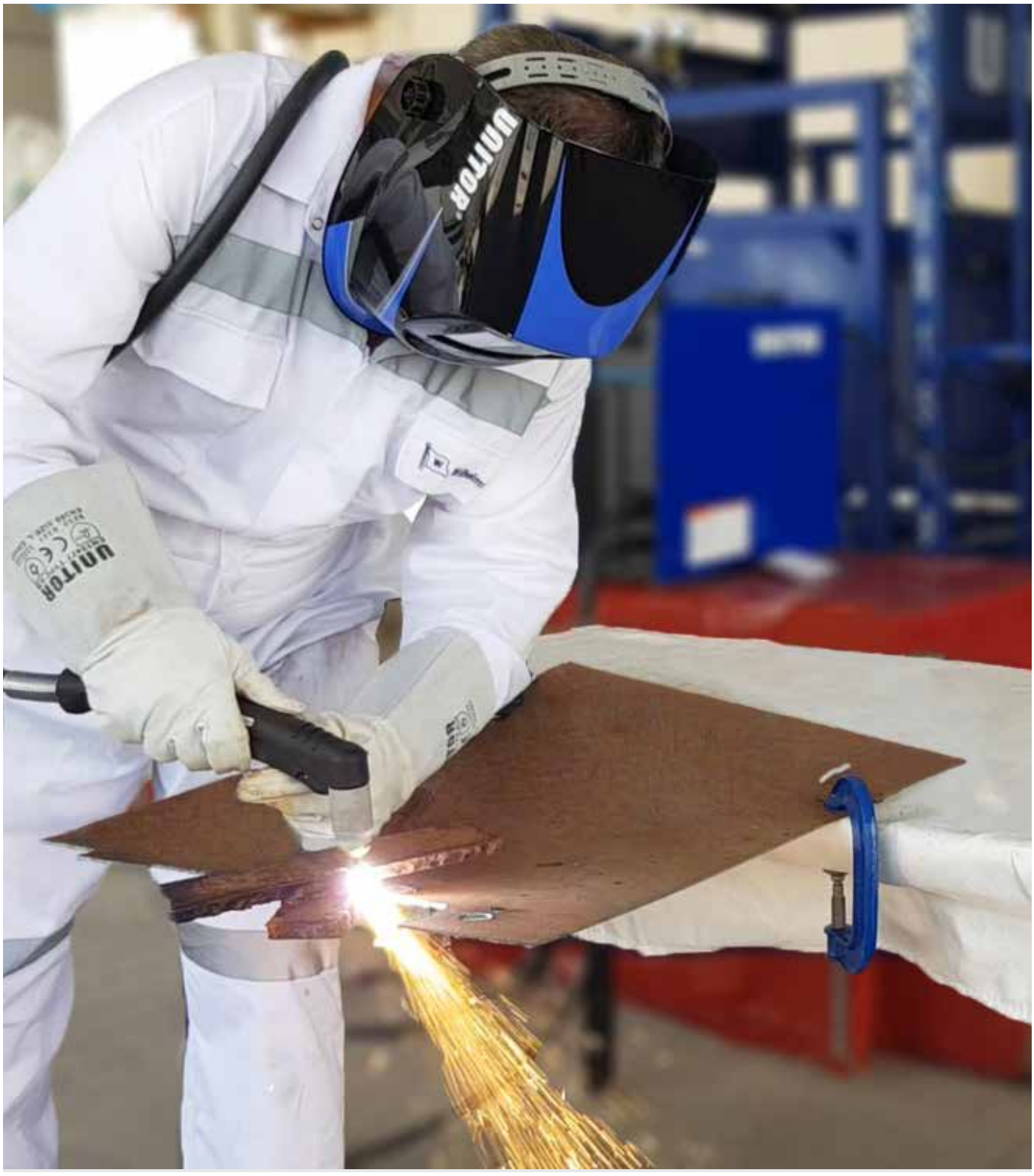
5 Steps to Safer Plasma Cutting Onboard



Introduction

Plasma cutting is an increasingly popular metal working tool due its versatility in cutting all types of electrically conductive materials and low heat input, with minimal heat affected zone (HAZ) width. In addition, it is economical, safe, efficient and can be an effective backup cutting and gouging tool when oxy-acetylene gas cylinder supplies are difficult to obtain.

But despite its merits, like most tools, let alone one that works at 20,000°C, it is vital to have a clear understanding of the equipment and how to operate it safely. So here's our five steps for safe and successful plasma cutting.

1

Install an Earth Leakage Circuit Breaker (ELCB) at the main power supply

When installing a new plasma cutter machine, ensure that the frames and cases are electrically grounded. At the main input power supply, also confirm a disconnect switch with overcurrent protection is provided for every outlet used. Another best practice is to connect to the power supply nearest to the work area and to use cable shield protection when laying long power lines or compressed air hoses on deck.

Read and understand the Operation Manual before use

Sounds obvious, but the specs for plasma cutter machines do vary from one manufacturer to another, and across models within the same manufacturer. For example, some units utilise drag shield and skirting, while others advocate the direct contact cut method. Using the incorrect cutting technique can affect the plasma cutting operations or reduce the consumable's life. So, it is important to read, understand and be trained in the safe use of the particular unit before you operate it.

2

3

Use appropriate Personal Protective Equipment (PPE)

To protect operators from potential hazards during plasma cutting, it is important to use the correct PPE.

- Eye protection with minimum shade #5 onwards depending on the cutting amperage to protect from plasma arc/ electromagnetic rays
- Ear protection to protect from noise generated, especially for continuous cutting operations
- Respiratory protection is essential to protect from harmful cutting fumes especially when handling zinc primer or paint coated steels
- Body protection, such as leather clothing and gloves are recommended along with safety shoes to protect the operator from heat, spatters and burns during plasma cutting
- To avoid electrocution risks, a non-flammable rubber mat for operator's standing while cutting is recommended

Conduct a Job Safety Analysis and get a permit

Pre-inspection by the operator before using the plasma cutter must be promoted as an absolute necessity in order to avoid electrical and compressed air hazards. A recent report conducted by a maritime organization states that more than 70% of personal injuries take place because of sheer negligence and failure in following safety procedures. Consistently conducting a thorough Job Safety Analysis which covers risk assessment, hazard identification along with putting safety controls in place is key.

Another core practice onboard when it comes to plasma cutting is the Permit to Work for Hot Work outside the engine room workshop. It is an invaluable means of identifying and mitigating further safety risks, including but not limited to working in confined spaces, and working in increased fire or flammable risk areas. These areas necessitate a gas free certified zone, before any hot work is carried out.

4

5

Regular or Periodic Maintenance

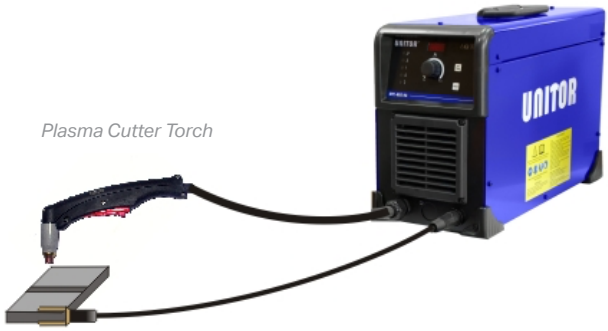
Regular maintenance on your plasma cutter will not only help to ensure tip top cutting performance but also ensure safe operation. Using severely worn consumables can damage the work piece, as well as destroying the plasma cutter torch.

If any defects are observed such as a damaged torch or exposed electrical cable etc., report immediately to your superior. Any repairs should be handled by a trained and competent electrician.

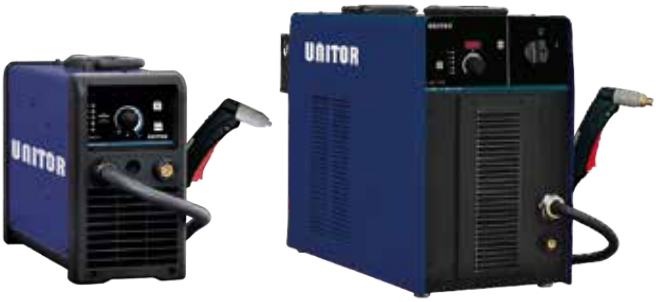
Invest in quality equipment and consumables

In order to ensure a higher level of safety for users, all our Unitor™ plasma cutters are designed with built in safety features and in accordance to the stringent requirements of EN 60974, EN 61000 and EN 60529 regarding design and construction, electromagnetic compatibility (EMC) requirements and ingress protection as per IEC standards. They are further approved for CE and RoHS directives.

A unique safety feature of Unitor™ plasma cutters is the unique RESET button to add; other key safety features include auto cut of compressed air over pressure, rubber sheath earth return clamp, plasma arc using Pilot arc and not high frequency (HF) ignition, safety warnings and thermal protection such as overheat or exceed duty cycle, and consumables wear alert.



Unitor™ UPC NEO



Unitor™ UPC-85 ML Range

In addition, selecting high quality consumables is advisable as using counterfeit or sub-quality plasma consumables can affect the safety and performance of the plasma cutter. Original plasma consumables use top grade Hafnium electrodes which both lasts longer and cuts better.

Definition. **Plasma** is a state of matter in which an ionized gaseous substance becomes highly electrically conductive to the point that long-range electric and magnetic fields dominate the behaviour of the matter. The **plasma** state can be contrasted with the other states: solid, liquid, and gas.

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