Welding Safety at the Brunsfield Centre

Introduction

This document is a general guideline and rules for safe usage of the MIG(GMAW), TIG(GTAW) and plasma(PAC) processes when used supervision in the Brunsfield centre. For more detailed information consult the Welding Safety Handbook in the Brunsfield office and the manuals of individual machines used. Also it is important that the term "welding" describes all hot work procedures such as plasma cutting and grinding. To simplify we will use welding as all operations if not specified. Never deviate from the rules from this documents and never use welding techniques that could be a safety issue from anyone other than a shop supervisor unless authorized.

Health Considerations

It it your responsibility to take care of your personal health and or notify the Brunsfield centre if you have any health issues that could affect your safety or those around you. Talk to you doctor or physician before signing up to a welding training if you have any conditions that may affect your safety and we will do our best to accommodate if possible. The most common health hazards when performing any welding processes are heat strokes, high intensity/flickering lights, electromagnetic interference (if you have any internal electronic medical device) and smoke / fumes.

Fire/Explosion Safety

As you will probably know by now, welding is a process that uses extreme heat to fuse two pieces of metal together. When working with extreme heat there is always a possibility of a fire. It therefore becomes extremely important that all flammables materials are removed from the vicinity. Also never perform any welding operations involving a closed container like a barrel as it may have previously contained ignitable vapours. Do not weld on any reactive metals such as titanium, magnesium or other potentially reactive metals. In the event of a fire, a fire blanket or fire extinguisher can be effective ways to put out a fire. The Brunsfield centre is equipped with ABC class fire extinguishers, and are therefore good for extinguishing

all types of fires except reactive metals. For this reason that working with reactive metals at the Brunsfield centre is strictly forbidden.

Emergency Procedures

In all cases notifying the shop supervisor of the situation should be a priority, shop staff are trained on how to handle most situations. here is a list of the most common emergencies that happen within the welding area and how one should handle the situation. It is important to always use judgment when working in the Brunsfield centre to avoid accidents.

Fire : Remain calm, notify the supervisor and follow his/her instructions.

Someone on Fire : If someone is on fire, the main priority is to extinguish the fire as quick as possible, Use either a fire blanket to smother the fire or bring them to the emergency shower to extinguish the flames.

Injuries or Burns : The nearest first aid kit and burn gel patch is located in the Brunsfield office, you should always call for a supervisor in the case of an injury. If the injury is considered major call Protection (4511) using any campus telephone. It is important that while on campus you call protection and not 911 as they will dispatch the necessary services directly to your location.

Emergency : In the case of an unconscious person or any similar emergency it is important to immediately call protection (4511) using any campus telephone and stabilize the person as much as possible. Enlist the aid of others nearby to help with the situation.

Personal Protection Equipment

Eye Protection

For MIG and TIG welding you will use auto darkening welding helmets with variable shade. The minimum shade while welding is shade 10, you may need to increase the shade level as amperage/voltage increase or for comfort. It is important to always keep your safety glasses on underneath your welding helmet. Plasma cutting requires a shade 5 shield, use the plasma cutting safety glasses(#5) which are provided by the Brunsfield centre. Always ensure that when entering a welding area the person inside is aware of

your presence to avoid arc flashing. Looking at an electric arc with no eye protection can cause temporary blindness. When welding is in progress,it is important that its curtain are properly closed to protect everyone else inside the centre from the blinding lights and flying sparks.

Clothing

Clothing is your body's main level of protection against sparks, minor burns and UV rays which are all very present while welding. It is thus important that you are wearing proper clothing while welding as follows:

- Welding jacket, Welding beanie, and gloves depending on the process.
- Non synthetic pants such as jeans or cotton with no holes.
- Hairspray is a combustible material,avoid it's use before welding.
- Make sure your jackets cuffs are well tucked in your gloves to protect you wrists from sparks and UV exposure.

Fumes

Fumes become a major consider when welding. During the MIG training you will be shown the main types of metals and what not to weld. Certain materials have coatings which can be hazardous to ones health when heated. It is therefore recommended not to weld any unknown materials. When in doubt ask a supervisor for assistance in identifying your material. Here a few basic things to keep in mind while welding to protect yourself against fumes:

- Clean all oil or grease to parts to be welded or heated, usually found on cold rolled steel.
- Do not weld on galvanized or painted parts. Stop welding if the part is starting to bubble.
- Use the fume extractor as shown in the training.
- Avoid having your head directly above where the welding process where the fumes are being generated.

Operations Related to Welding

Welding activities will most likely introduce you to new power tools that are not commonly used outside of welding such as the angle grinder and bench grinder. Ask the supervisor when it is your first time using these tools will have a few safety concerns that cannot be clearly defined in this document. However here are the golden rules:

- Do not grind aluminum or soft metal as it clogs up, heat up and may shatter and may shatter the grinding wheel, producing flying debries.
- Restrict grinding to minor operations, as other people have to endure the noise and dust.
- Ask someone to help lift heavy items such as weldments.
- Minimize noise for you and others, even with hearing protection loud noises can be dangerous to ones hearing. Hammering pieces into place or dropping pieces onto the table should be kept to a minimum.

Compressed gasses (MIG TIG)

The MIG and TIG processes use highly compressed gases stored in cylinders attached to the back of the machines. If your bottle is empty, dot not replace bottle unless you have the approval of a supervisor. Move the welding cart at a safe speed to reduce the chance of the cylinder tipping over. Always keep the cylinders chained to the welding carts. Dot not over tighten the gas valve when closing/opening and do not hang cable around the cylinder.

Have fun welding!