

THE VALIDATION CENTRE (TVC) LIMITED



PURGING CASE STUDY

WATER TANK MANUFACTURE WITH FLOW CONTROL USING FORMING GAS

TVC was approached by a company that manufacture Duplex water tanks and use a forming gas for back purging the tanks. The welding process is automated GTAW and the process involved:

- setting up a tank to purge whilst a pre-purged tank is being welded
- initial purge carried out by ensuring that a high flow rate purge was maintained for a set period of time

PROBLEM

- time the tank was on purge would exceed the nominal time required to fully purge the vessel
- the large volume of gas wastage

***AUTOMATED GTAW WATER TANK MANUFACTURE
AND GAS WASTAGE***

3-STAGE FLOW CONTROL & PRE-PROGRAMMED ALARM LEVEL SOLUTION



GPM OXYGEN MONITOR WITH 3-STAGE FLOW CONTROL

The **revised purge procedure** using the TVC equipment starts with the operator **setting up the tank to be purged and connecting the gas supply** which is **routed through the GPM 3-stage flow control box**.

The **GPM sampling tube is connected to the tank** and, when the 'Start' button is pressed, **the GPM will start sampling the O2 level and the flow control box starts the purge gas flowing at the high flow rate**, in this case about 80 LPM.

PRE-PROGRAMMED ALARM LEVELS

The GPM has **two alarm levels pre-programmed**. These alarms control the Oxygen levels that the flow rates will change at; in this solution, the high alarm level is set at 1000 PPM O₂ and the low alarm is at 50 PPM.

- When the **O₂ level drops below the high alarm level** (1000 PPM), **the flow control automatically changes** over for the high flow level of 80 LPM to the mid-flow level of 15 LPM.
- As the O₂ level continues to drop, **once the low level alarm threshold is reached, the flow control changes to the lowest set flow rate** of 5 LPM which is **enough to maintain the purge** until the operator is ready to transfer the purged tank on to the automated welding lathe.

COST-SAVING ANALYSIS

FOR EVERY ONE-MINUTE OF HIGH FLOW PURGE TIME SAVED, THE CLIENT ESTIMATES A SAVING OF £0.36 BASED ON CURRENT FORMING GAS COSTS

Based on saving **10 minutes every hour** for an **8-hour working day**, for a **5-day working week** over a **48-week year** the **annual cost saving would be £6,912.00.**

As the savings are for a ***single*** welding station, the **annual saving for a large-scale factory with multiple production lines** could potentially be **considerable** as the **TVC equipment costs would be fully recovered within 21 weeks.**



TO SEE IF TVC CAN ASSIST YOU WITH
YOUR PURGING, PLEASE CONTACT US
TO DISCUSS YOUR REQUIREMENTS.

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WEBSITE

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