

The background of the slide features a complex, flowing, blue and teal abstract pattern that resembles liquid or molten metal. The Arkema logo is positioned in the top left corner.

ARKEMA

Kynar® PVDF Li-ion Battery Applications

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Arkema at a glance

WE ARE INNOVATION DRIVEN

- **8,7 billion** revenue in 2019
- **20,500** talents
- Presence in **55** countries
- **15** R&D centers on 3 continents
(Europe, Americas et Asia)
- **1,600** researchers, **60** R&D partnerships
- **222** patents filed in 2019, 67% relating to sustainable development issues



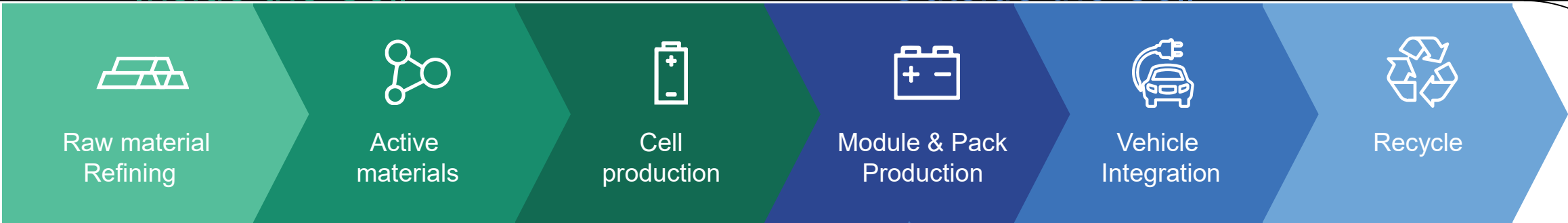
Our world is changing fast, accelerating demand for new materials

				
Future of mobility	Urbanization	Environment	Industry 4.0	Consumer demand
Lightweighting	Insulation	Wind, solar, hydrogen	3D printing	Personalized designs
Durability	Energy efficiency	Water treatment	Miniaturization	Performance
Batteries	Modular construction	Renewable resources	Smart devices	Sustainability

Arkema Materials in the world of Battery

Inside the Cell

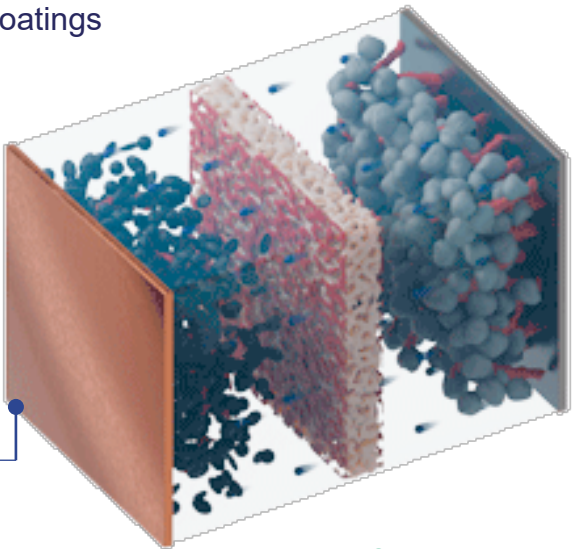
Outside the Cell



ALBONE®
Purification of Ni

ARRMAZ
Li Collectors

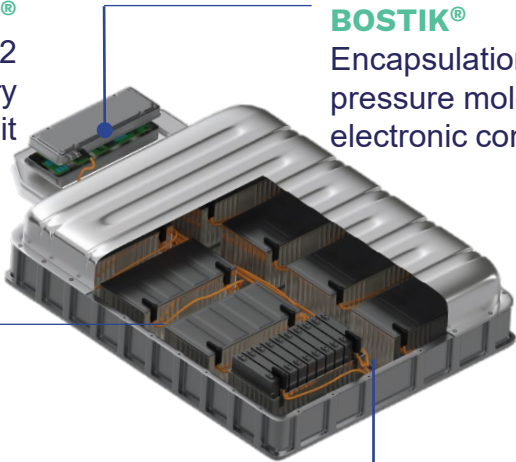
KYNAR®
PVDF Binder & Separator
coatings



INCELLION™
New Anode Binders
Rheology Additives

FORANEXT®
Ultra Pure LiFSi Salt

**RILSAN® &
RILSAMID®**
PA11 & PA12
for battery
cooling circuit



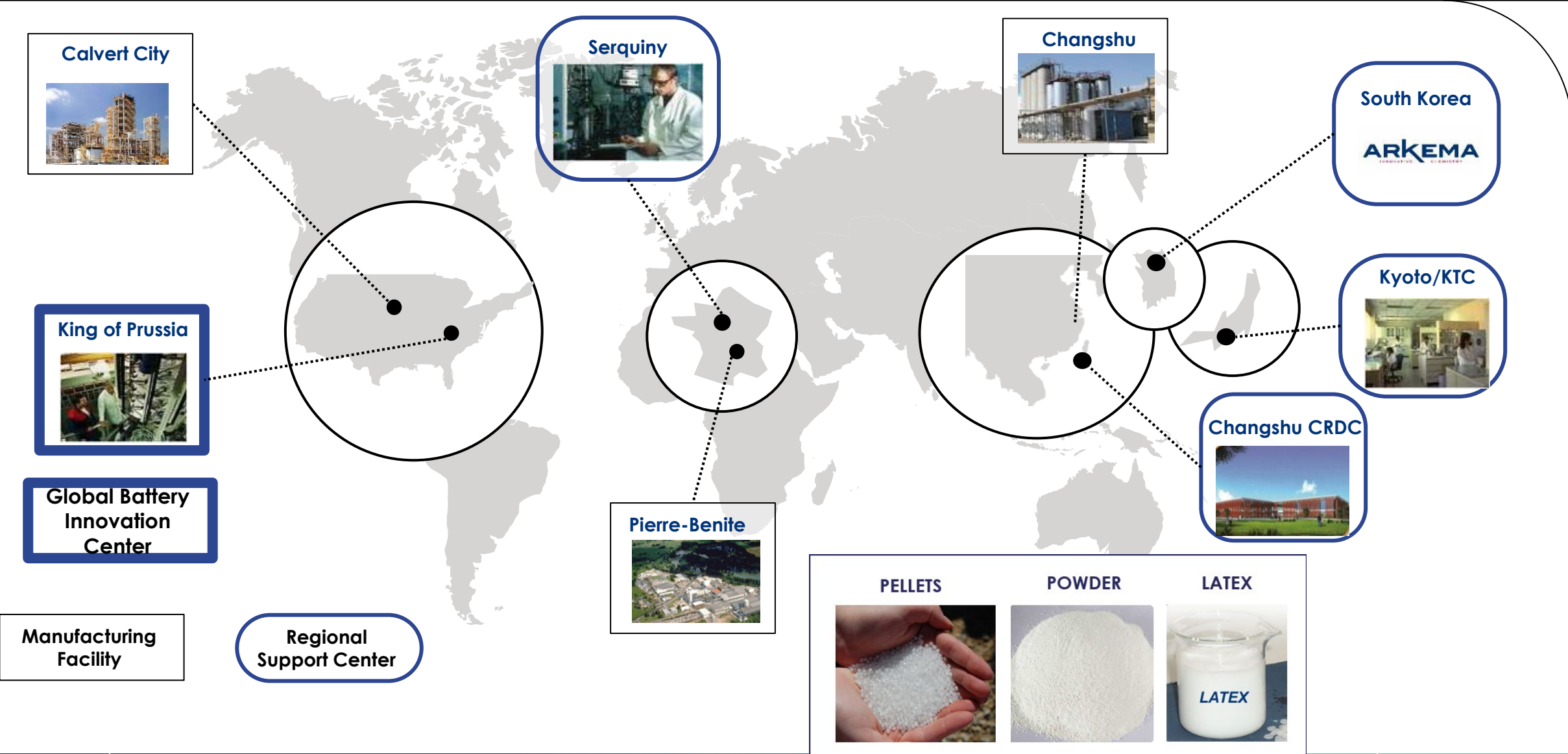
**RILSAN® Fine
Powders & RILSAN®**
PA11 for Busbar
coating

BOSTIK®
Encapsulation & low
pressure molding for
electronic components

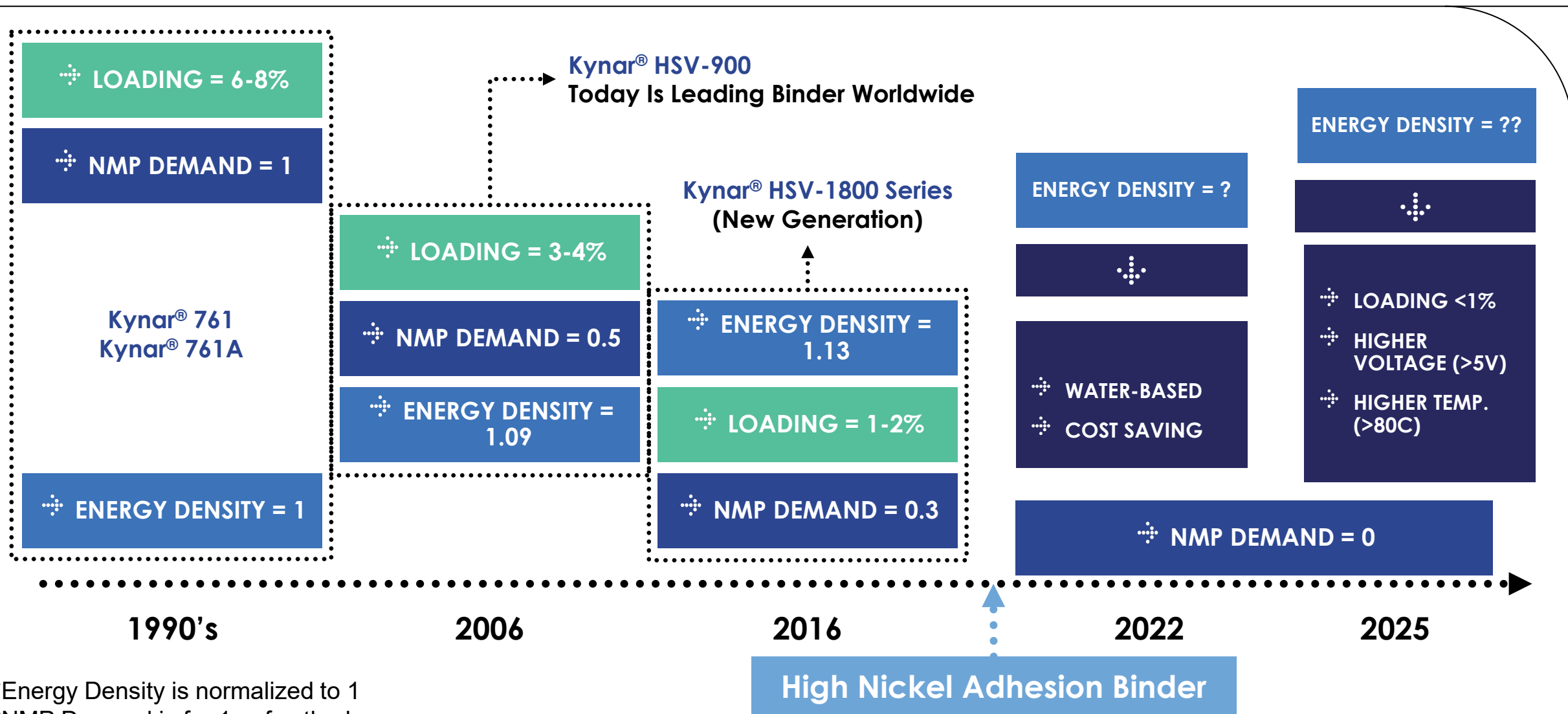
**RILSAN®
ORGALLOY®
KEPSTAN® PEKK**
in high performance
connectors

ALBONE®
Purification of Ni

KYNAR® PVDF GLOBAL FOOTPRINT



EVOLUTION OF KYNAR® BINDERS



*Energy Density is normalized to 1
 *NMP Demand is for 1g of cathode

KYNAR® PVDF BROAD PRODUCT PORTFOLIO = a toolbox for customers

Key fine-tuning parameters...

- Molecular weight
- Crystallinity
- Copolymer content
- Functionalization

For tailor-made properties of Kynar PVDF

- Adhesion
- Flexibility
- Electrolyte uptake (swelling)
- Dissolution speed
- Phase separation speed

Main commercial Kynar® battery grades

