



**25 - 27 October / Ekim 2018**

TÜYAP Fair, Convention & Congress Center, **İstanbul**

Tüdöksad Akademi **10. Uluslararası Döküm Kongresi / 10th International Foundry Congress** by Tudoksad Academy

In conjunction with **ANKIROS / ANNOFER / TURKCAST** fairs

**«Pur Cold-Box Systems - Past - Present - Future»**

**«Soğuk Kutu Maça Üretim Sistemlerinde Yeni Teknolojiler»**

**Peter Gröning**

**(Hüttenes-Albertus Chemische Werke GmbH)**

**6.Oturum / 6th Session**

**Oturum Başkanı / Session Chairman: Prof. Dr. Ali Kalkanlı (ODTÜ)**



# **PUR Cold-Box Systems**

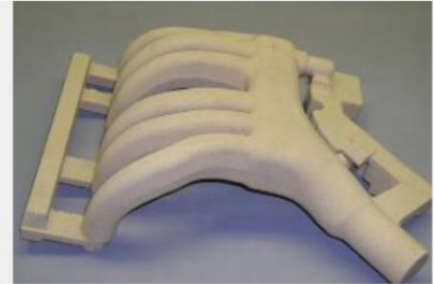
Past – Present – Future

# 50 Years of PUR Cold-Box – A Success Story!

2018

HAPPY 50th!

1968

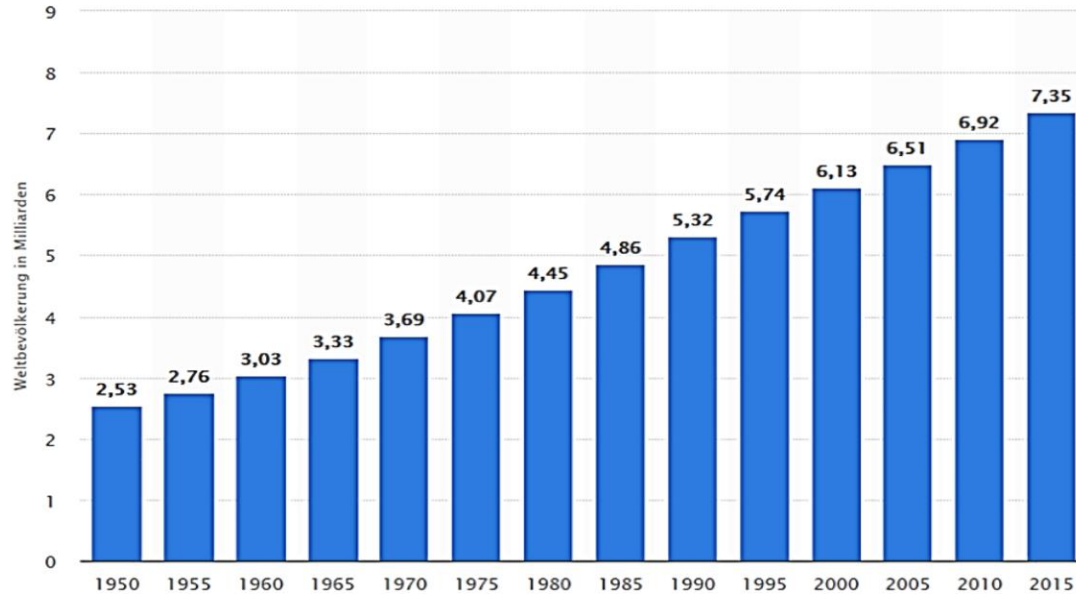


# Innovations 1968

1968

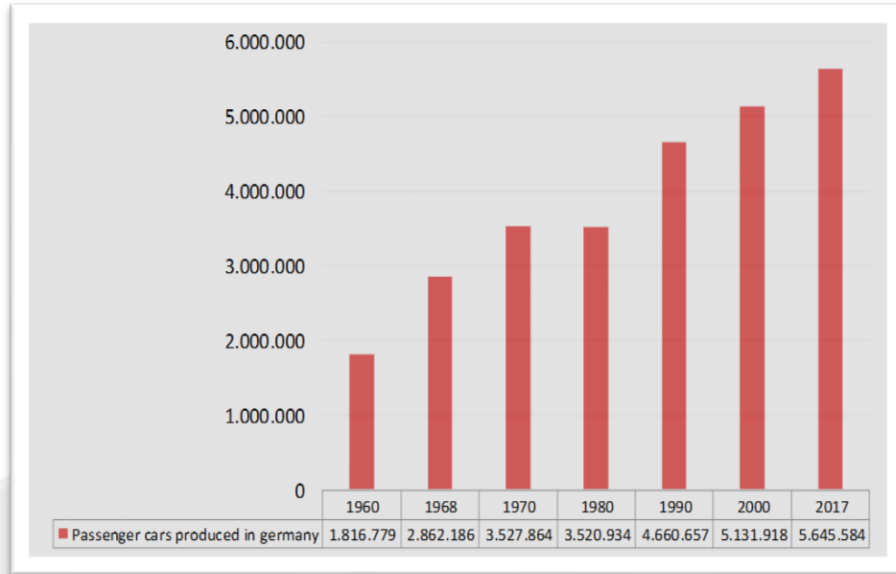


# Global Population Growth

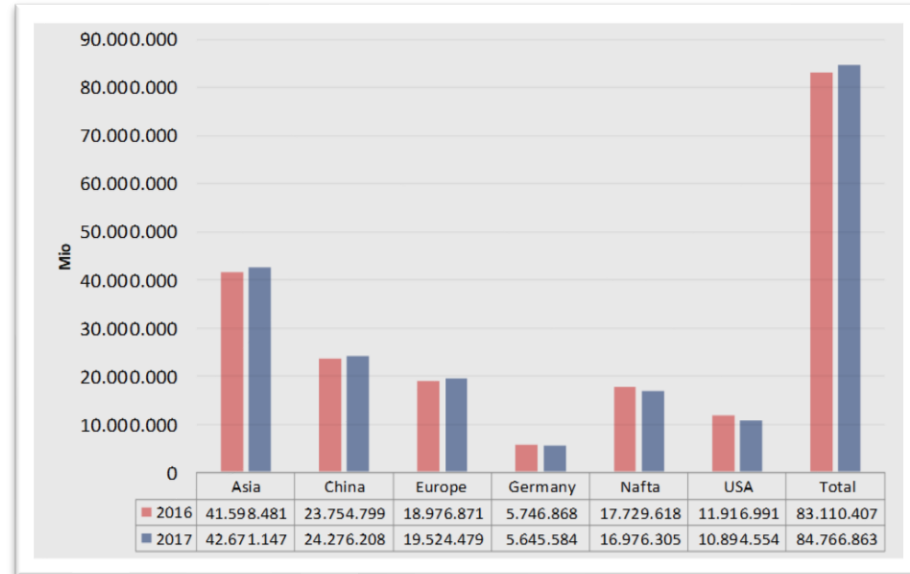


Source : Statista

# Development Car Production



Germany



Worldwide

Source : ACEA

# The Cold-Box Road to Success



**2018**

2000's

Introduction of silicatic  
Cold-Box Systems

1990's

Modification of solvents  
Introduction of RME

1980's

Cold-Box is becoming water  
resistant

1970's

Steady growth replacing  
older core making  
technologies

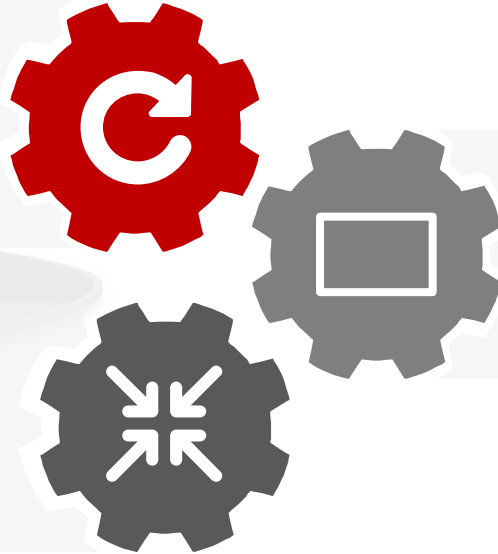
**1968**

Introduction of PUR Cold-Box  
to the foundry industry

# Technological Milestones

## Automatization

Core shooting, handling, coating



## Core Package Application

Very effective way to produce high quality products, box and boxless

## Curing Technology

Developing and improving curing technology



# Technological Milestones

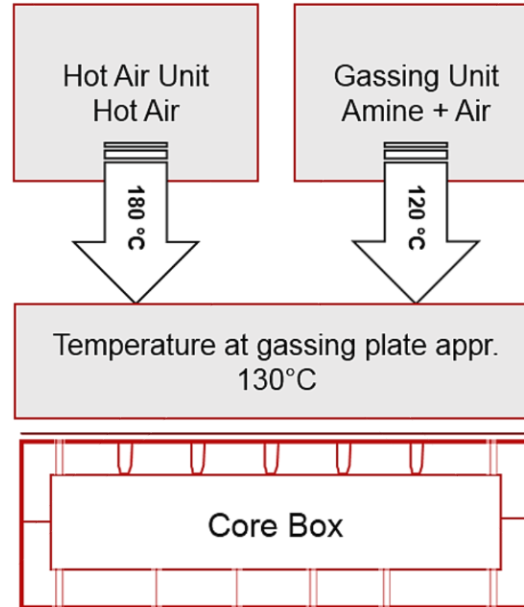
## Automatization

Core shooting, handling, coating

## Core Package Application

Very effective way to produce  
products, box and boxless

### New Curing Technology



## Curing Technology

Developing and improving curing  
technology

# Environmental Milestones

## Use of water based Coatings

Introduced in the 1980s - Improved water and humidity resistance of Cold-Box Systems

## Silicatic Cold-Box Systems

Introduced 1999 - TEOS based  
Pollutants, smell, condensate and gas reduction



## Bio Cold-Box Systems

Introduced 1996 - Aliphatic RME based  
Improved core shop performance  
Reduced pollutants

# Environmental Milestones

## Use of water based Coatings

Introduced in the 1980s  
water and humidity resistant  
Cold-Box Systems

## Silicatic Cold-Box

Introduced 1999 - TEO  
Pollutants, smell, condensation  
gas reduction



## Cold-Box Systems

6 - Aliphatic RME

shop performance  
ants

# Environmental Milestones

## Use of water Coatings

Introduced in the water and humidity Cold-Box System

## Silicatic Coatings

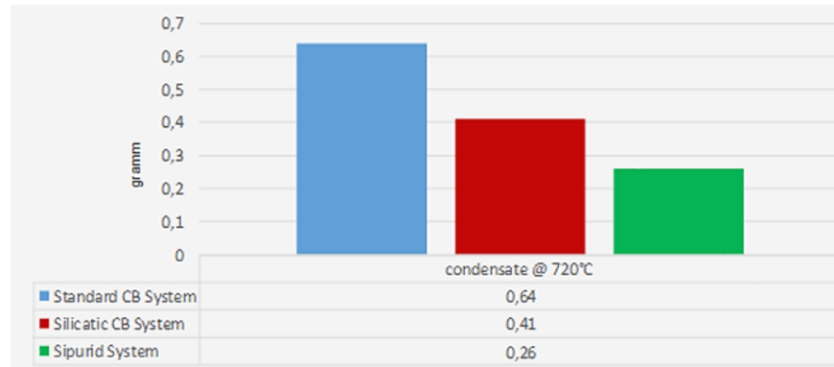
Introduced 1990s  
Pollutants, smoke  
gas reduction

Amount of amine [ g ]

Concentration of odour [ GE/m<sup>3</sup> ]

### Low condensate level – Silicatic CB systems

- Less risk of fires in the piping system
- Less die cleaning required
- Lower down times
- Increased productivity



10

Purging time [ Sek ]

0

# Sustainability Milestones

## Reclaiming

Developing binders systems suitable for different sand qualities

## Reduction of organics

Silicatic CB Systems, Inorganic Additives



## Amine Recycling

Reduction of pollution, saves crucial resources

## Reduction of free Monomers

Reduction of pollution, saves crucial resources

# Sustainability Milestones

## Cold-Box Process – Sipurid

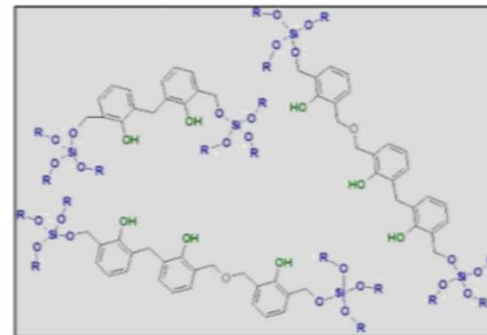
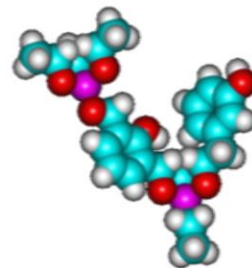
Increased molecular Mass

Improved thermal Stability

Amounts of solvents 50% reduced

Less Carbon

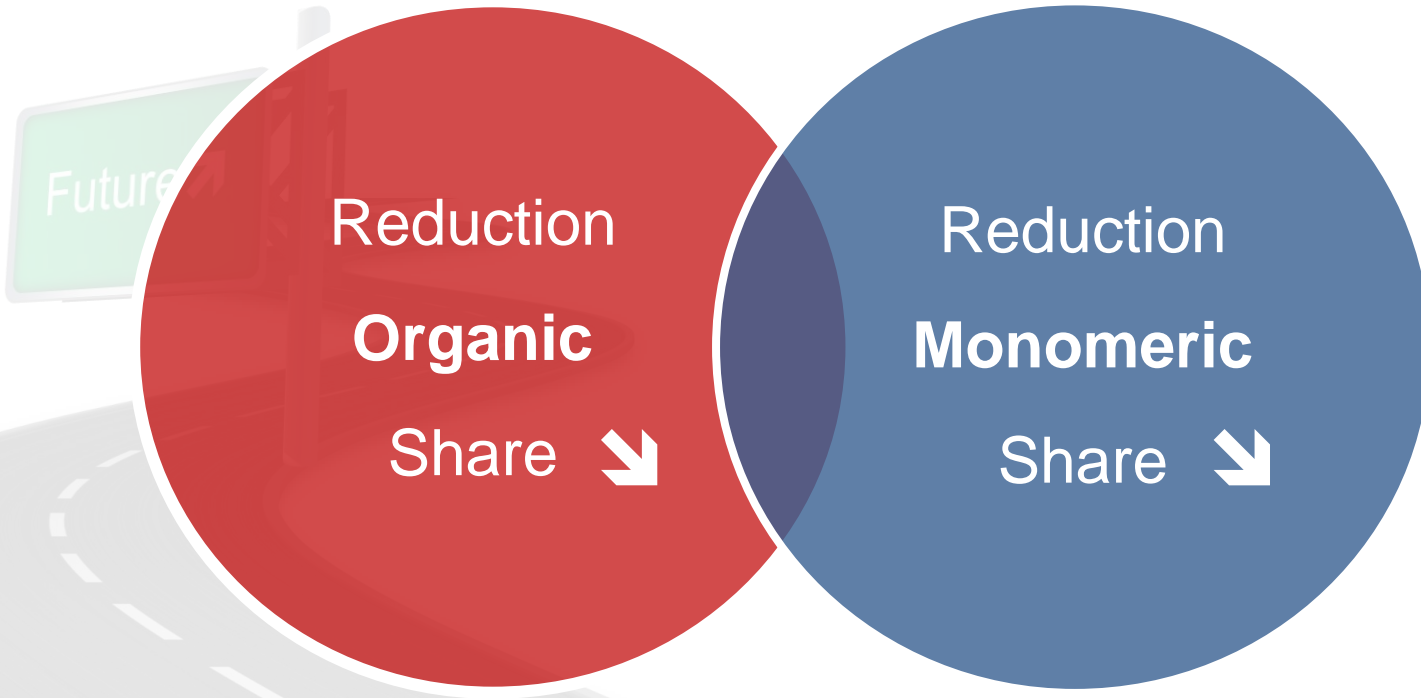
Reduced Emissions (Gass,Smell, Condensates)



# What is next in Cold-Box?

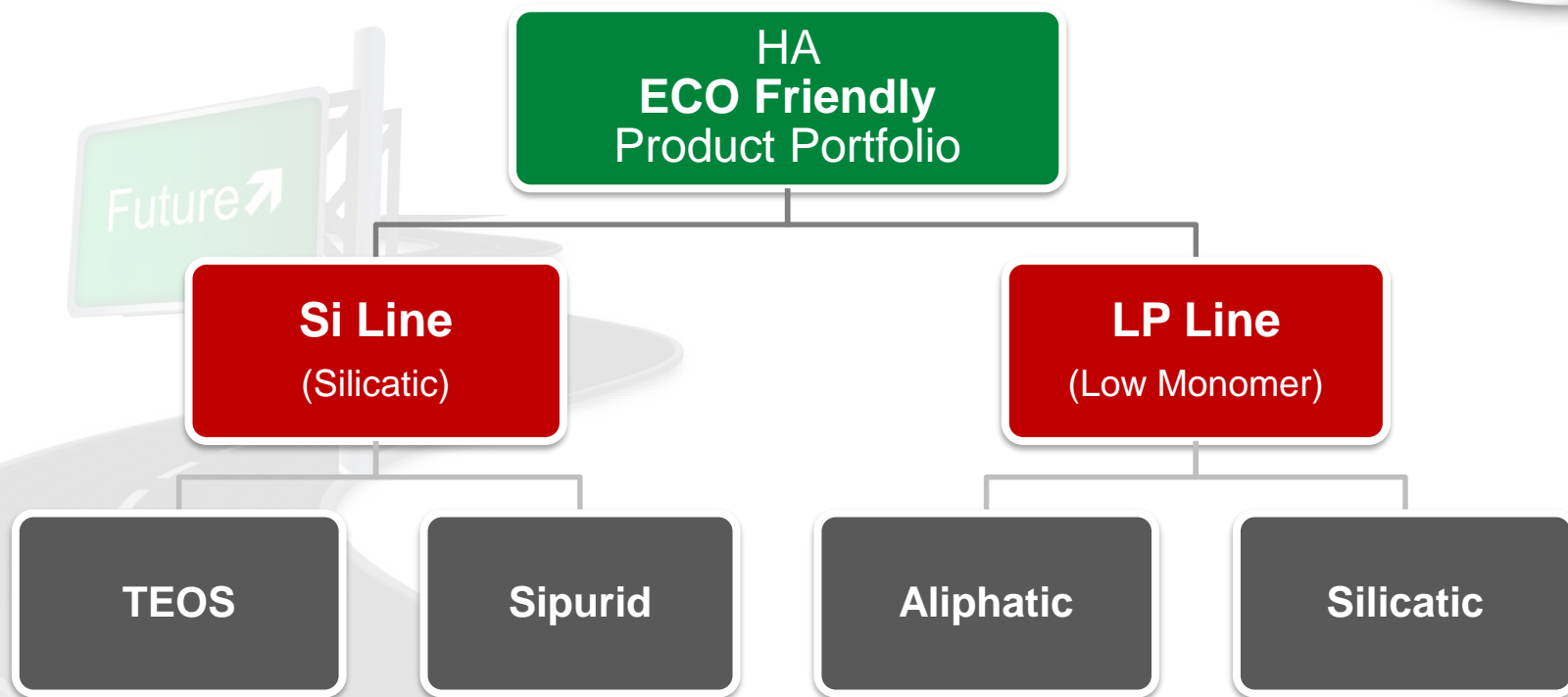


# What is next in Cold-Box?





# What is next in Cold-Box?



Thank you for your attention.

