



ALFA  
ROMEO

The image features the Alfa Romeo logo in a stylized, white, blocky font. The word "ALFA" is positioned above "ROMEO". The letters are thick and have a slightly irregular, hand-drawn appearance. The logo is centered on a dark blue background. A thin white horizontal line runs through the middle of the logo, passing behind the letters. Additionally, a thin white curved line arches over the top of the word "ALFA".

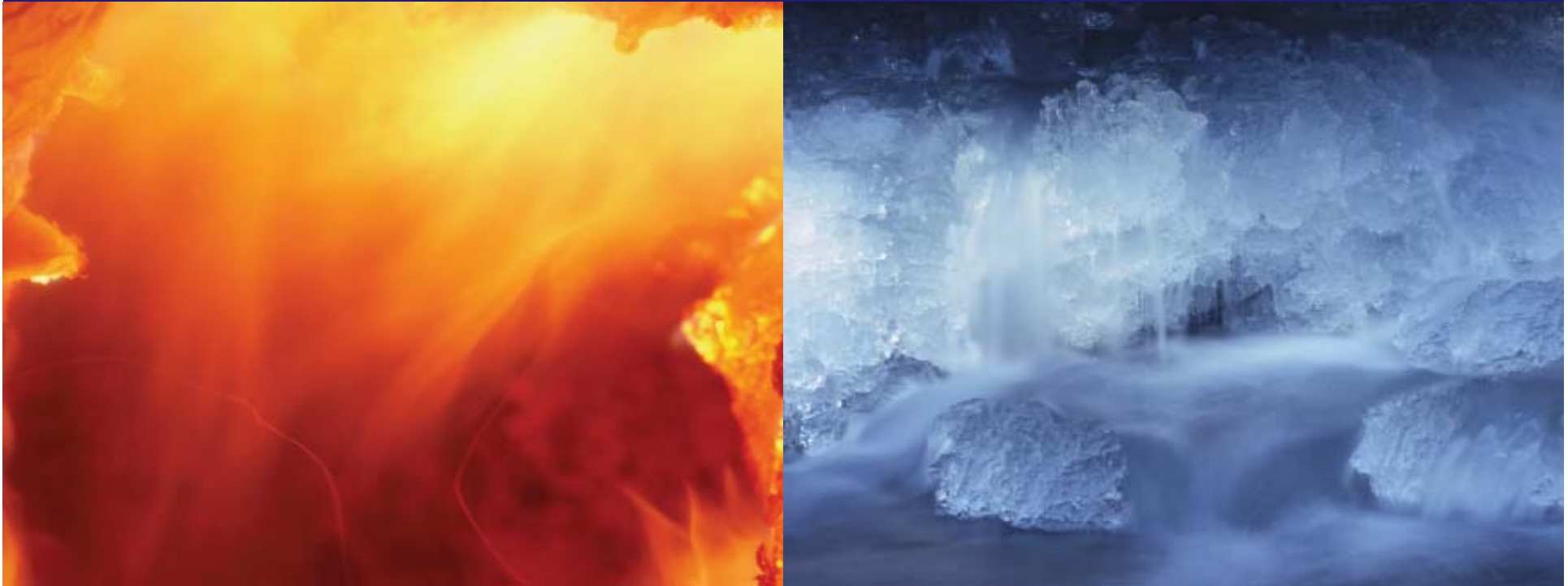


# Heat Transfer

Capital Market day, November 2010

Nish Patel

# Heating and cooling



Basic needs in many industries

# Drivers & trends

- \* Fast-growing markets will serve as key growth engines
- \* Rising energy costs, need for energy efficiency
- \* Modernisation & replacement
- \* Environmental concerns demand for energy efficiency

# Global heat exchanger market 2009

Total HE 9,600 M€

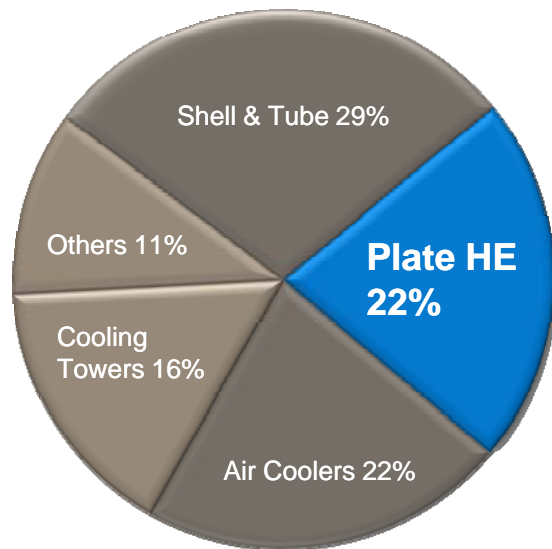
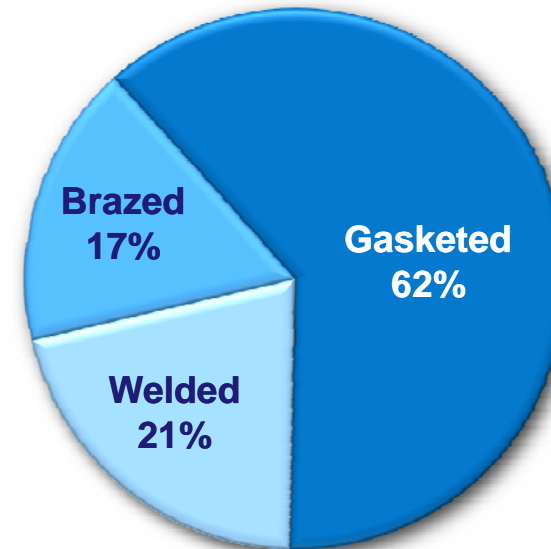
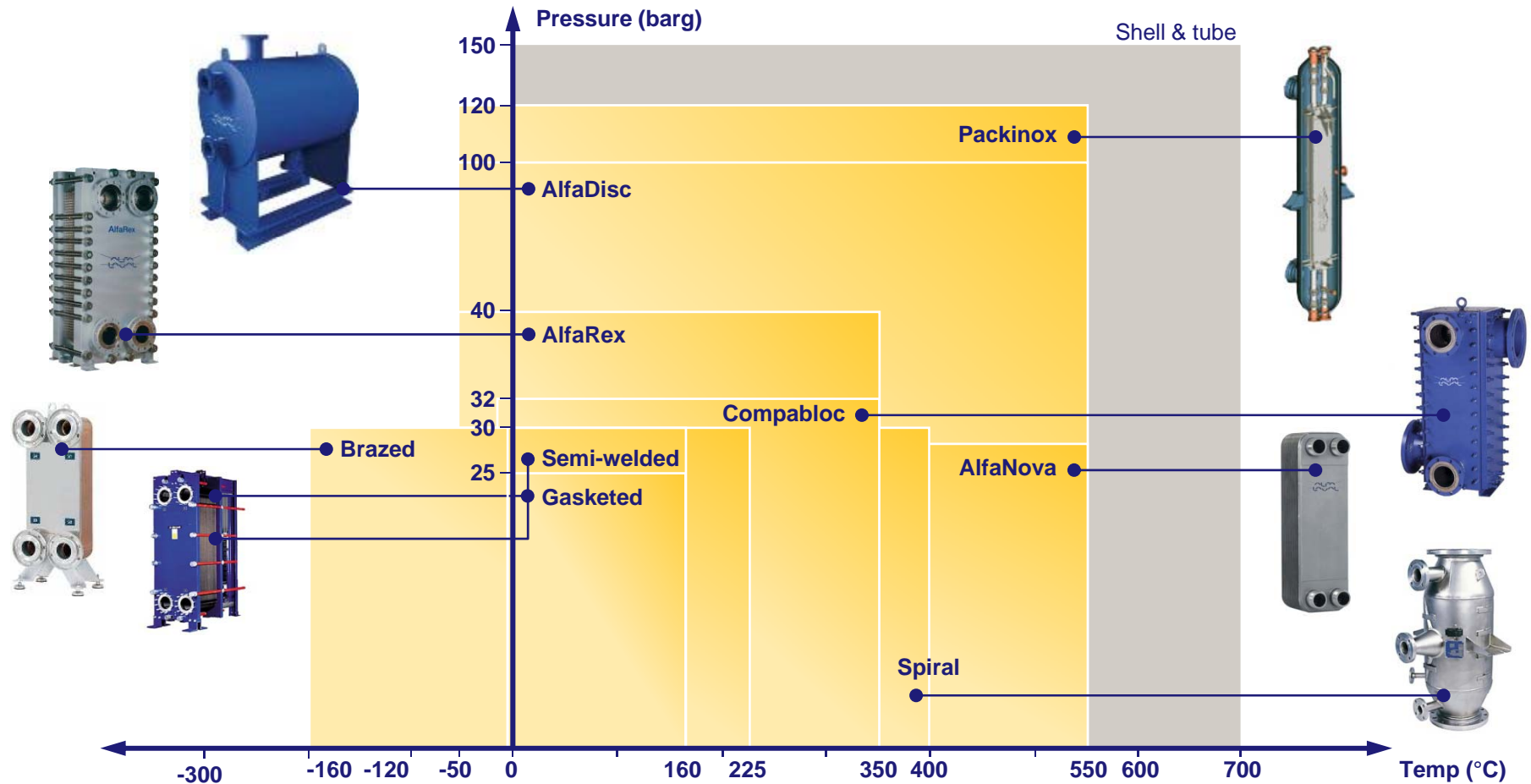


Plate HE 2,100 M€



# Design pressure and temperature





# The advantages of the plate heat exchanger

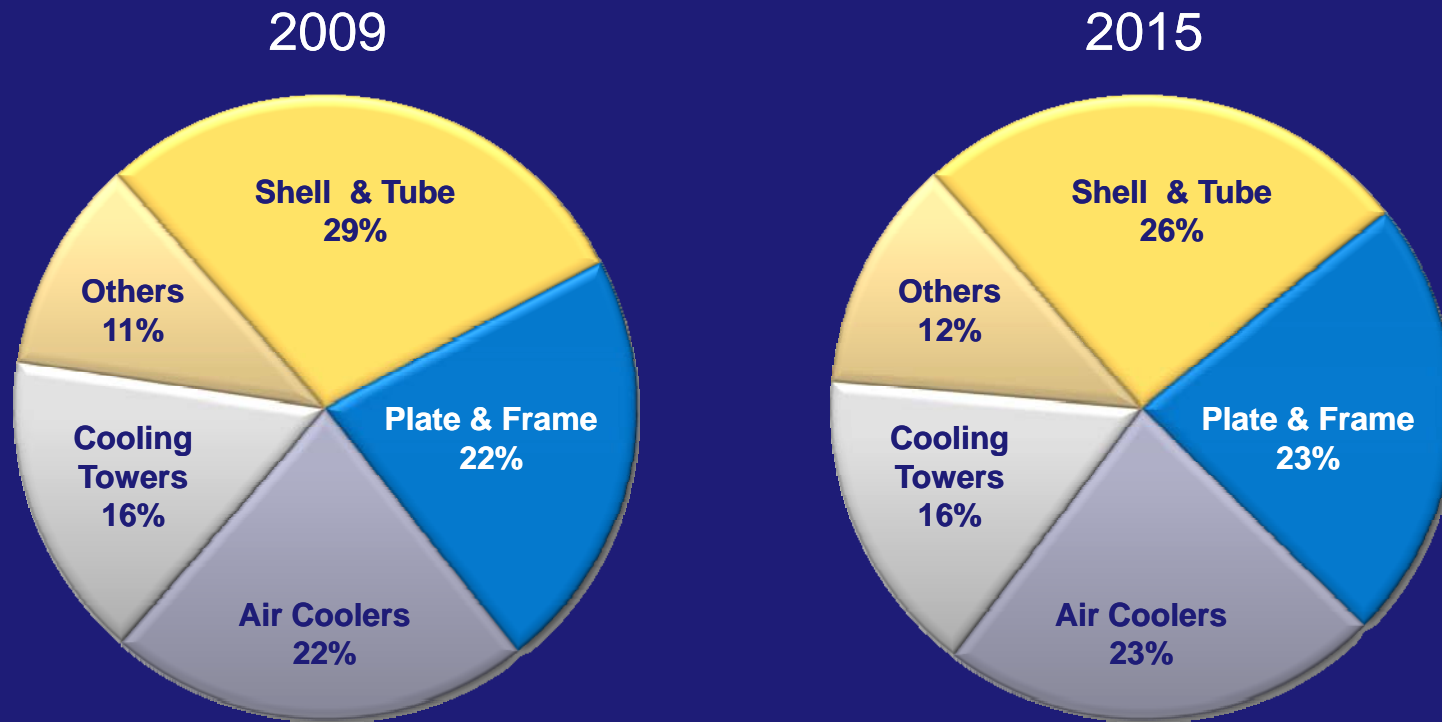
- \* Low investment cost
- \* Low installation cost
- \* Low space requirement
- \* Low maintenance cost
- \* Flexible design
- \* High reliability



Which means PHE is increasingly taking market share

# Heat exchanger types

## The technology shift

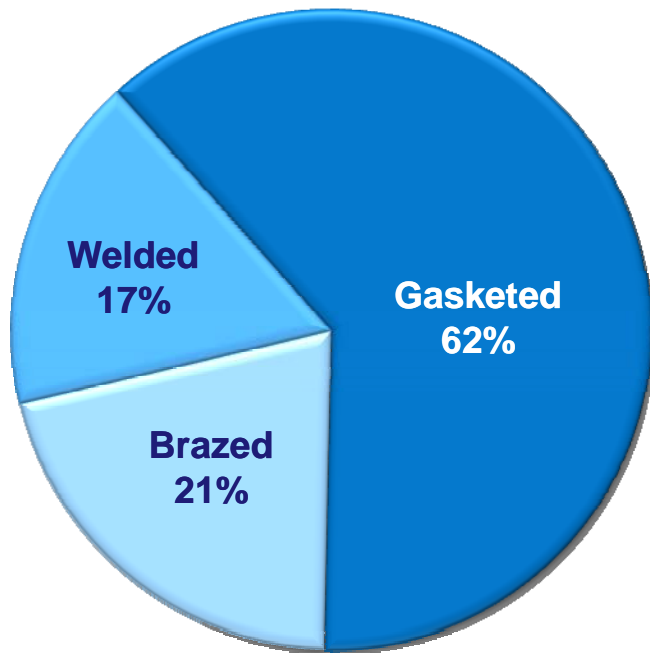


... and this is expected to continue



# Plate heat exchangers

## Different versions



Welded



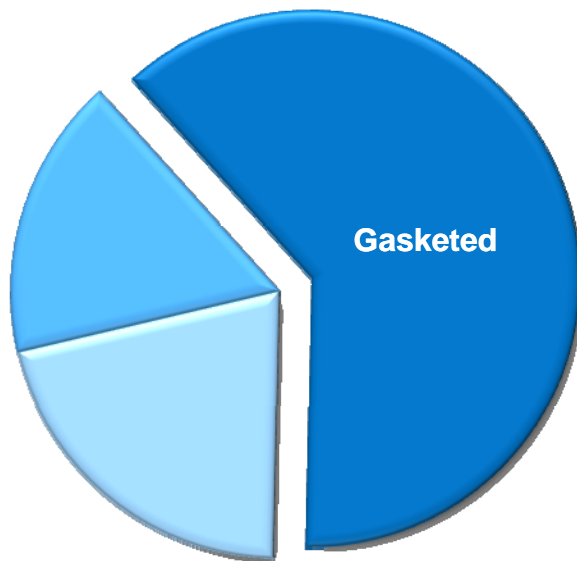
Braze



Gasketed

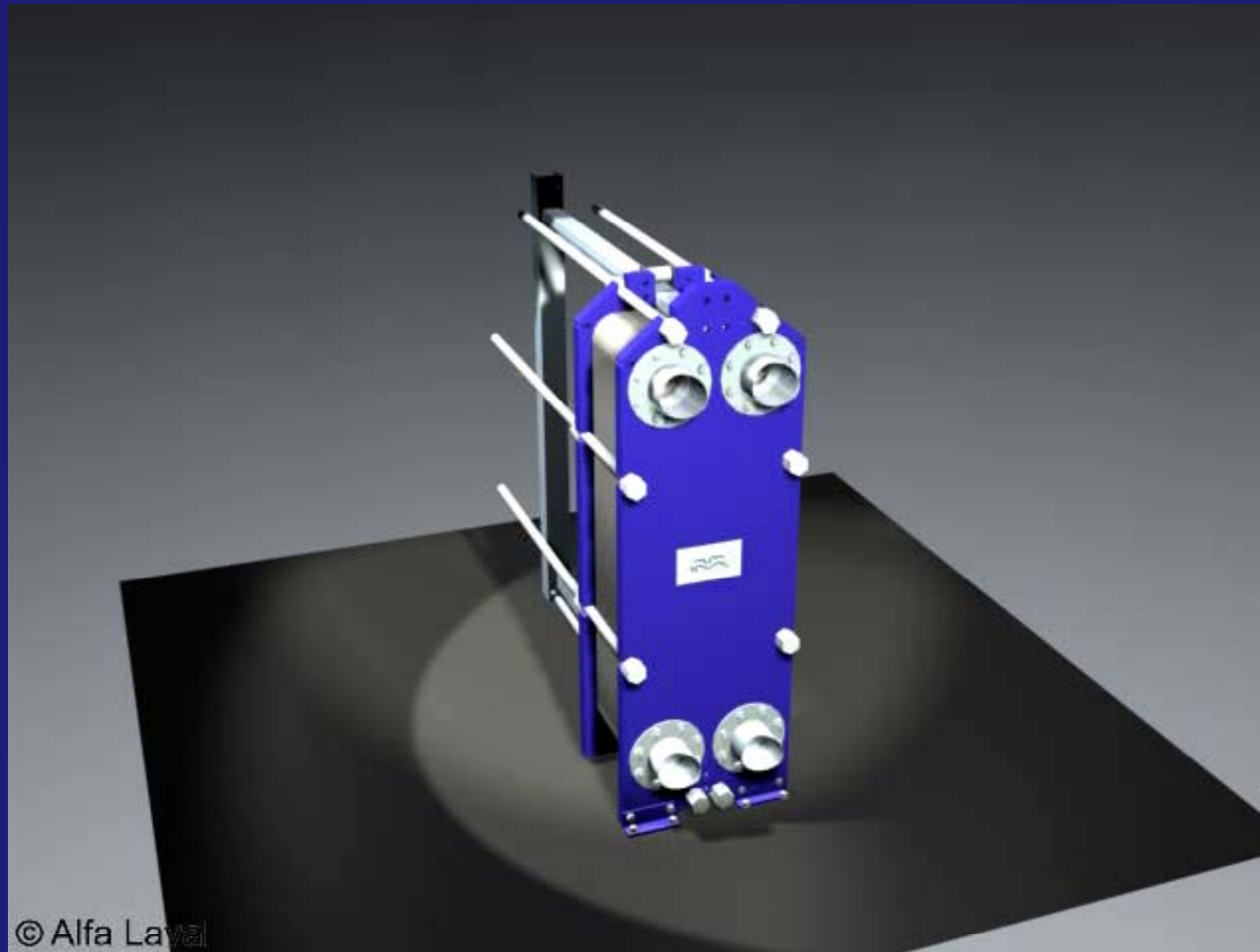
# Gasket plate heat exchangers

Market 1,300 M€



# Plate heat exchangers

– flow principle



# Applications



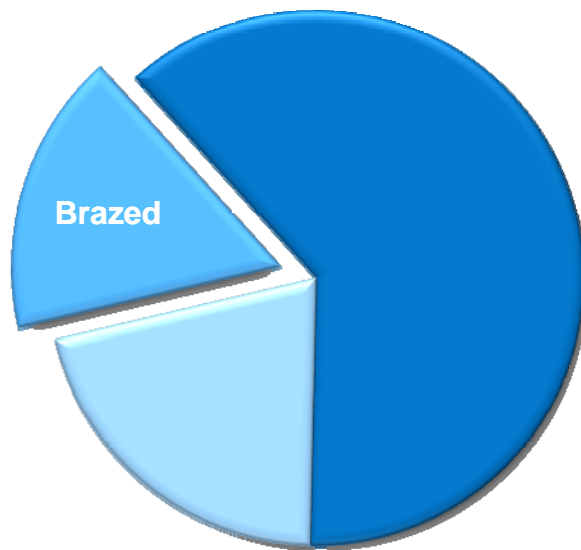
District/Central cooling



Wet crude oil treatment

# Brazed plate heat exchangers

Market 450 M€



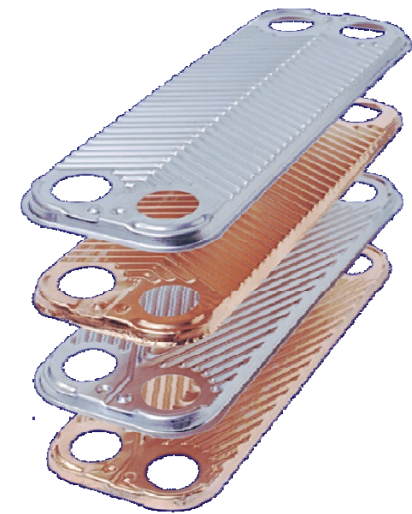
Brazed



# The brazed & bonded plate heat exchanger

\* For higher temperature duties

Fusion bonded



Copper brazed



# Typical applications



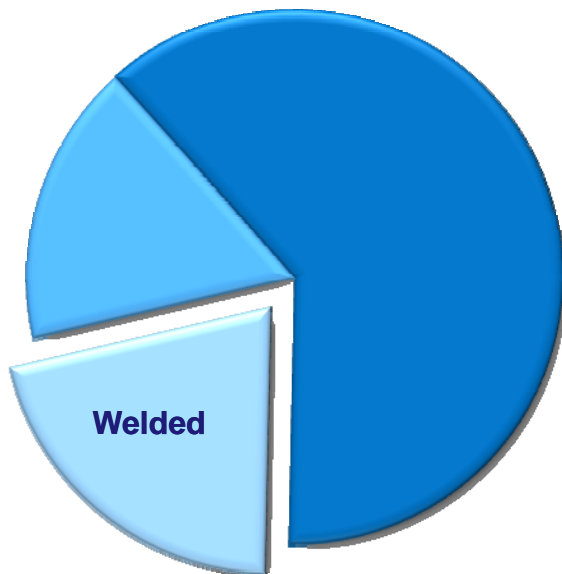
Heat Pump



Refrigeration

# Welded heat exchangers

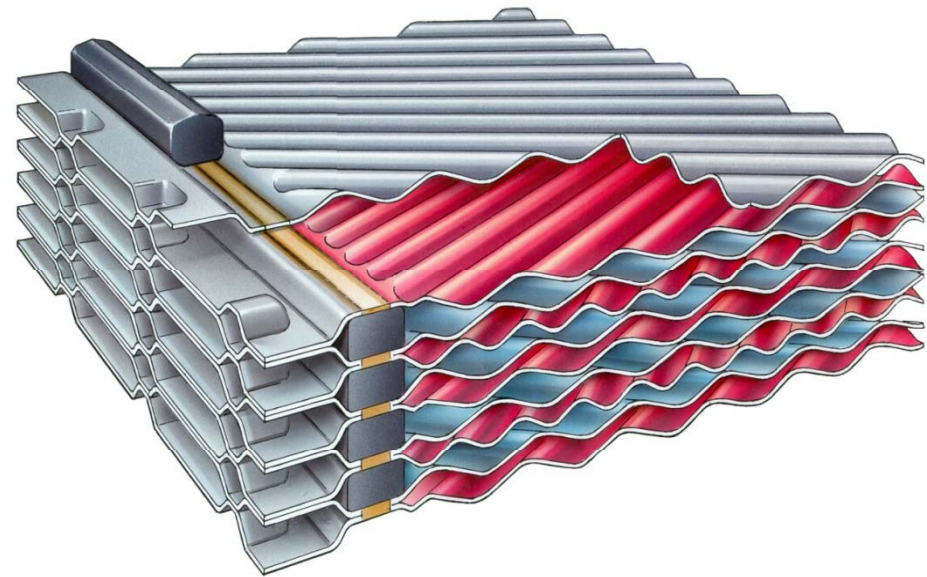
Market 350 M€



Welded

# Semi welded PHE – usage

- \* When one medium is hostile to gasket materials





# Applications



HVAC cooling



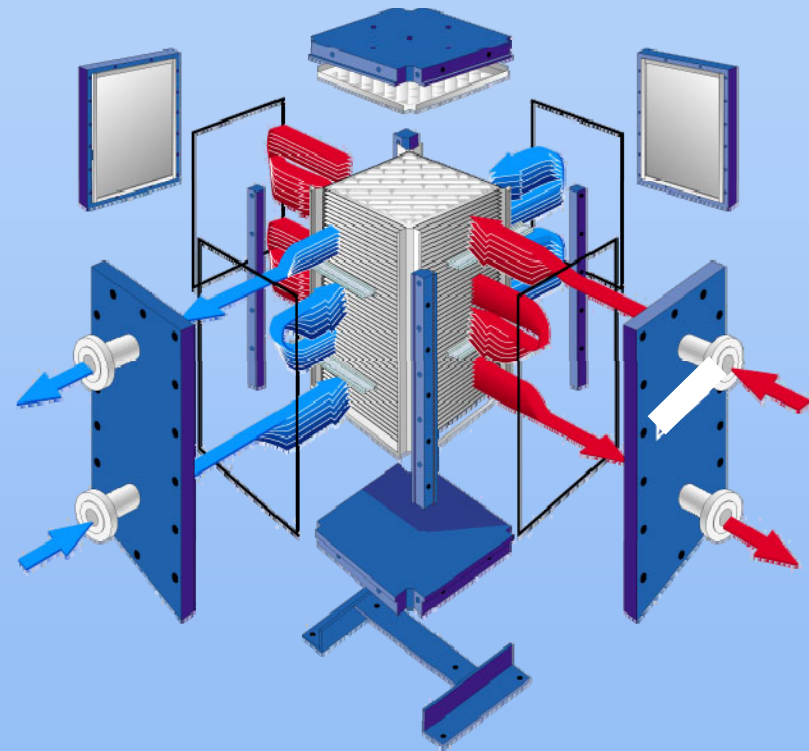
Gas compression



Supermarket cooling

# Compabloc – welded and accessible

\* For higher pressure duties





# Applications



Gas processing



Chemical processing

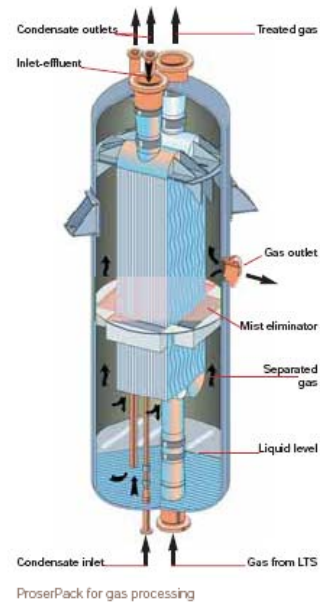


# Packinox

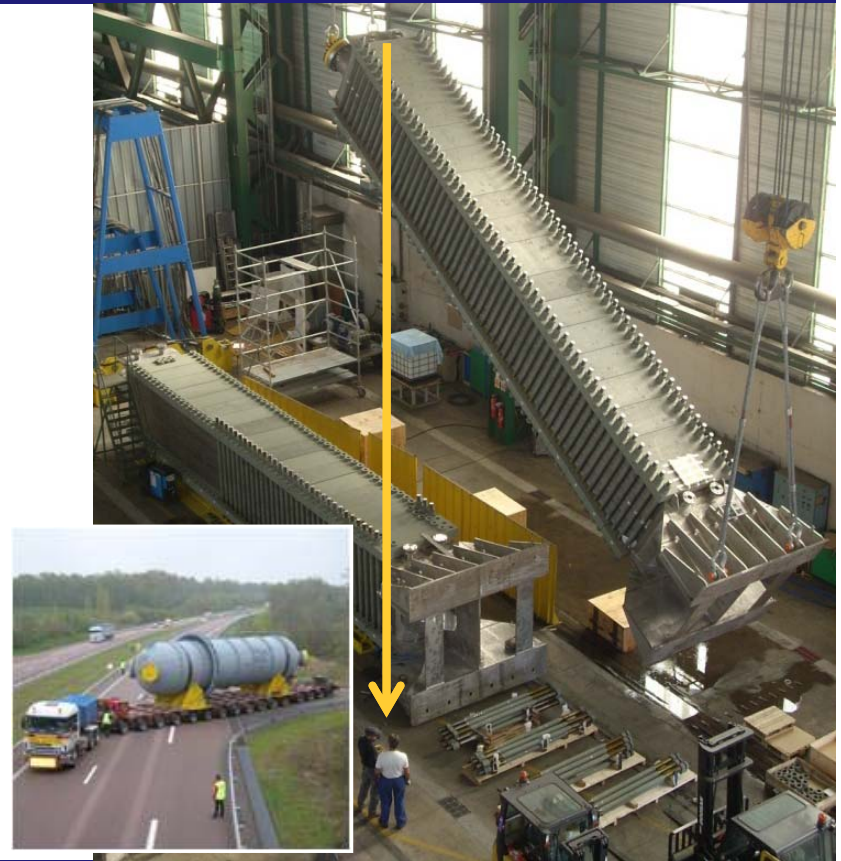
\* For higher pressure and temperature duties



Stripper Bottoms Heat Exchanger



ProserPack for gas processing



# Applications



Refinery



Petrochemical plant

# Spiral heat exchangers

For duties containing fluids with particles

- \* A fully welded heat exchanger for tough process duties.
- \* Has an open channel, suitable for slurries and fluids containing particles.
- \* Is adaptable, to suit condensing duties.





# Applications



Steel plant



Paper mill

# Air heat exchangers



## Continuous Development

**1976**

Artec Start

**1990**

Artec  
acquired

**2007**

Helpman  
acquired

**2007**

Fincoil  
acquired

**2008**

AHE  
production  
in Bulgaria

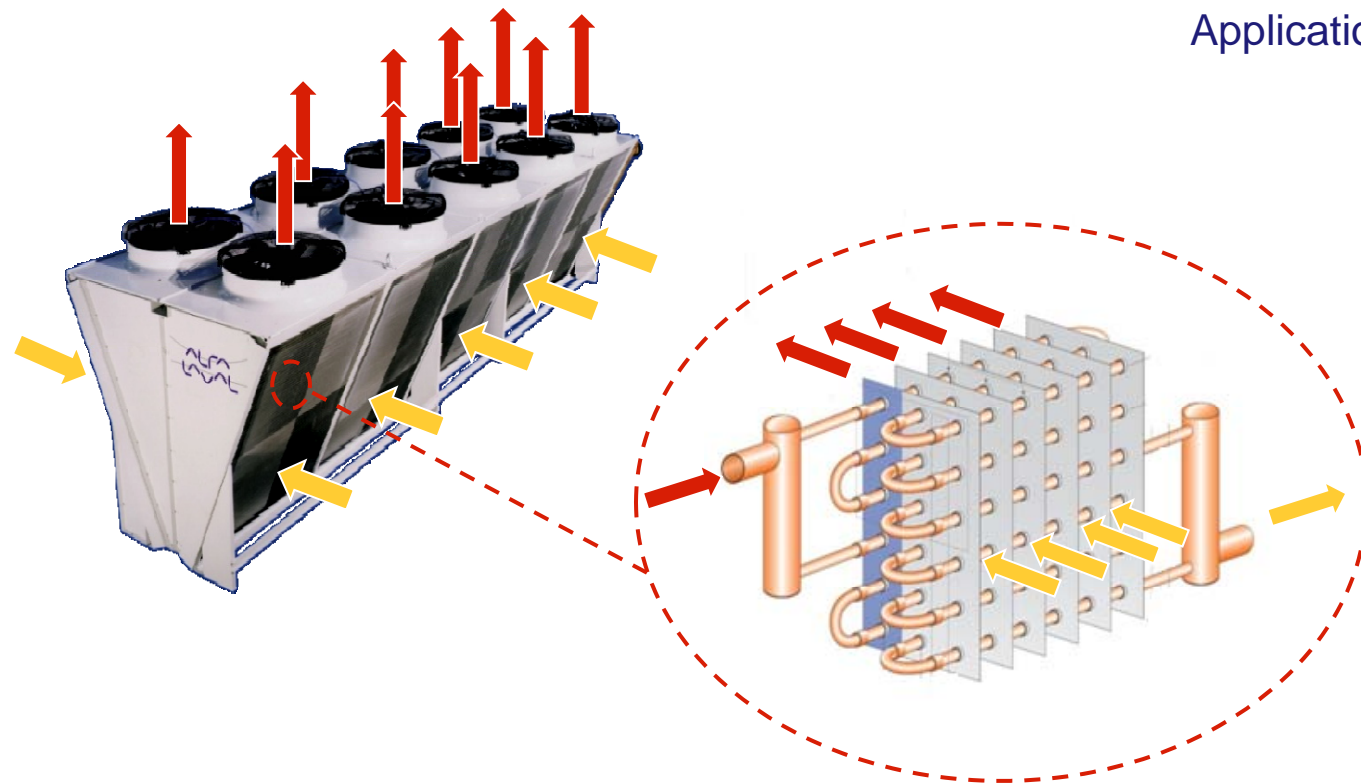
**2010**

AHE  
production  
in India

**2010**

AHE  
expansion  
in Russia

# How it works



Applications





# Shell & tube for refrigeration



HVAC



Marine

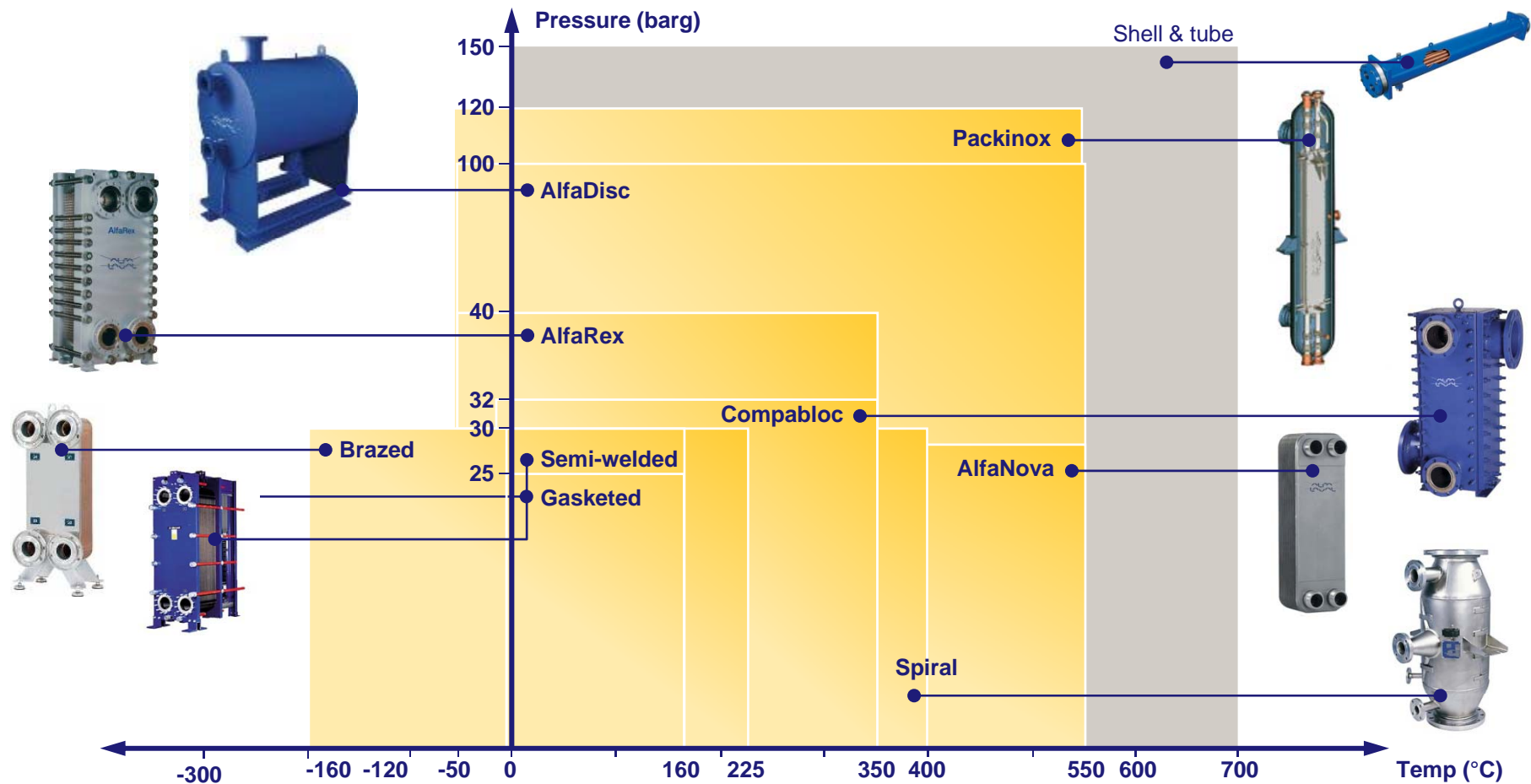


# Focus on R&D

- \* Investment (2009):  
MSEK 654 = 2.5%  
of sales
- \* 290 engineers and  
technicians
- \* 35-40 new products  
annually
- \* More than 300 patents  
related to own products



# Design pressure and temperature





ALFA  
ROMEO

The image features the Alfa Romeo logo, which consists of the words "ALFA" and "ROMEO" stacked vertically. The letters are white and have a stylized, blocky appearance with rounded edges. The logo is centered on a dark blue background. A thin white horizontal line runs through the middle of the logo, passing behind the letters. Additionally, a thin white curved line arches over the top of the word "ALFA".