

Improving Premium Steel Manufacturing through Automation

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Project Outline

Objective 1: Develop a modular, multiple gas monitoring system capable of measuring extreme gases in hostile environments.

- Exhaust gas temperature = 500-700 °C
- Very high dust load (orders of magnitude attenuation)
- Fluctuating pressures (vacuum to atmospheric)
- Varying gas composition

Objective 2: Use these real-time *in situ* measurements to gain better understanding of a secondary steel making process.

Objective 3: Investigate closed loop automation using these measurements, increase productivity, improve quality reduce costs and improve the sustainability of premium steel manufacture.

Project Impact

Single installation – multiple gases and temperature measured



Project Impact – It Works!!

- Measured CO and CO₂ during secondary steel process – fluctuating pressure, high temperature and heavy and varying dust load
- Significant advantages over current analysers
- Added to the understanding of the production process



Project Impact - Manufacturing

Reduced batch time = lower energy costs
= **£x k / year saving**

Increased throughput = additional production capacity
= **£y k / year saving**

Improved quality = less reprocessing
= **£z k / year saving**

Future Challenges and Opportunities

Steel making - Arc furnaces
- Operational optimisation and safety

Further integration secondary steel making:

Close the loop – full automation
Realise benefits for steel makers
Make UK steel more competitive

Increased unit sales for TDL

Increase staff numbers for sales and support



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Accurate, precise and specific gas measurements.....

