

Flame Cutting: Increasing Productivity Through Efficient Process

Business benefits

- Process improvement, increasing productivity and reducing bottlenecks
- Cutting costs reduced by up to 40% including labour savings
- Cutting times reduced by up to 40%
- Significant quality improvements to the profile

Improving productivity whilst managing cost is critical to all steelwork contractors.

A leading UK steelwork contractor approached BOC to improve their productivity in their cutting process. One of the main areas BOC helped support the customer was by removing bottlenecks which had begun developing in their cutting procedures. The company whose capabilities include the design, fabrication and erection of steel framed structures and wanted to move away from traditional cutting processes.

The issues

Productivity

The customer was aiming to increase output, reduce production bottlenecks and meet demand.

Quality at High Speed

To fulfil demand for high quality steel it was necessary to increase the productivity of the customer's fabrication plant whilst managing cost.

Existing cutting processes, using Propane performed poorly when the machine speed was increased to meet output demand. A poor cut profile with notching occurred and a large amount of manual grinding was required after the cut to achieve the required finish.



Poor cut profile using Propane (above) compared to Acetylene (below)

The BOC solution

BOC's manufacturing specialists visited the site and conducted a number of inspections and trials. The conclusion was to use Acetylene in the existing machines to significantly improve the performance.

Primary reasons for using Acetylene are due to its properties:

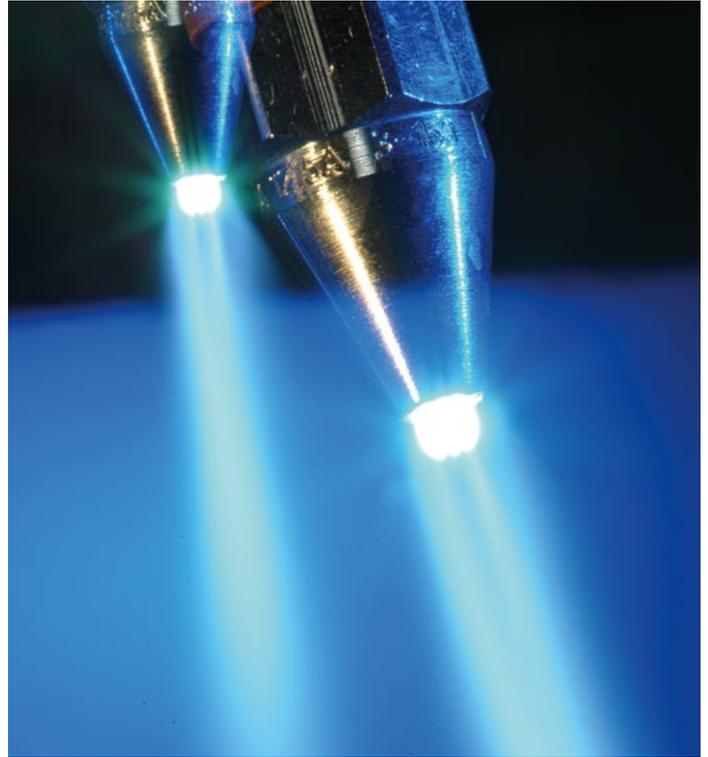
- high flame temperature
- fast flame speed
- concentrated primary flame
- lower moisture content
- efficient use of oxygen

Productivity

The key properties of Acetylene enable customers to achieve a cutting speed of more than twice as fast as Propane. Even at the higher cutting speeds the cut quality is far greater when oxy-acetylene is used due to the concentrated primary flame, fast flame speed and high temperature.

Quality

By using Acetylene the cut profile of the steel was improved therefore requiring less manual grinding before welding.



Customer Benefits

BOC conducted trials on a number of different thicknesses of material from 35mm to 85mm with positive results on all. The results for 35mm compared with the existing process were:

| | Existing process (using propane) | BOC solution (using acetylene) |
|-------------------|-------------------------------------|-----------------------------------|
| Productivity | 306mm/min | 490mm/min |
| Quality | | |
| Surface roughness | 7.61Ra | 5.87Ra |
| Cost | £3.10 per metre cut | £1.80 per metre cut |

The results from the trial show how productivity with Acetylene is improved and reflected by the cost per metre being significantly reduced. The quality of the cut is noticeably improved.

After reviewing the results of the trials the customer ceased using Propane and now uses Acetylene as their fuel gas of choice for cutting.

For further information on any of the items referred to in this case study, please speak to your account manager or use the contact details below.

BOC Limited

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