APMelt™ – LEAM™
Low Emission Aluminium Melting

Air Products developed LEAM™ as an environmentally friendly solution for melting contaminated aluminium scrap in a rotary furnace.

LEAM™ technology can be retrofitted to existing rotary furnaces and has now been successfully implemented into other non-ferrous metal melting processes.

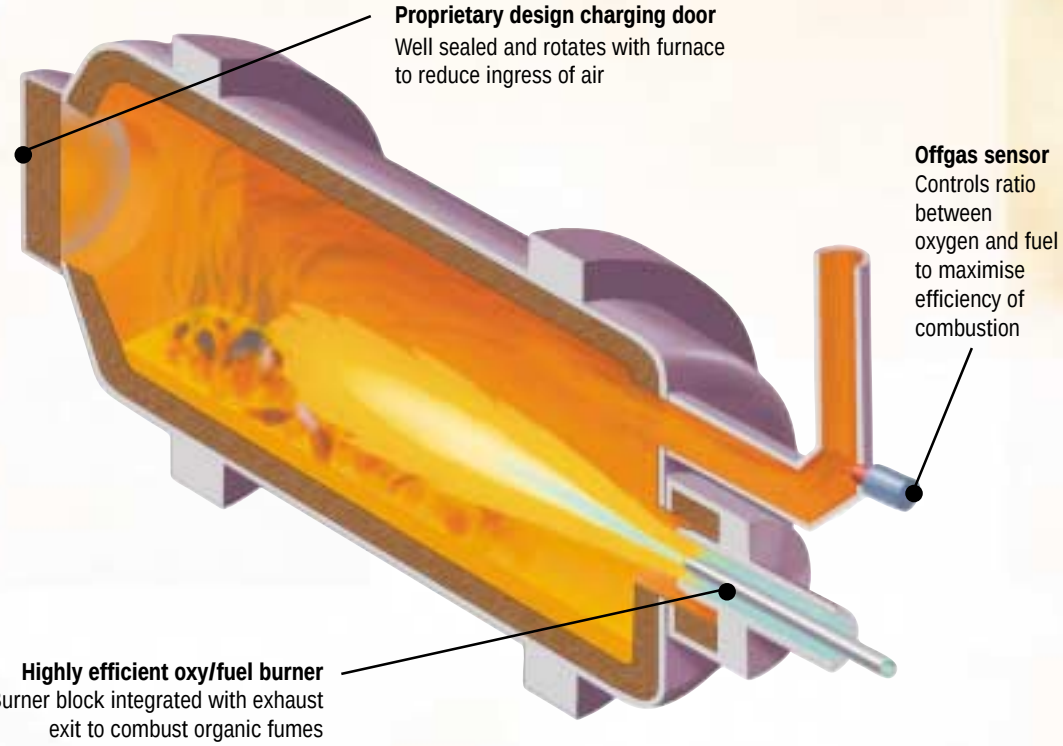
The result is an extremely safe, versatile and efficient furnace that can melt a wide variety of charge materials with the minimum of scrap pre-treatment or post-treatment of emissions. All these features result in significant financial advantages to the end user.

The LEAM™ system offers the following:

- All the benefits of oxy-fuel and oxygen-enhanced combustion over equivalent air-fuel furnaces, including reduced fuel cost, increased melt rate, reduced flue gas volume and higher flame stability
- Combustion of organic fumes within the furnace, even during charging, reducing the need for pre-treatment or afterburning
- Flexibility of accepting a wide variety of contaminated or clean charge material
- Maximised yields through advanced furnace control
- Low cost method of meeting NO_X, CO, C_XH_Y and dust emissions legislation
- Improved energy efficiency by utilising the fuel value of volatiles in the fumes
- Well-sealed charging door to minimise secondary air leakage, thereby allowing the consistent control of furnace conditions

A typical LEAM™ system consists of the following key elements:

- Highly radiative oxy-fuel burner, which also acts as an afterburner
- Flue gas analysis integrated into PLC control system
- Well sealed charging door with proprietary design



Integrated burner block and exhaust system for double pass operation

Results from a converted furnace:

	conventional air-fuel	APMelt™ – LEAM™
Tap-to-tap time (%)	100	70
Energy consumption (kWh/t)*	850	420
Thermal efficiency (%)	35	71
Baghouse dust (kg/t)*	25	6
Offgas volume (%)	100	30
NO_X (kg/t)*	<3	1.45
Organic compounds, C_XH_Y (kg/t)*	0.3	0.03
Additional afterburners required (to meet emissions legislation)	yes	no

**referring to total furnace charge input*

Burner can remain on high fire when charging door is open

Air Products offers more

Experience	Equipment design and supply	Project Execution
• Involved in the metals industry for over 50 years • Over 100 combustion systems installed in the non-ferrous industry • Team of experienced process engineers, equipment engineers and technicians • In-house development team with close links to the industry	• Proven, proprietary designs • Supply of combustion system, control system and instrumentation • Door design • Furnace modelling • Furnace layout • Co-ordination with furnace suppliers	• Start-up assistance • Training packages including operation, maintenance and safety • Ongoing technical assistance • Ongoing maintenance support

Additional information

For more information on furnace technologies available from Air Products, contact the company at one of the following locations:

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