



# INVESTOR 2012 DAY

PARIS, FRANCE  
SEPTEMBER 18, 2012

**ARKEMA**  
INNOVATIVE CHEMISTRY

**INVESTOR**  
2012 **DAY**

# PVDF Kynar® **High Performance Materials segment**

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Executive VP

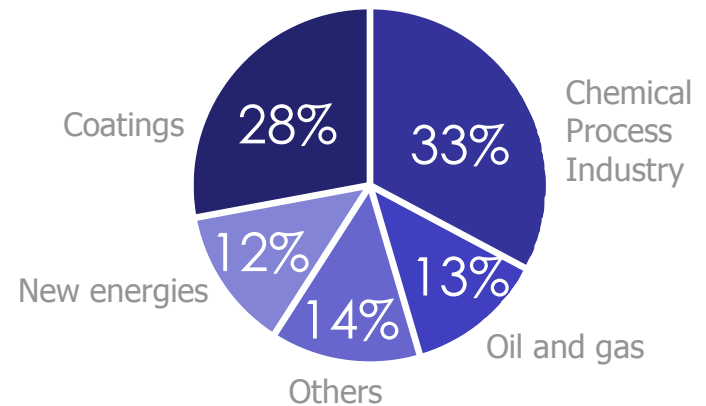
**ARKEMA**  
INNOVATIVE CHEMISTRY

# Fluoropolymer PVDF Kynar®

## Transformational project: expansions in China and France

- #1 worldwide
- Niche market: ~40 kt
- 40% market share
- Main competitor: Solvay
- Key growth drivers
  - New energies:
    - Photovoltaic: +10 to 20% /year
    - Li-ion batteries: +10 to 15% / year
  - Oil & gas: deep offshore
  - Industrial coatings: high growth regions
  - Innovation momentum
    - Membrane for water filtration: access to drinkable water
    - Kynar® Aquatec for cool roofing
    - Foams

Demand by end markets



Expected growth  
**+7%** /year

# Arkema's PVDF business

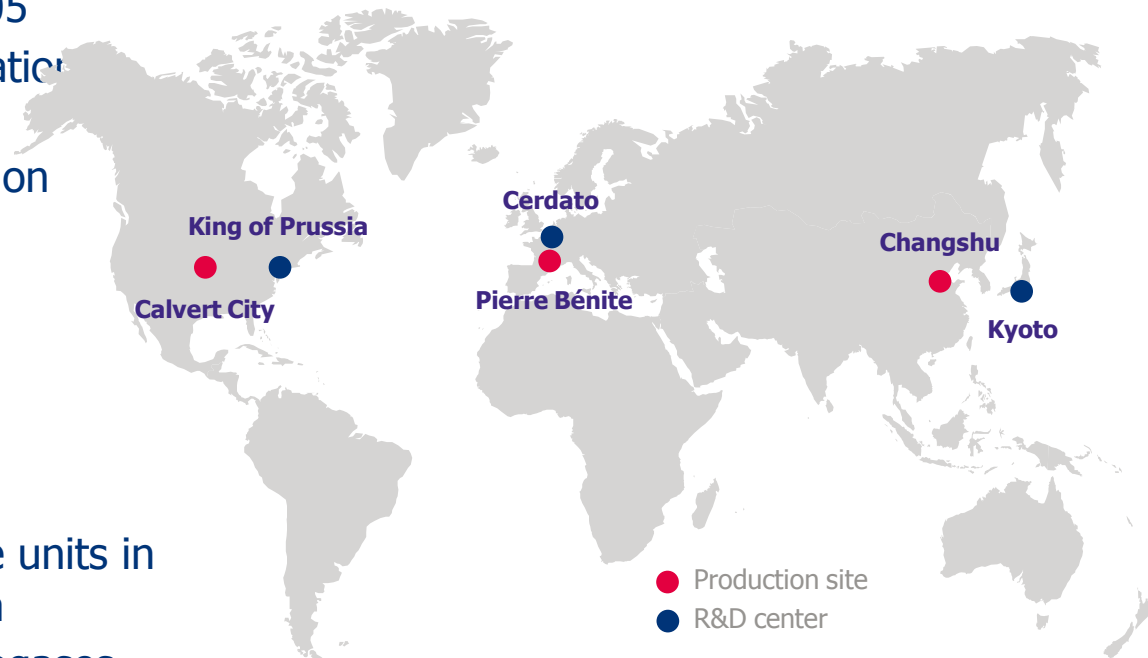
## Major achievements

- **>10%** cagr sales since 2005
- **>25%** of sales from innovation (less than 5 years old)
- Start-up of Chinese production unit in 2011 and expansion in 2Q'12

## Competitive advantages

- Premium brand Kynar®
- Only player with world-scale units in Europe, North America, Asia
- Efficient integration in fluorogases
- Strong innovation pipeline (oil and gas, photovoltaic, li-ion batteries, membranes for water treatment) supported by global R&D network
- Unique proprietary technology and 50 years of experience
- Ability to manage complex projects

## Global presence supporting customer proximity



# Main end-markets

## INTEGRATED CHAIN



## END MARKETS

### Coatings

High end architectural coatings (exceptional UV resistance)



### Chemical Process Industry

Semiconductors, biotech, pharma (high purity, chemical resistance)



### Oil and gas

Deep offshore flexible pipes



### Photovoltaic

Films for panel backsheets



### Water treatment

Membrane for water treatment



### Batteries

Electrode binder for li-ion batteries



# Strategy: strengthening leadership position

## ➤ **Leverage customer proximity**

- Pursue developments of long term technical partnerships with leading customers
- Provide customers with increasingly differentiated and innovative solutions
- Worldwide R&D presence (new laboratory in China)

## ➤ **Maintain innovation momentum**

- Leverage promising high value applications in photovoltaic, li-ion batteries, water filtration, oil and gas, etc.
- Extend the use of PVDF to new highly demanding applications (example: separator into high-voltage lithium-ion batteries)

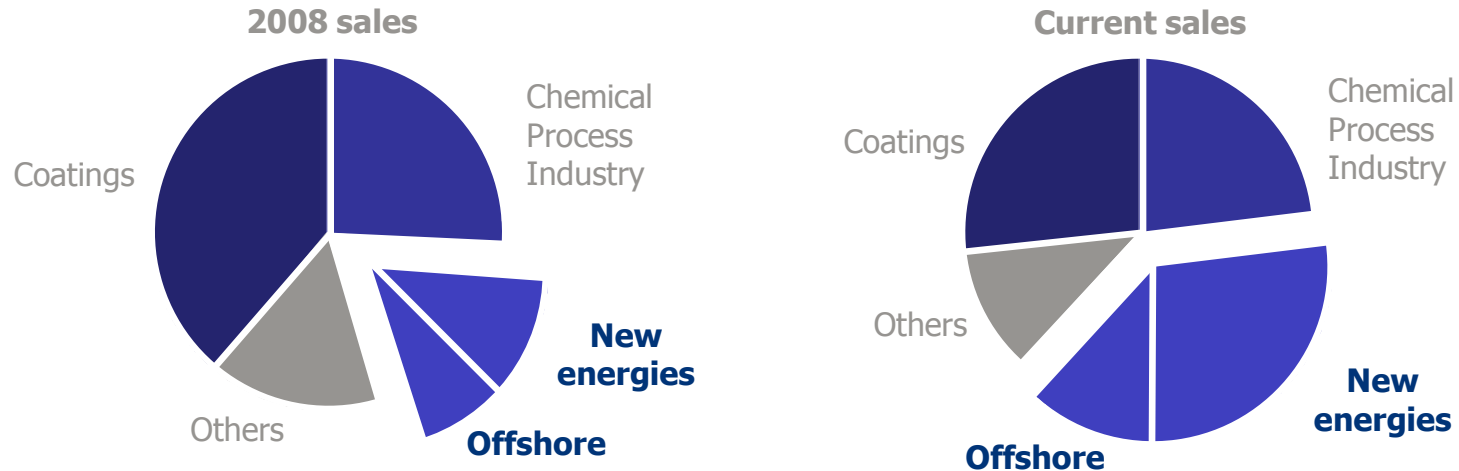
## ➤ **Reinforce global industrial presence in Europe, North America and Asia**

- Changshu (China): 50% capacity expansion in 2012 of new unit started in 2011
- Pierre-Bénite (France): project to increase by 50% production capacity in 4Q'14

## ➤ **Take advantage of strategic integration in fluorogases**

# Portfolio successfully positioned on fast-growing applications

- Successful developments of fast-growing new applications supported by strong innovation momentum



- Innovation aligned with megatrends and four corporate R&D platforms

## New energies

- Photovoltaic
- Li-ion batteries

## Eco-friendly solutions

- Kynar® Aquatec for cool roofing

## Water management

- Membranes for water filtration

## Lightweight materials

- Foam for mobility: 30% weight savings, fire and temperature resistance



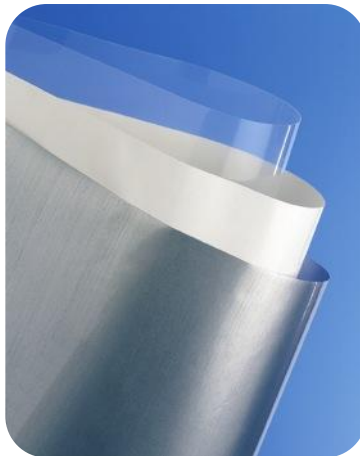
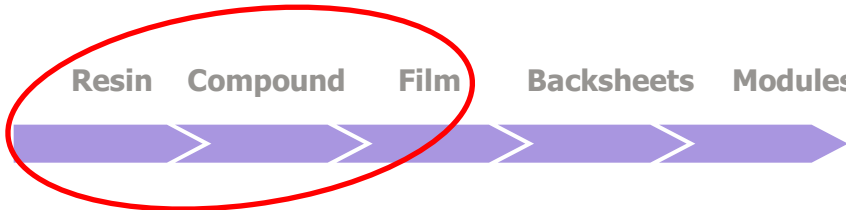
# Enhancing value throughout the chain

## Photovoltaic

**+15% / year**

Multilayer PVDF films offering high durability and protection

Resin Compound Film Backsheets Modules



## High performance coatings

- Partnerships with customers through brand name licensing

**KYNAR®**  
BY ARKEMA



- Innovation in water-borne eco-friendly coating

**KYNARAQUATEC®**  
BY ARKEMA





# Emerging as a leading partner of the oil and gas industry

## ➤ **Kynar® resins used as a chemical barrier for offshore flexible production riser**

- Kynar® resins complementary to PA 11 for deeper and warmer oil-field

## ➤ **Service life of Kynar® resins in contact with oil exceeding 20 years**

## ➤ **Supply Star award from Technip in 2012 for the second time**

- Acknowledges the responsiveness and excellence of sales, technical and logistics support provided by Arkema teams in Brazil, France and Malaysia
- Partners in the production of offshore flexible pipes since 1972

## ➤ **Key growth drivers of deep offshore**

- Development of non-conventional production technologies
- Rehabilitation of existing pipeline network



# Rapid expansion of industrial footprint

## € 70m capex program

- +50% capacity
- Innovative process
- Optimization of integrated chain

**Calvert-City**

**Pierre-Bénite**

**Changshu**

Capacity increases in 2008 and 2010

Arkema's largest PVDF plant

## New unit started in 2Q'11

- Running at full speed after 3 months
- Initially dedicated to growing industrial coatings in Asia

## +50% capacity started in 3Q'12

- Supporting developments of high growth markets (photovoltaic, li-ion batteries and water treatment)
- Started several weeks ahead of schedule

# Kynar® PVDF key take-aways

- **Outstanding properties and easy processability for highly demanding applications**
- **Recognized leader in PVDF**
  - Unique proprietary technology and strong know-how
  - Premium brand Kynar®
- **Strong customer proximity**
  - Only producer with world-scale production units in Europe, North America, Asia
  - Long-term partnerships and co-developments with industry leaders
- **Innovation-driven growth with promising pipeline**
  - New energies, water filtration, lightweight materials, etc.
  - Over 25% of sales from less-than 5 year old products
- **High growth profile and earning resilience**
- **Future growth supported by expansions in Changshu in 2012 and Pierre-Bénite in 2014**

#1



New energies



Oil and Gas



Drinkable water

+7%

CAGR 2012-2016



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Financial information for 2011, 2010, 2009, 2008, 2007, 2006 and 2005 is extracted from the consolidated financial statements of Arkema. Quarterly financial information is not audited.

The business segment information is presented in accordance with Arkema's internal reporting system used by the management.

The definition of the main performance indicators used can be found in the reference document filed with the French Autorité des Marchés Financiers and available on [www.finance.arkema.com](http://www.finance.arkema.com)