"My MIG torch gets to !!!!!!! hot!"
"This torch is no !!!!!!! good... the tips keep seizing up on the wire!"
"I'm getting porosity problems. I've turned up the gas, but the problem just won't go away!"

The solution to all of these complaints is the same. They are symptoms of the same incorrect technique; which is not your fault!

The following explanation will save you money.

Most 'other' MIG don't have cooled gas nozzles. Consequently, when the shielding gas arrives in the nozzle area, the gas impinges on the hot nozzle at 350-450^{o} C and expands rapidly, like a continuous explosion.

This gas, now very hot and thin, flows at a higher linear velocity out of the nozzle, causing turbulence and dragging the surrounding air with it.

Result- porosity!

One short term solution (with other torches) is to turn up the gas. This may work but it costs you money!

Another short term solution (with other torches) is to reduce 'stick-out' and set the gas nozzle very close to the weld pool.

This brings short term success but with excessive consumption of gas and consumables. In addition, productivity and quality suffer because visibility and deposition rates are impaired by this technique.

However, the vicious circle can be broken. Binzel Pty Ltd provides the right solution.

The Binzel torch cools the gas either by dissipating the heat through its cooling fins or by water cooling the nozzle seat area.

The maximum operating temperature of a Binzel gas nozzle is 250^{o}C. This reduces the nasty shock the shielding gas gets when it enters the nozzle zone.

Also, the aerodynamic design of the Binzel gas nozzle ensures that air entrainment is kept to a minimum is correct gas flows are maintained.

So now it's possible to go back to basics, and break that expensive vicious circle.

Set the gas flow to 15 Lt/min maximum (18 Lt/min for pure Argon). Lift the torch nozzle away from the weld pool until the nozzle weld pool distance is 12-15 times the diameter of the wire (e.g 11-14mm for 0.9mm wire, more for flux-cored wire).

Two things will happen.

First, the arc will get shorter and may require an extra volt or two from the welding machine.

Secondly, the welding current will fall. This is due to the extra electrical resistance presented by the increased length of electrode wire, now between the contact tip and the arc.

Note: The welding current passing through this extra resistance is not wasted: it preheats the wire, making it easier to melt in the arc. This reduction in current happens automatically, you don't reduce the wire drive speed.

Then, if you wish, you can increase the wire drive speed to restore the original welding current.

Now, let's look at what we have achieved.

You have increased the torch – weld pool distance by 50%, reducing by half the heat radiating back to the torch.

Gas consumption has been reduced by as much as 30 per cent.

In order to restore the original welding current with the increased torch stand-off you have increased the wire speed by 20-30 per cent, with an equivalent increase in deposition rate.

Because the increased stand-off allows the welder to actually see what he is doing, surely this will improve quality.

Now that the whole torch is running cooler, naturally all torch consumables will last longer.

It works give it a go!