

YR10 ENGINEERING

Component 3

How do I achieve today?

- Bronze: I can name the type of welding we saw, and list materials that can be welded
- Silver: I can describe the type of welding we saw, and I can list the materials that we could weld
- Gold: I can name all the different materials we use, I can describe all of the welding process in detail, and I can describe different situations in which the various processes can be used and list some advantages.

MIG Welding

- Welding is the joining of metals. What welding does is join metals or other materials at their molecular level



MIG Welding

- MIG welding uses a non-oxidizing inert gas to protect the molten metal from oxidation.
- The gas is continuously flowing through the torch.



is that
and has a
to the
the air
le that
continuously
owing
r.

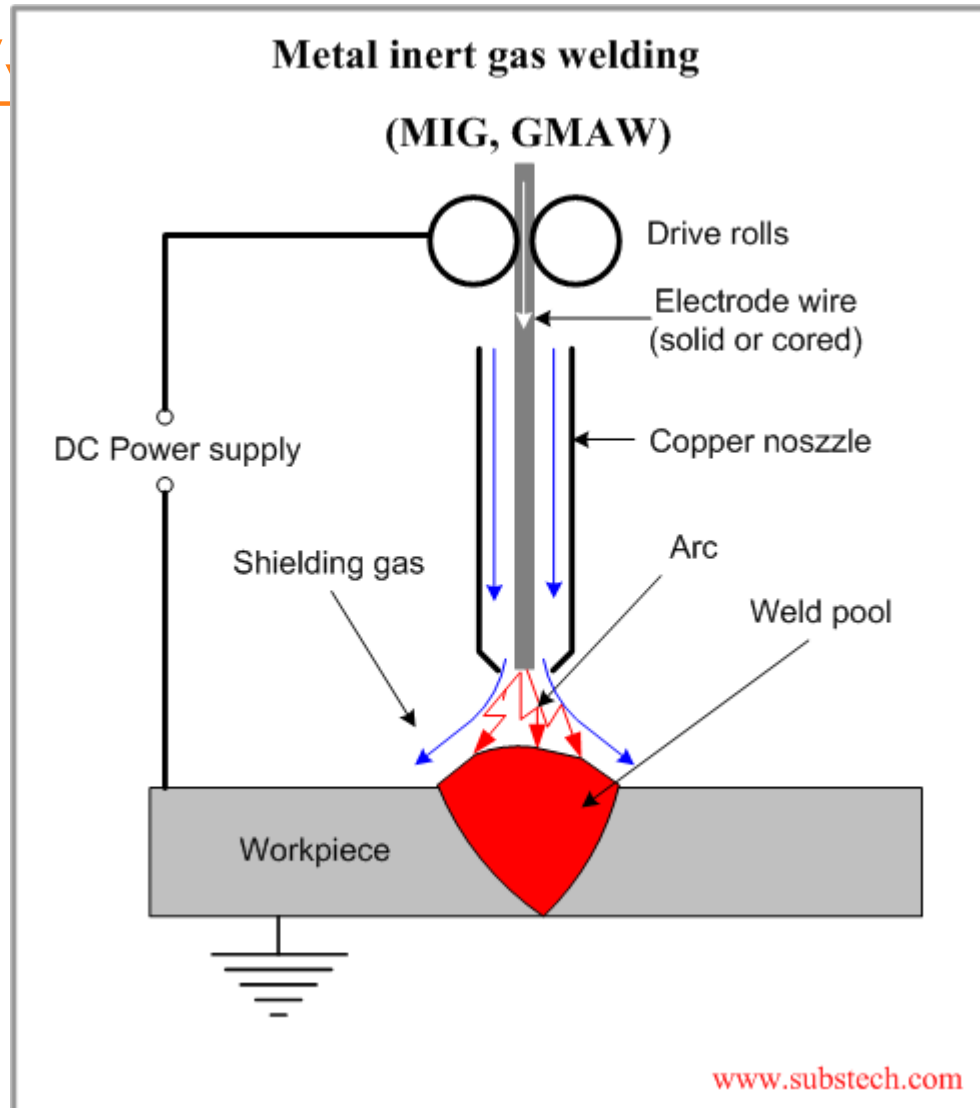
MIG Welding

- ❑ MIG welding uses a machine to feed a wire through a contact tip into a MIG gun. The electrically charged contact tip transfers the welding current to the wire.
- ❑ The arc is established between the wire and the base metal. Often times an inert gas is used, which flows out of the gas nozzle to shield the welding process from the atmosphere.

MIG Welding

□ <https://www.substech.com>
E

[GTWCux74](https://www.substech.com)



MIG Welding

- Where would we use MIG welding?
- A MIG welder can be used on stainless steel, mild steel of all thicknesses



MIG Welding

- Make sure that all of your skin is covered to prevent overexposure from UV rays. You will need a mask with at least a #10 shade or darker. This will help prevent arc eye.
- If you are working in a poorly ventilated area, you will need a vapor mask to minimize the amount of toxic vapors inhaled during the welding process.

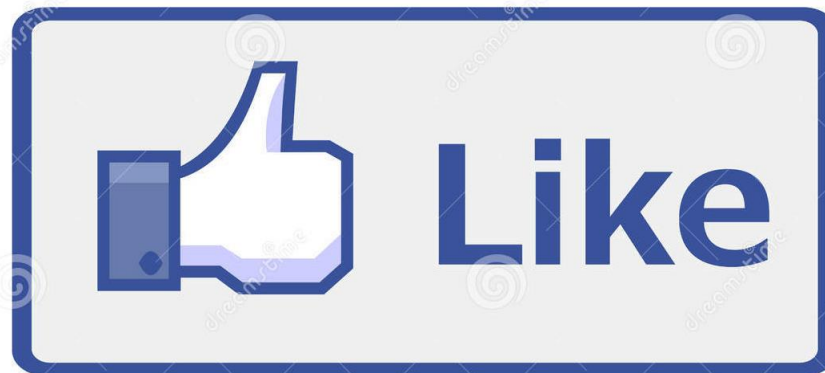
MIG Welding

- ❑ Wear gloves that can protect your skin from molten metal.
- ❑ Keep a CO2 extinguisher and a bucket of sand nearby for emergency fires.



Advantages of MIG

- The main advantages are;
 - ▣ MIG is an easy process to weld with but machine set-up can be difficult.
 - ▣ When MIG welding the size of the weld is what you see and it is basically a point and shoot operation.



Disadvantages of MIG

- ❑ The down side is it is a terrible welding process if you are out doors due to the shielding coming from a bottle of gas that the wind can just blow away at any moment.



Plenary



Morgan Motor company make low volume hand made sports cars, using a blend of wooden frames and aluminium bodies.

Evaluate MIG for use in the manufacture of high performance sports cars

Describe the advantages and disadvantages of using **low volume production**

Spot Welding

- Welding is the joining of metals. What welding does is join metals or other materials at their molecular level
- Spot welding is welding two pieces of metal together in a small area by the application of heat and pressure.



Spot Welding



So what happens
inside the weld?

Spot Welding



- Where would we use this?

Spot Welding

- Spot welding is safer and easier than MIG and Oxy-Acetylene.
- Very often sparks fly off from the joint area. Wear approved face shield or safety goggles with side shields.
- Do not touch hot parts bare handed

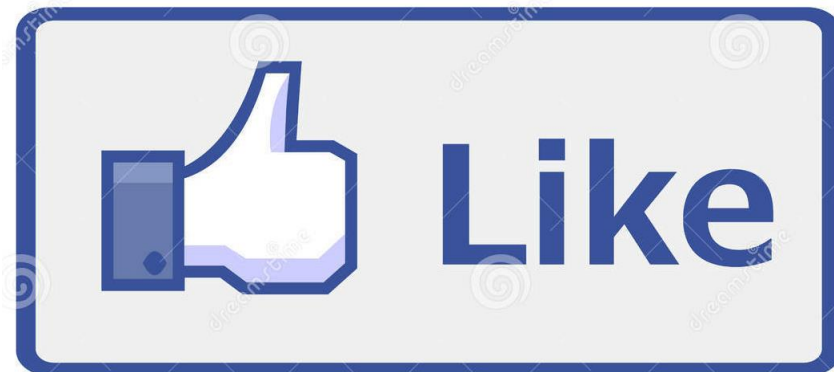
Spot Welding

- ❑ Keep a CO2 extinguisher and a bucket of sand nearby for emergency fires.
- ❑ Wear gloves to protect hands from hot workpieces



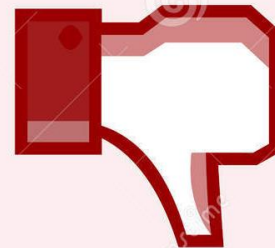
Advantages of Spot Welding

- It's easy to learn.
- The equipment is cheaper than most other types of welding rigs.
- The equipment is more portable than most other types of welding rigs.
- Really neat and tidy weld marks



Disadvantages of Spot Welding

- Can tend to warp/distort workpieces that are flat because of the high heat involved
- Can only be used on sheet metal



Dislike

Plenary



Exam Q: Evaluate Spot Welding for manufacturing cars. Think about materials used, shape and size of materials used and the advantages/disadvantages of using spot welding. Discuss possible alternatives

Ideal Answer

- Making cars using spot welding has good and bad points.
- The good points would be high levels of accuracy, the welding can be automated easily, its quick, cheap and staff wont need high levels of skill/training.
- The bad points would be that you can only weld thin sheet metal. Also spot welding can tend to warp/distort work pieces that are flat because of the high heat involved
- Summary.....I think that it's a good idea to use spot welding because....

What does your peer need to do to improve. Explain how to achieve the next level?