High-Yield Oxy-fuel Burner for Secondary Aluminum Melting

Air Products' patent pending* burner technology minimizes melt losses and flux usage while achieving improved productivity, reduced process costs and emissions. The Air Products High-Yield Oxy-fuel Burner was designed specifically to increase yield for secondary aluminum melters. Our combustion researchers used state-of-the-art computer modeling – with extensive operational data from melting operations – to develop a new generation burner.

Comparison testing

Comparison tests have shown the Air Products High-Yield Oxy-fuel Burner can achieve the following results over conventional oxy-fuel burners.

- Reduced flux by 10%-15%
- Increased yield by 1%-2%

Key features and benefits

While oxy-fuel technology has a proven track record in the metals industry, this development adds yield improvement and flux reduction to the long list of benefits. Compared to air-fuel systems, our High-Yield Oxy-fuel Burner can provide the same benefits of conventional oxy-fuel technology, including fuel savings, increased production and reduced baghouse temperatures and loadings. This new generation technology can also provide yield savings compared to existing air-fuel systems through reduced melt times, reduced excess air, protective furnace flow patterns and more consistent operation.

* US2011 0154950 A1

Our High-Yield Oxy-fuel Burner technology can improve your operations through one or more of the following aspects:

- Increased metal yield
- Reduced usage of flux or salt in the process
- Enhanced operational consistency and process efficiency
- Increased production rates, fuel savings and lower emissions vs. air-fuel systems
- Decrease in noise levels

The technology can be easily retrofitted to existing furnaces with minimal interruption to your production schedules. Our industry specialists can provide operational support and consulting on an ongoing basis to help you experience a smooth transition and consistent results.

"We have worked with Air Products for many years and through this relationship, we've improved our melting process on rotary and reverb furnaces using different types of technologies. Having used the Air Products High-Yield Oxy-fuel Burner technology for over two years, we've seen an improvement in yield and with the combination of further melting control optimization such as the Advanced Low Emissions Melting System, we've achieved great results on production increase, yield and lower maintenance on ducting and backhouse system."

Ludek Septun,
Production Manager,
Remet

Figure 1: Predicted oxygen concentration profiles

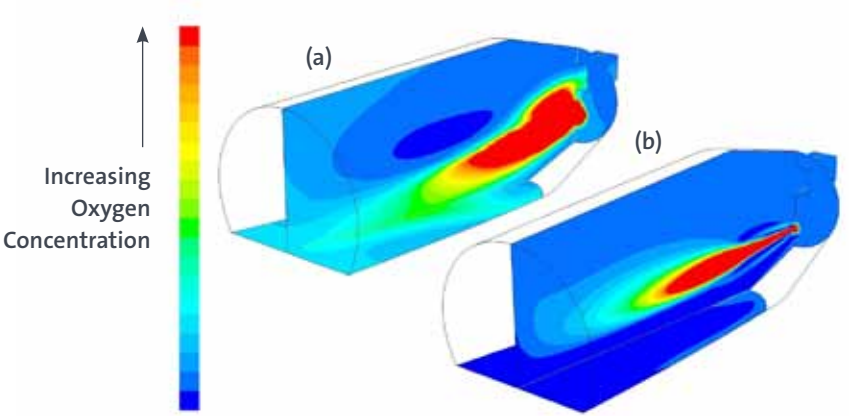
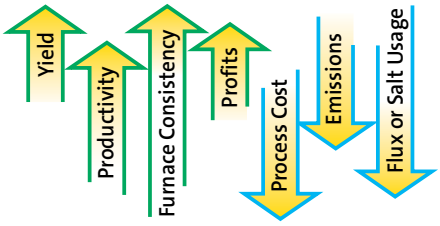


Figure 1 shows computational fluid dynamic (CFD) predictions of oxygen concentration profiles in a double-pass tilting rotary furnace (TRF) when operating with (a) a conventional air-fuel burner and (b) the Air Products High-Yield Oxy-fuel Burner. The (spatially averaged) oxygen concentration at the metal bath surface is calculated to be more than 12 times lower when the furnace is operated with the high-yield burner compared to operation with an air-fuel burner. This change in oxygen concentration enables the High-Yield Burner to minimize melt losses and flux usage.

Air Products' solutions and services

- Technical and design expertise
- Advice and consulting
- Process equipment
- Fully integrated control equipment
- Commissioning
- Optimization
- Maintenance contracts
- Safety training

Typical performance benefits from the High-Yield Oxy-fuel Burner can include:



"Our extensive experience in the industry along with our Centre of Excellence capabilities has given us a strong platform for continuous improvement in combustion technologies. The High-Yield Oxy-fuel Burner is one example of how our expertise has helped customers such as Remet."

Petr Tlamicha, Industry Manager for Primary Metals, Minerals & Energy

tell me more

Can your operation benefit from oxy-fuel technology? Contact Air Products' applications engineers for an assessment of your process.

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