

SMARTBURNER: Revolutionizing Industrial Burner Efficiency

Environmental Concern

Gas burners are widely used in metallurgy, food, chemicals, and ceramics industries. The global gas consumption market exceeds €B100, with the industrial burner market alone valued at €B3. These burners typically operate at **low efficiencies** ranging from 20% to 65%, offering significant room for improvement. They contribute to around 10% of whole emissions. These market are expected to grow by 5% over coming years.

Customer needs: Operational Issue

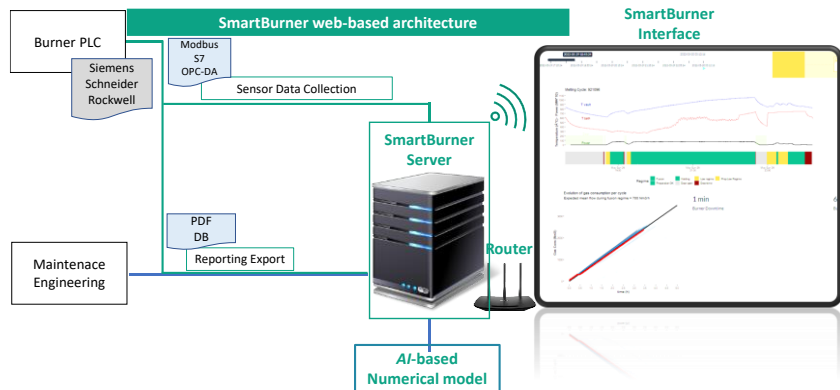
Frequent malfunctions in sensors, valves, ventilators, filters, nozzles, leakage and controller parameters often lead to a gradual drift in burner efficiency. That results in significant energy waste, reduced productivity, and increased CO₂ emissions. Moreover, this can lead to inadequate or uncomplete gas combustion (~1%), leading to CO or NO_x emissions, which carry an environmental impact ten times greater than that of CO₂. The major problem is that these **drifts can persist undetected for extended periods of time**. The challenge is to **detect** these drifts and to **quantify** their impact on burner efficiency, making corrective action difficult.

Customer Benefit

Cost reduction Impact: Significant **direct bottom line saving** due to reduction of energy consumption

Environmental Impact: Achieve up to a **10% reduction in CO₂ emissions** and energy consumption

Operational Impact: Reduce **downtimes**, and boost productivity by up to 10%



Introducing SmartBurner: A Data-Driven Solution

SmartBurner is a game-changing solution that includes a **digital twin** of the burner, enriched by an advanced **deep learning** algorithm. It integrates online data acquisition, visualization, and reporting to monitor burner functionality, **detect abnormalities and drifts**, assess and **quantify their impact**, allowing corrective actions.

A Cutting-Edge Numerical Model Enhanced with Deeplearning

At its core, SmartBurner employs a sophisticated combination of **very fast physical models and deep learning**. This allows for the consideration of burner-specific physical specifications and auto-adjustment of parameters through historical data, resulting in accurate and real-time calculations.

Key Features

- Unique tool allowing **real-time burner efficiency estimation** based on real operational conditions
- Early **detection of abnormalities** and deviations
- **Quantification of the energy loss** and burner efficiency loss due to a detected abnormality
- Determination of **root cause** of a detected abnormality
- **Statistical analysis** for data-driven initiatives
- **Auto-learning** from users inputs
- Cross-technology burner **comparison** with using calculated efficiency and other KPIs
- Web-based **user friendly interface** allowing for both local and remote multi-user access
- Applicable to **variety of burner technologies** such as regenerative burner, oxyfuel, hydrogen

Contact us

Novamet team includes highly professional members with several years of successful experience in industrial thermal processes, ad-hoc software development:

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