Industrial Refrigeration

Claes Ericsson
Industrial Equipment
Industrial Equipment
- the segment and its markets

Comfort

Refrigeration

OEM Engine & Transport

Fluids & Utility

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Refrigeration
– what is industrial refrigeration?

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Industrial refrigeration – the main end-user markets

The cold chain

HVAC & Refrigeration

Process Industry

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Key market drivers
– structural growth drivers trigger change

- Increased living standards
- Urbanization
- Environmental concerns
- Energy efficiency
Key market drivers
– increased living standards & urbanization

**Increased living standards**
- New consumption patterns in BRIC
- Demand for more prepared food
- Higher quality of food

**Urbanization**
- Strong urbanization ahead
- Cold chain infrastructure
Living standards & urbanization
– examples in fast-growing economies

* Expansion
  - 1000 hyper or larger supermarkets are added in the BRIC countries every year
  - FDI – foreign direct investment – means entrance of global retail players in India
  - New state program for food in Russia

* Modernization of installed base
  - Old systems are inefficient
Stepwise increases
– in footprint for air products in BRIC

- 3,000 m²
  March -11

- 1,500 m²
  March -12

- 3,500 m²
  March -10

- 5,000 m²
  Apr -12

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Key market drivers
– environmental concerns

- Montreal Protocol
  – Reduction of ozone depleting gases

- Kyoto Protocol
  – Reduction of greenhouse gas emissions
Environmental concerns
– drive increased use of natural refrigerants

Environment

Safety

- Ammonia & CO₂
- Aligned with nature
- Technology barriers
- Risk avoidance

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Key market driver
– energy efficiency

- Cost of energy and energy usage
- Combining thermal & application knowledge for higher efficiency
- Alfa Laval is the leader in helping customers cut energy costs.

The Optigo case

Energy costs

Cost of chiller

Refrigerant and initial ref charge
Energy efficiency
– examples in established economies

- Retrofit market
- Energy efficiency and LCC
- Alignment to legislations
Let’s look at practical examples – the cold chain
The cold chain
– food and beverage processing industry
Food & Beverage processing industry
– Beer production in Brazil

- Ammonia refrigeration system
- Evaporators & condensors
- Utility cooling water
- Order value 1.9 M€
The cold chain
– cold storage and distribution centrals
Storage and distribution central

- Insulated cooler
- Semi-welded plate heat exchanger
- Ammonia liquid separator
- Air-cooled condenser/dry cooler
- Air cooler - single discharge
- Air cooler - dual discharge
- Fusion-bonded plate heat exchanger
Storage and distribution
– Chili storage in India

* India is among the world’s largest fruit & vegetables producers

* According to Indian government
  – 5,500 cold storage areas in India today
  – This capacity cover 15% of production output

* Cold chain opportunities
  – 25% of food destroyed
  – 20% growth in the cold chain annually
The cold chain
– retail

[Diagram showing the cold chain process from distribution central to production industry, processing industry, retail and restaurants, and end-users.]
Retail

- Air cooler – dual discharge
- Air-cooled condenser/dry cooler
- Air cooler – single discharge
- Air cooler – single discharge
Retail
– CO₂ refrigeration in the UK

* CO₂ gas cooling
  – Legislation-driven investment
* An industry on the move
* Industry infrastructure to grow
  – Knowledge among installers
  – Time

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Summary

- Structural growth will offer opportunities ahead
- Our improved footprint enables access to a larger market
- As technology leader with a focus on R&D, Alfa Laval will also drive change in a very dynamic market
- A strong brand, wide offering, excellent market coverage and deep application knowledge means potential to capture future growth