



## **Understanding LIQUID FUEL Cutting (and what sets SupaCut torches above gas fuelled torches)**

SupaCut liquid fuel torches have several unique features that by their utilisation the laws of physics and thermodynamics generally sets their performance well above a torch using a flammable gas fuel system.

### **VELOCITY - MOMENTUM - DENSITY**

During exit of the liquid fuel from the nozzle the liquid fuel evaporates causing a massive expansion in volume which in turn creates an ultra high speed laminar flow from the torch nozzle. Flow velocity can be up to 10 times greater than torches that rely on the compressed gases to provide flow, and expansive flow also gives significant momentum to carry the heat and force of the flame effectiveness a much greater distance than a gaseous fuel can. Additionally, the vapour density (weight) is about 4 times that of a flammable gas so provides significantly increased power (or punch).

### **BURN TIME**

Liquid fuels such as gasoline and diesel produce significantly greater BTUs for a longer burn time than compressed gases can. The extended burn time and longer period of BTU release increases the distance the preheat flame remains effective. In other words an extended burn time transports the flame heat a greater distance and makes operation more forgiving for less experienced operators . The increased user flexibility and greater coupling distances plus a significantly increased flame void bridging capability overcomes many frustrations (and time loss) found with using a gas fuelled torch and its limitations.

### **OXIDATION**

A common misconception with cutting of steel is that the steel is being melted or burnt away by the torch flame. However the torch preheat flame is simply the catalyst to initiate actual ignition and combustion of the steel itself, and then the steel becomes its own fuel source while the preheat flame supports a continuous ignition. The higher the level of oxidation one can achieve the more of the steel is combusted and converted into BTUs. Liquid fuel torches oxidize almost 100% of the steel, and so unlock more energy to sustain cuts. Conversely a gas fuel such as acetylene oxidizes

only 70% of the steel . This lack of full oxidation wastes approximately 30% of the available burn energy and a user is also confronted with a dangerous stream of molten steel from the cut.

## **TEMPERATURE**

The flame temperature of the SupaCut Liquid Fuel Torch ranges from 2900 to 3500 degrees Celsius (5200 to 6400 degrees Fahrenheit). Whilst oxy/propane flame temperature is only around 2800C / 5100F. The higher temperature flame from a liquid fuel SupaCut torch, along with the increased vapour density, higher velocity and a longer burn time allows operators to more easily maintain combustion in situations where it can be challenging to do so, such as painted, rusty or wet steel. Again another area where a SupaCut liquid fuel torch readily outperforms torches that just use compressed gases.

## **COMBINED EFFECT**

Each individual benefit from the use of a liquid fuel has its own advantages, but combine all the above and the performance of the SupaCut liquid fuel torch is more powerful, versatile and user friendly than any other gaseous fuel cutting system.

## **BENEFITS**

- Significantly Reduced Operating Cost (using low cost fuel)
- Lower labour Cost (increased cutting speed)
- Cleaner & Safer Cutting (virtually no molten waste)

# **Let SupaCut light up your life today !!**