

**BOOSTAL**<sup>TM</sup>

Solutions for Metallurgy



# Your needs

You require enhanced process output and improved production flexibility, while reducing environmental emissions.

Air Liquide will optimize your core production performance with customized solutions.

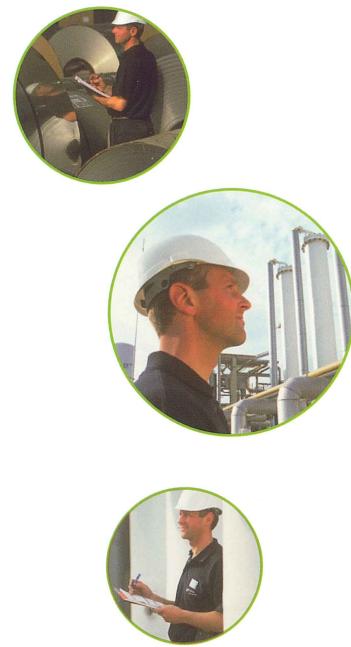
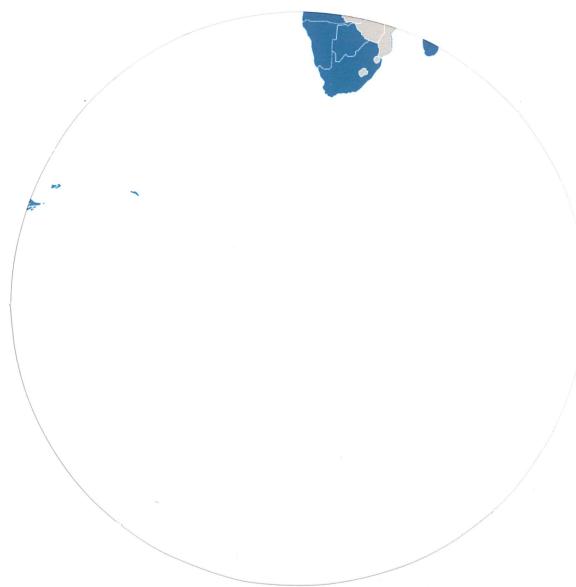
## Your Needs...

Productivity improvement

Production increase up to 50% without additional investment

Energy efficiency

Energy cost reduction by 50%



Emission reduction

- Reduction of CO<sub>2</sub>, NO<sub>x</sub>, VOC, SO<sub>x</sub> and other greenhouse gas emissions
- Waste water treatment

Clean technologies with advanced oxy-combustion process control  
ASPAL Clean

Flexibility

- Improve production time
- Increase yield
- Implement efficient process control

Large oxy-combustion burners adapted to each metallurgy process

Reliable supply chain

- Product certification
- Regulatory compliance

Supply chain engineering, measurement and management

# Our value creation

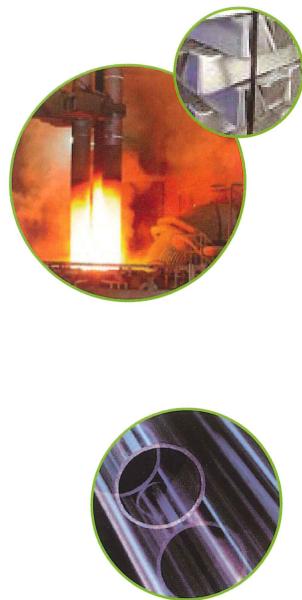
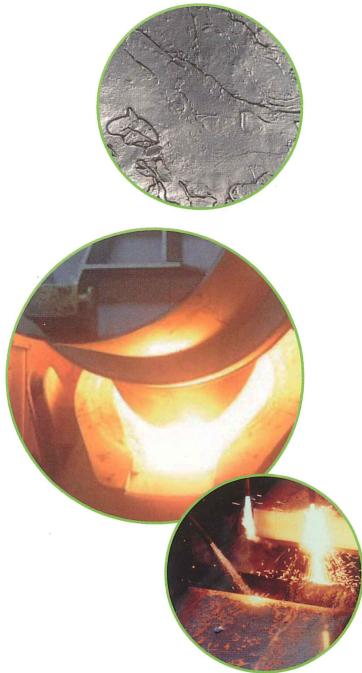
With **BoostAL** Air Liquide commits to create value demonstrated by tangible and measurable results obtained through engineered solutions that are supported by a network of experts and full implementation at the customer's plant.

## **BoostAL** Value for Steel

- Reduction of electrical energy consumption up to 60 kWh/t
- Reduction of power-on-time up to 12%
- Increase of metallic yield up to 1%
- Enhanced safety

## **BoostAL** Value for Foundries

- Decrease of melting process cycle time up to 30%
- Improvement of product quality up to 30%
- Productivity increase up to 15%
- Reduction of coke consumption up to 10%



## **BoostAL** Value for Non-Ferrous

- Fuel savings of up to 50%
- Production increase of up to 50%
- NOx reduction of up to 90%
- Significant CO<sub>2</sub> reduction

## **BoostAL** Value for Semi-Finished Products

- Fuel savings of up to 50%
- Increase of production of up to 40%
- Reduction of heat-up time by more than 40%
- Homogenous temperature profile in the product

# Your process

From feed conditioning and raw material melting, to melt refining and casting, all the way to finishing operations, Air Liquide supports you in every step of your production process.

ようこそ

مرحبا

Bienvenida

Bem-vindo

Willkommen

приветствовать

Benvenuti

Welcome

स्वागत

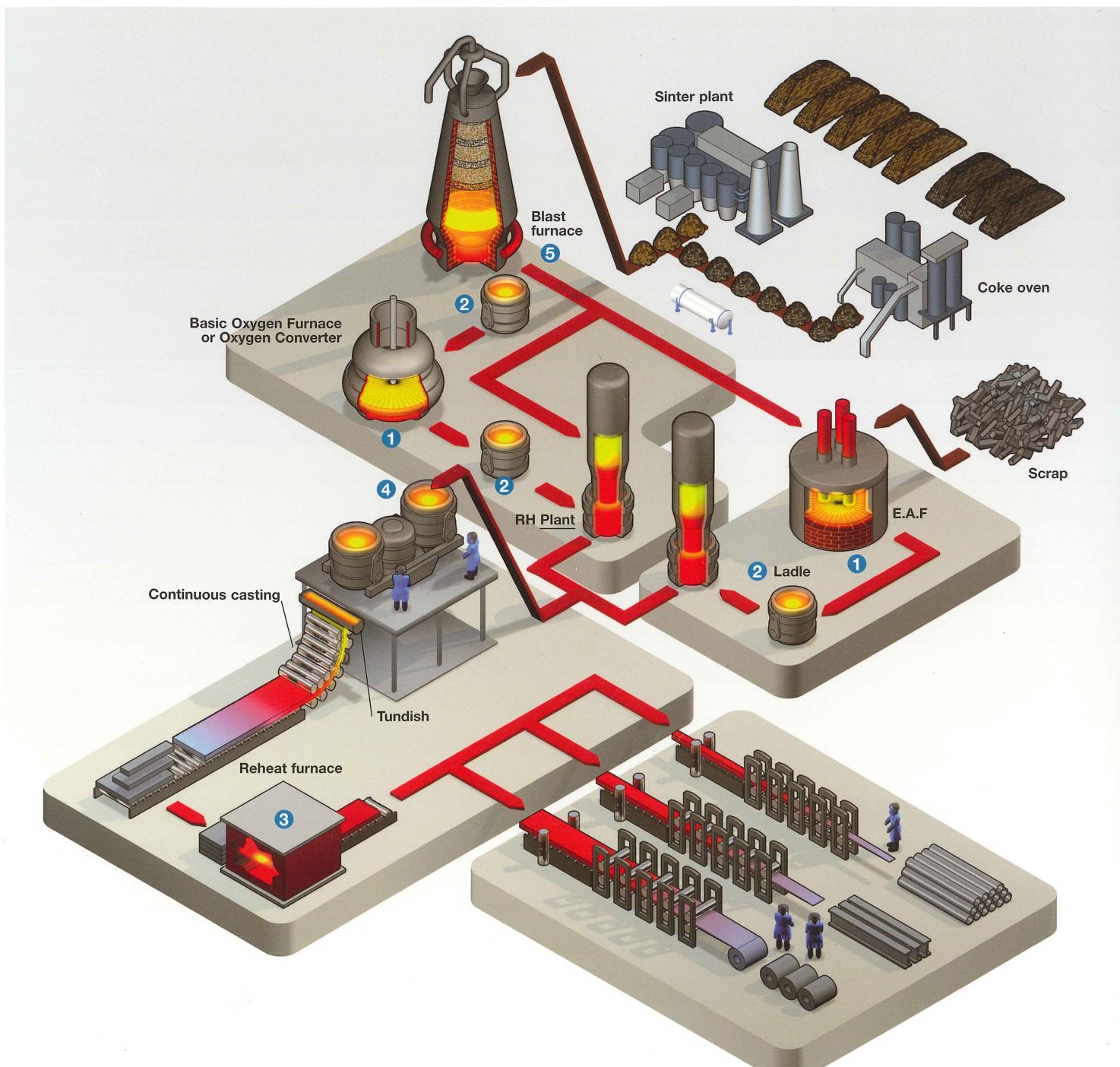
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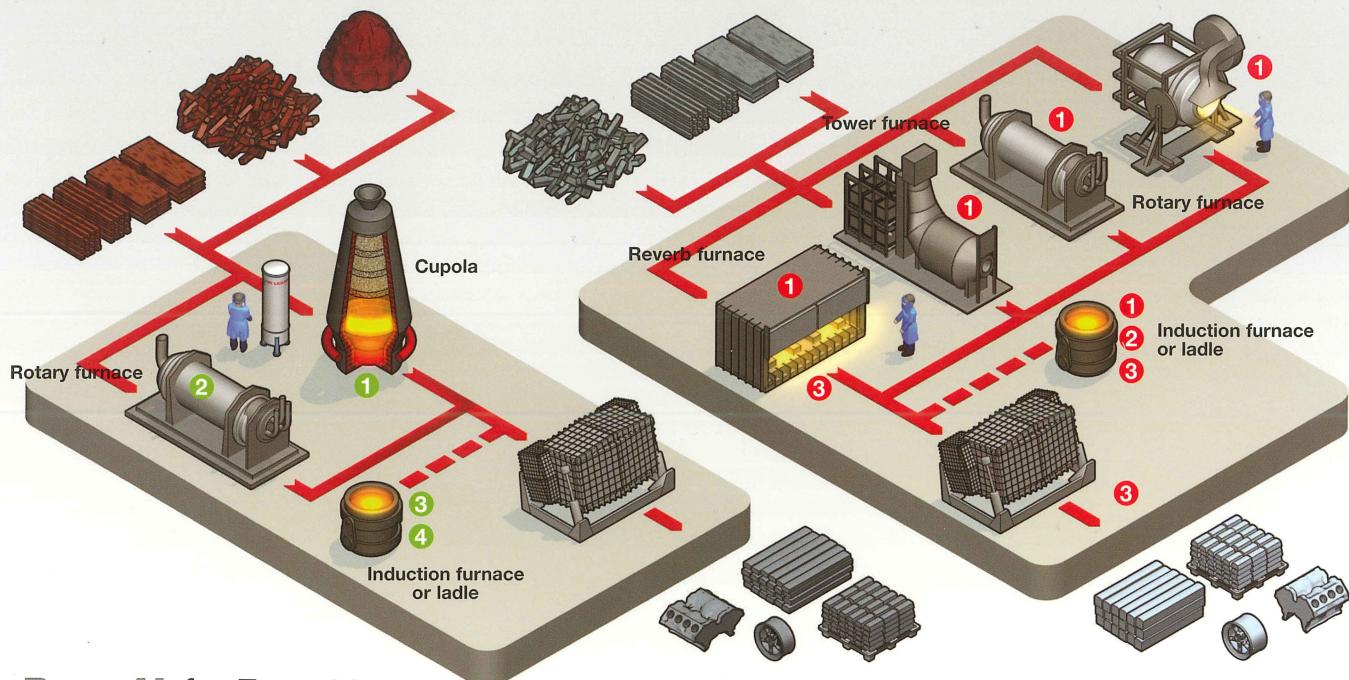
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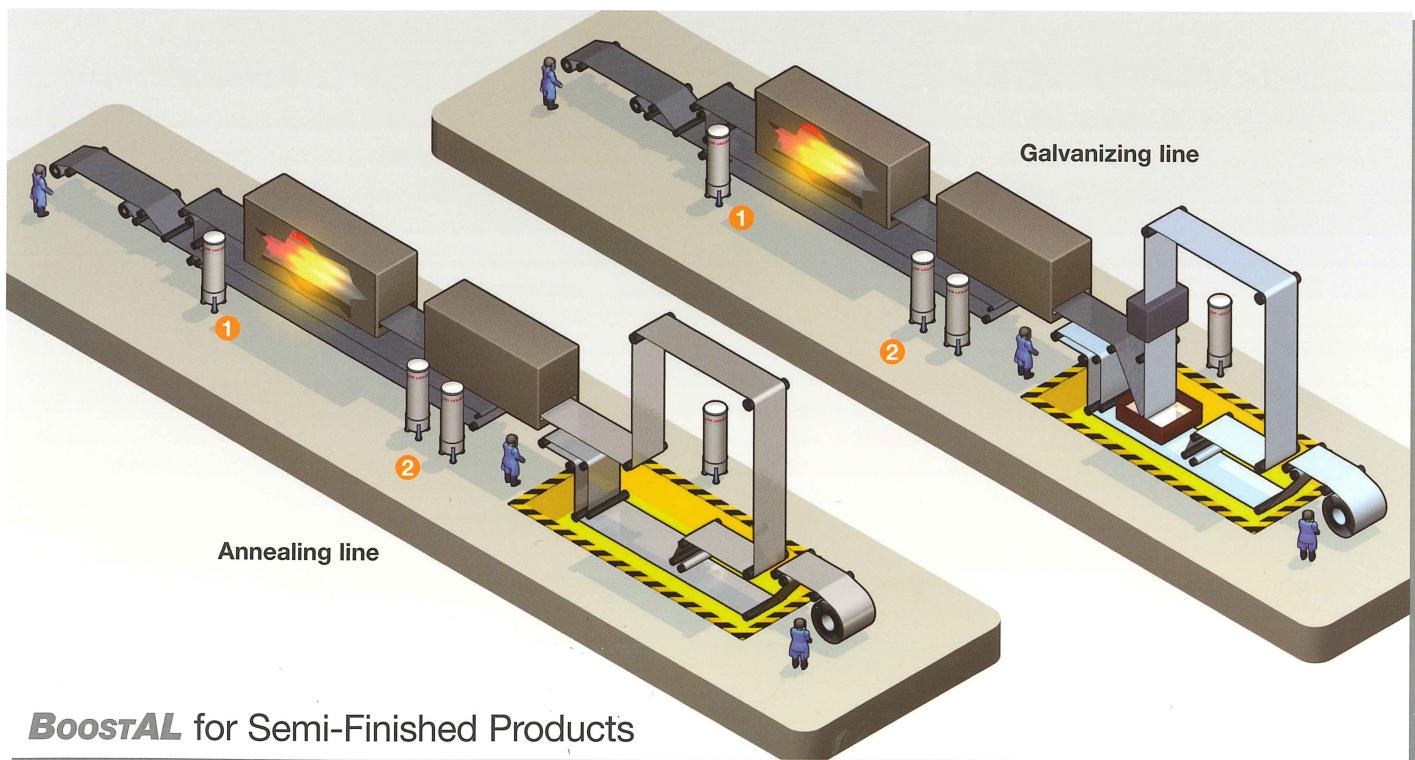
# Your process

From feed conditioning and raw material melting, to melt refining and casting, all the way to finishing operations, Air Liquide supports you in every step of your production process.





**BoostAL** for Foundries



**BoostAL** for Semi-Finished Products

**BoostAL** is Air Liquide's offer in metallurgy that covers the full range of clean application technologies designed to satisfy your needs. **BoostAL** optimizes performance through increased production output and reduced energy consumption, resulting in high quality products.

Our Offer

# Our offer

**BoostAL** is Air Liquide's offer in metallurgy that covers the full range of clean application technologies designed to satisfy your needs.

**BoostAL** optimizes performance through increased production output and reduced energy consumption, resulting in high quality products.

## BoostAL for Steel

### 1 - Melting with Electric Arc Furnace mills (E.A.F)

- Oxygen lancing to adjust carbon and reach composition target (O<sub>2</sub>)
- Post combustion to reduce CO and electrical power consumption (O<sub>2</sub>)
- Oxy-combustion to increase furnace's overall efficiency (O<sub>2</sub>)
- Supersonic injection technology to combine all the benefits of oxygen usage (O<sub>2</sub>)

### 2 - Metal transfer

- Oxy-combustion for preheating ladles to enhance flexibility and lower costs (O<sub>2</sub>)

### 3 - Reheating

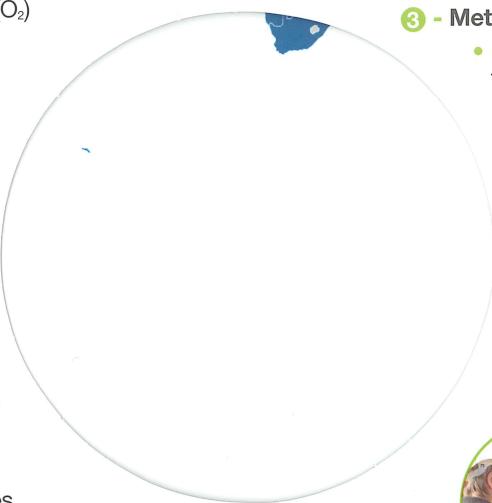
- Oxy-combustion in reheat furnaces to increase productivity and reduce CO<sub>2</sub> and NO<sub>x</sub> emissions (O<sub>2</sub>)

### 4 - Surface protection and degassing

- Non-reactive stirring gas injection for degassing (Ar, N<sub>2</sub>)
- Liquid argon for metal surface protection (Ar)
- Inert vessels: RH, ladles, tundishes to lower defects and increase yield (Ar, N<sub>2</sub>)

### 5 - Environment

- Carbonic dry ice injection for red fumes suppression (CO<sub>2</sub>)



## BoostAL for Foundries

### 1 - Melting with cupolas

- Oxy-combustion and Post combustion to save coke and increase production (O<sub>2</sub>)
  - Blast air enrichment with oxygen
  - Supersonic oxygen lancing
  - Oxy-fuel flame

### 2 - Melting with rotary furnaces

- Oxy-combustion to increase production and furnace yield (O<sub>2</sub>)

### 3 - Metal transfer

- Oxy-combustion for preheating of ladles to enhance flexibility and lower costs (O<sub>2</sub>)

### 4 - Surface protection and degassing

- Non-reactive stirring gas injection for degassing (Ar, N<sub>2</sub>)
- Liquid argon for liquid metal surface protection (Ar)
- Inert vessels: ladles, tundishes to lower defects and increase yield (Ar, N<sub>2</sub>)



## BoostAL for Non-Ferrous

### 1 - Melting with refiners and smelters

- Oxy-combustion to increase furnace's overall efficiency (O<sub>2</sub>)
- Post combustion with oxygen enriched air to reduce CO and increase the heat transfer to the load (O<sub>2</sub>)

### 2 - Metal transfer

- Oxy-combustion for preheating of ladles to enhance flexibility and lower costs (O<sub>2</sub>)

### 3 - Surface protection and degassing

- Non-reactive stirring gas injection for degassing (Ar, N<sub>2</sub>)
- Inert vessels: ladles, tundishes to lower defects and increase yield (Ar, N<sub>2</sub>)

### 1 - Reheating

- Oxy-combustion in reheat furnaces to increase productivity and reduce CO<sub>2</sub> and NO<sub>x</sub> emissions (O<sub>2</sub>)

### 2 - Heat treatment with protective atmospheres

- Controlled atmospheres for annealing and galvanizing lines to enhance production quality for a cost effective solution (N<sub>2</sub>, H<sub>2</sub>, CO)