

KEMIWATT, the ultimate water-based organic Flow Battery to support energy transition



Better performances

- 20-year durability with low LCOS
- High operational flexibility



Lower costs

- 12.7 €/MWh/cycle vs 59.5 €/MWh/cycle for Li-ion in 2025



Safer

- No risk of fire nor explosion
- Less corrosion



Greener

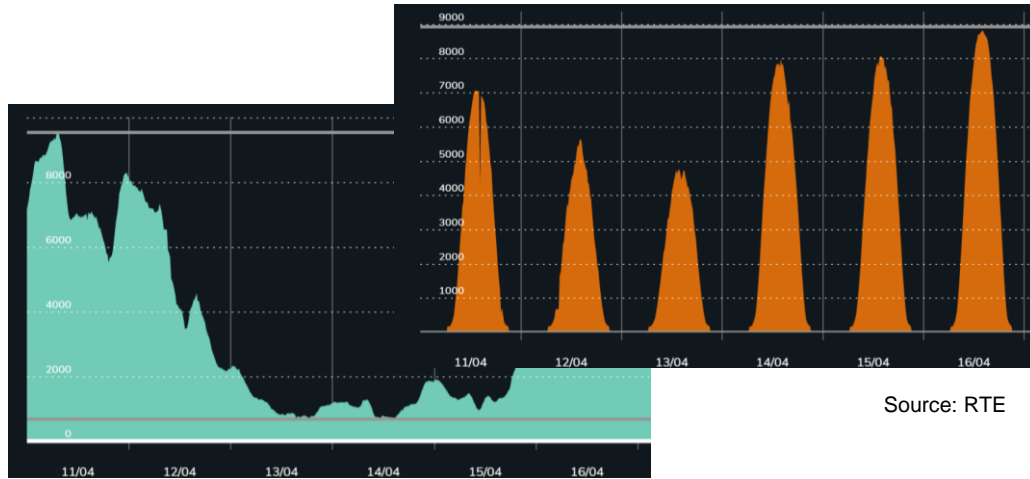
- Recyclable chemicals and equipment
- No rare, heavy nor precious metals

Compared to alternative technologies

ENERGY STORAGE, THE MISSING PIECE FOR THE ENERGY TRANSITION

NEED TO SUPPORT RENEWABLE INTERMITTENCY AND TAKE ADVANTAGE OF ELECTRICITY PRICES

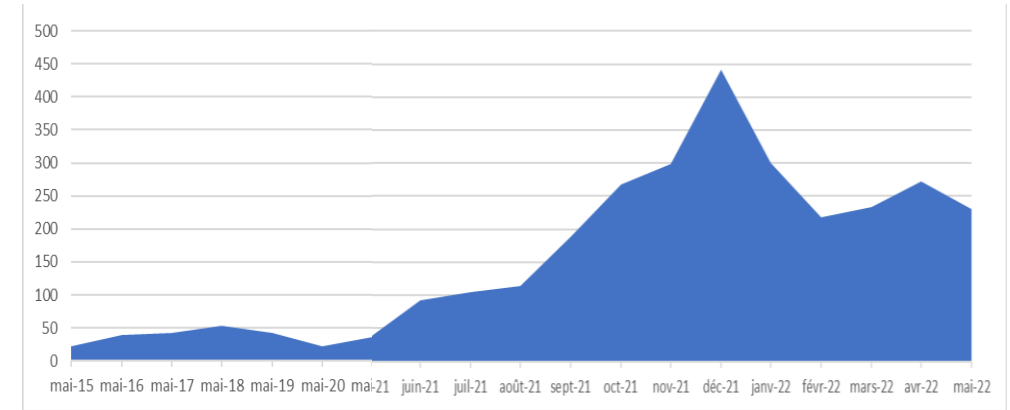
Solar and Wind Intermittency



Source: RTE

INTRA DAY AND WEEK INTERMITTENCY

Evolution of French Spot Energy Prices €/MWh



Source: RTE

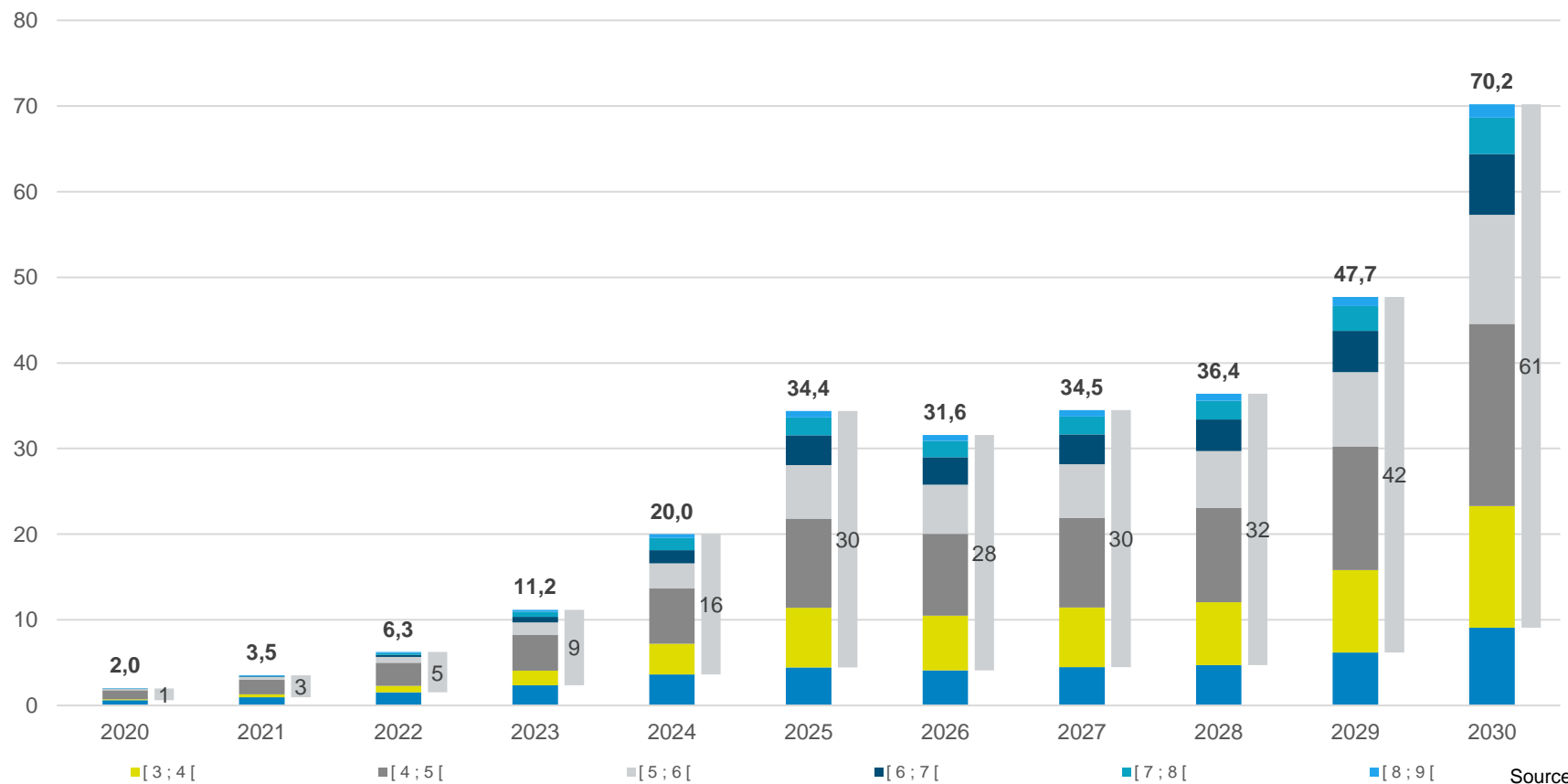
SPOT PRICES INCREASE BY A FACTOR 10 IN 7 YEARS

KEMIWATT PROVIDES A HIGH-PERFORMANCE, ECONOMICALLY COMPETITIVE, SAFE AND ENVIRONMENTALLY FRIENDLY STATIONARY ENERGY STORAGE SOLUTION

ENERGY STORAGE, A GROWING MARKET DRIVEN BY LONGER DURATION

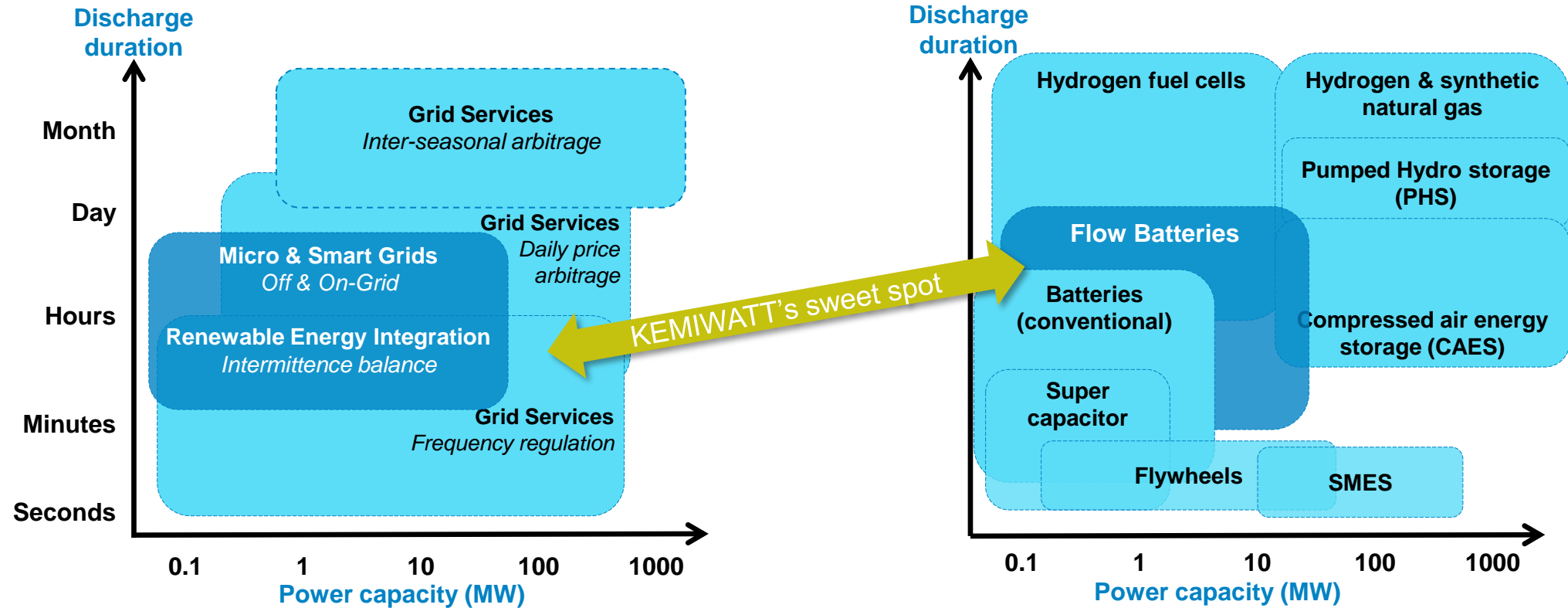
AS TOTAL ENERGY STORAGE MARKET INCREASES AND MARKET TENDS TOWARDS LONGER DURATION, KEMIWATT'S ADDRESSABLE MARKET BECOMES A MASS-MARKET

Breakdown of new installed capacity per year according to storage discharge duration (GWh)



Source: Clean Horizon, KEMIWATT, Bloomberg

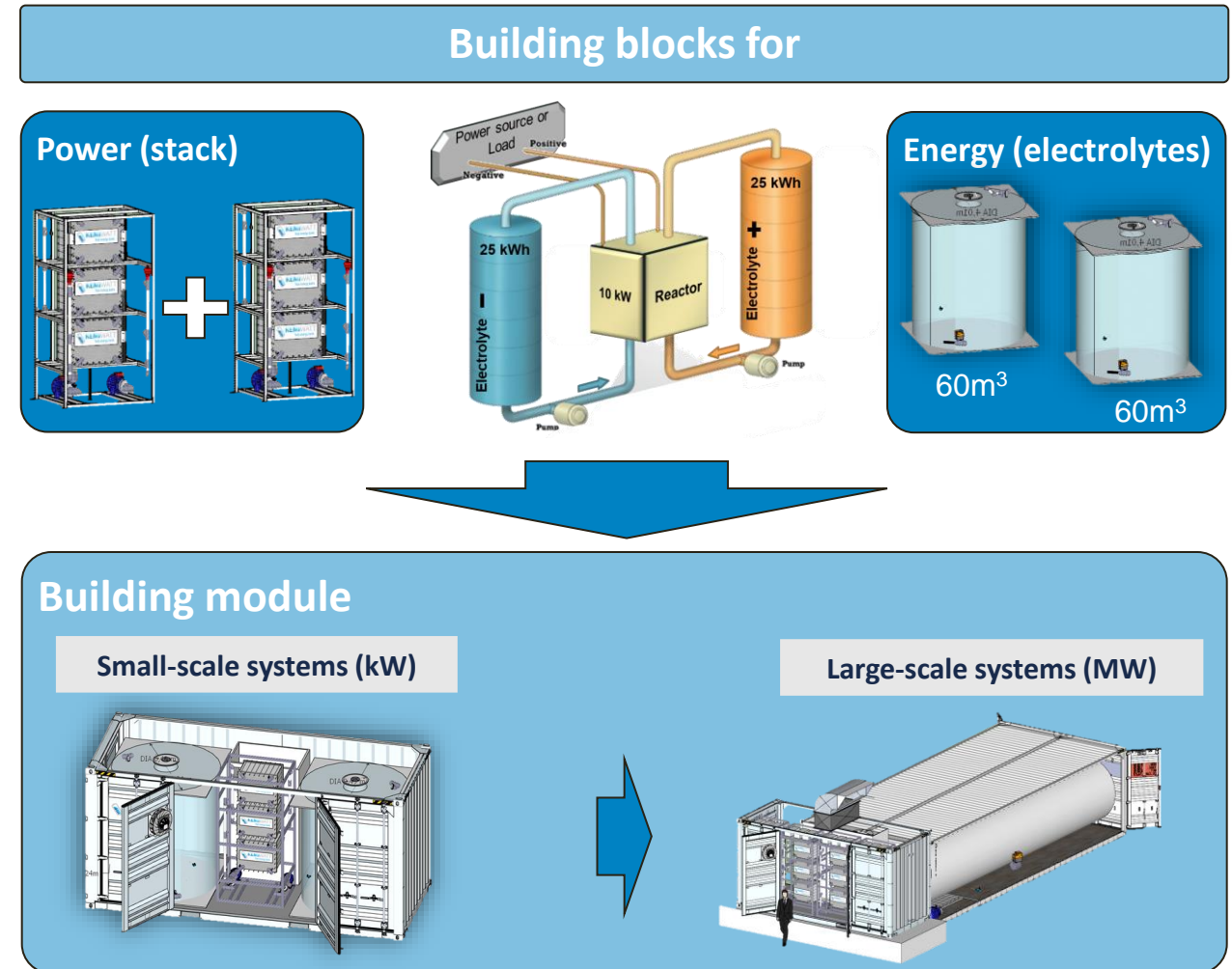
FLOW BATTERIES AN IDEAL TECHNOLOGY FOR KEY MARKET SEGMENTS



FLOW BATTERY, A SUSTAINABLE ALTERNATIVE FOR LONG STORAGE DURATION

KEMIWATT HAS DEVELOPED OFF-THE-SHELF STANDARDIZED BUILDING BLOCKS OF POWER AND ENERGY, WHICH CAN BE COMBINED AT WILL TO MATCH CUSTOMERS' DEMAND

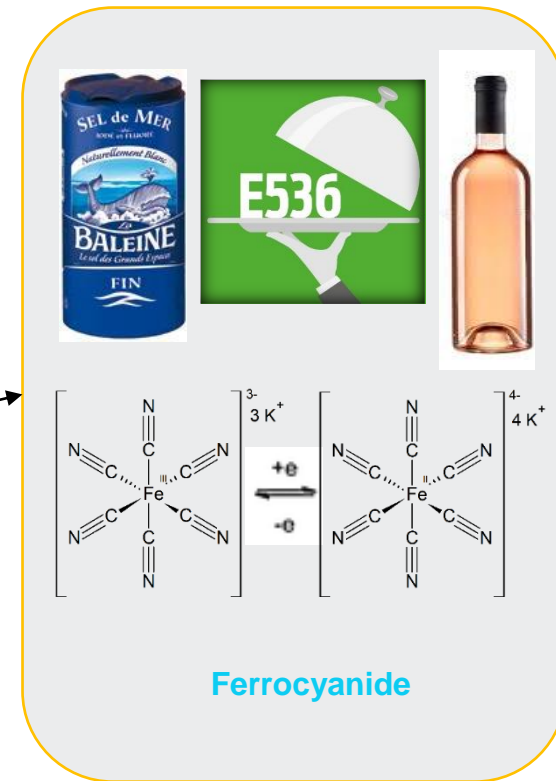
- KEMIWATT's unique electrolytes are composed of **recyclable organic molecules**
- Flow batteries store electrical charges in tanks of liquid electrolytes
- This layout **decouples the energy and the power components**
- The system is thus easy to design for any application, manufacture, commission, disassemble and recycle
- Thanks to the combination of stacks and electrolytes, the system is **fully scalable** to match customers' requirements



FLOW BATTERY, A SUSTAINABLE ALTERNATIVE FOR LONG STORAGE DURATION

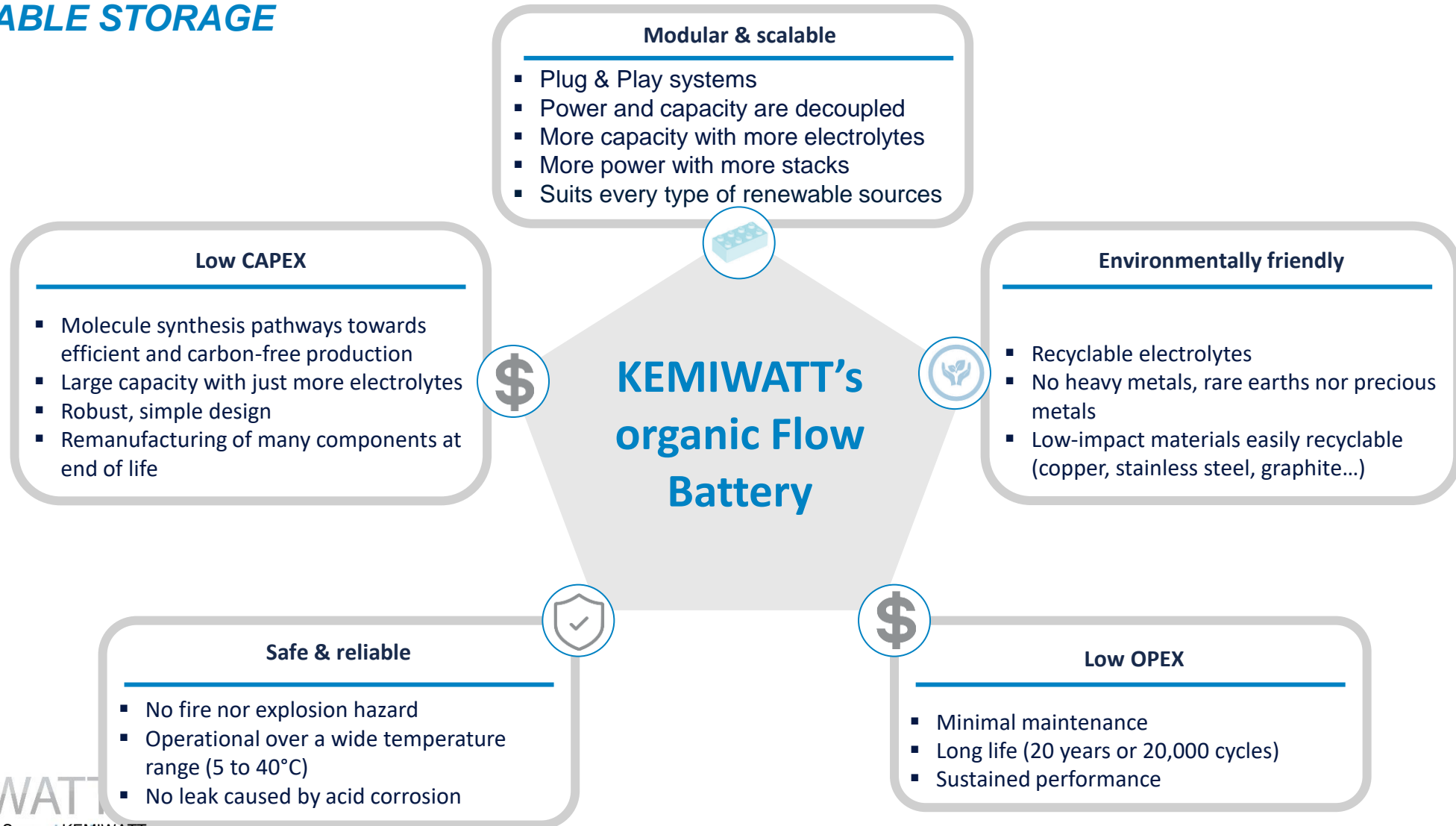
Kemiwatt develops Aqueous Organic RedOx Flow Battery

- Anthraquinone-based anolyte (**proprietary molecule**)
- Stack design and assembly
- Electrolytes recycling
- No needs of heavy metal
- Safety (no thermal runaways issue)



KEY COMPETITIVE ADVANTAGES OF KEMIWATT'S TECHNOLOGY

VALUABLE CORE ADVANTAGES ASSERT KEMIWATT AS THE LEADING CHOICE FOR COMPETITIVE AND SUSTAINABLE STORAGE



KEMIWATT'S ECO-COMPATIBILITY

OPTIMIZED SYNTHESIS PATHWAY OF THE ORGANIC MOLECULE TO MINIMIZE ENVIRONMENTAL FOOTPRINT

- Only biobased solvent and water
- Recycling of >90% of solvent
- Recovery of unreacted main reagent
- Excellent E-factor (kg waste / kg product) = 2.7
- Synthesis process can be implemented anywhere

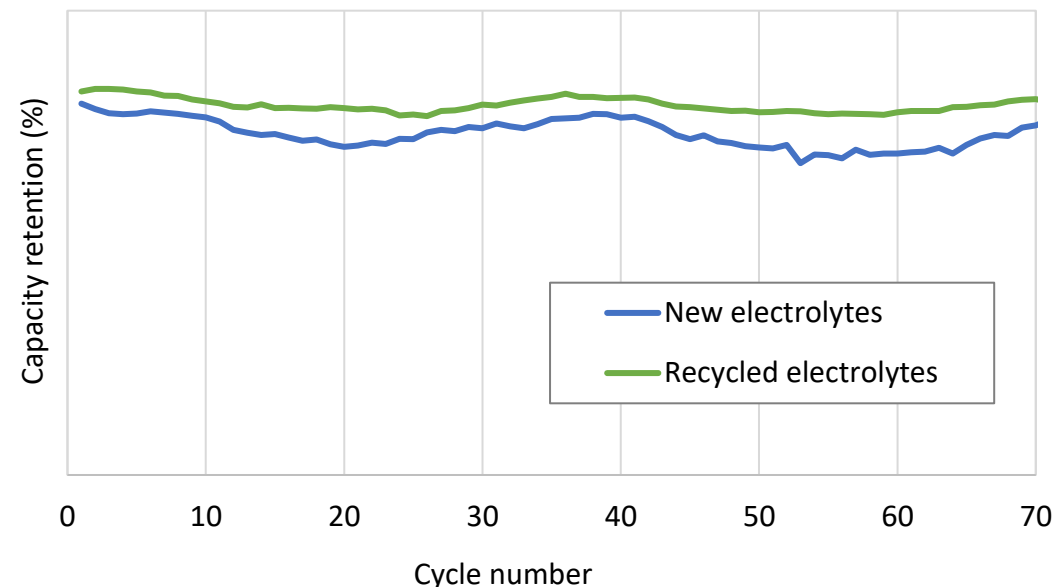
Green Chemistry

Source : Green Chemistry, 2007, 9, 1273-1283



SIMPLE RECYCLING PROCESS OF BOTH ELECTROLYTES

3-step recycling protocol validated for both electrolytes, giving > 70% efficiency and electrolyte cost savings up to 50%



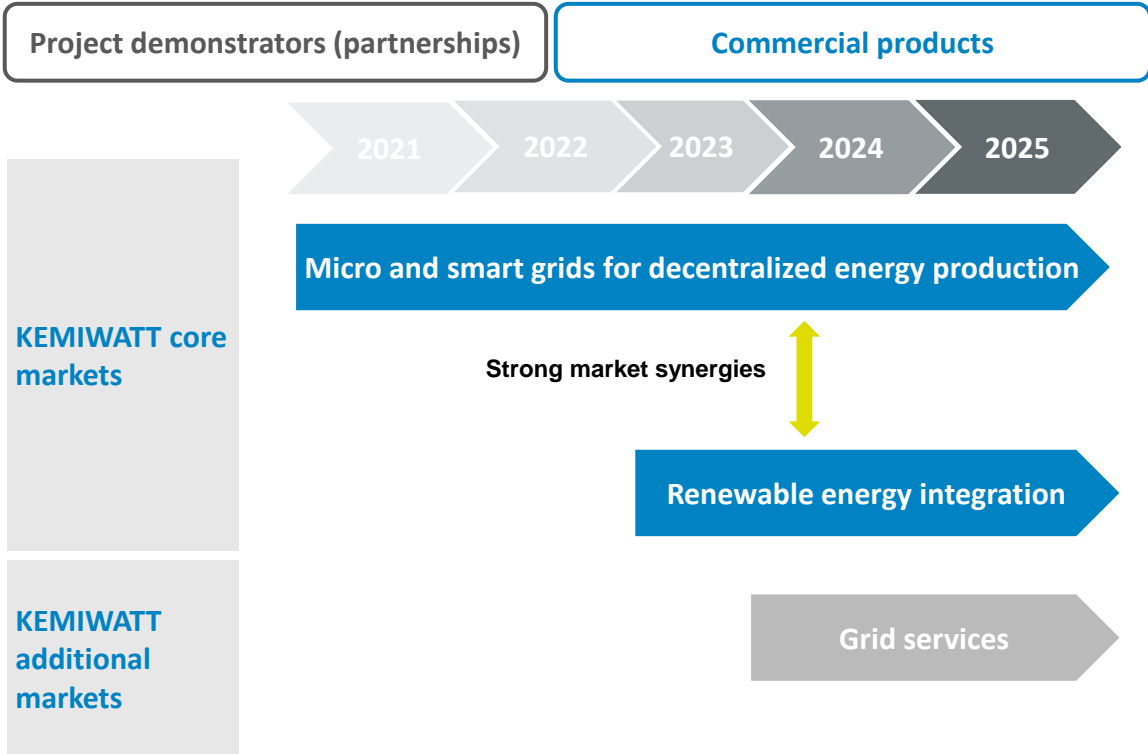
- The battery performances are similar with fresh or recycled electrolytes

Recycling by precipitation of the active molecules, with low-cost reactants

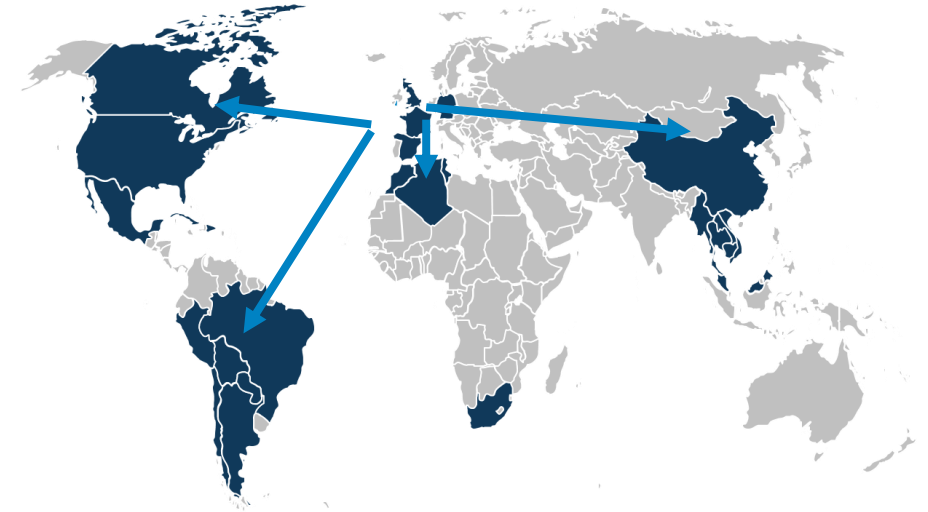


A PHASED APPROACH TO KEY MARKETS AND APPLICATIONS

Market segmentation

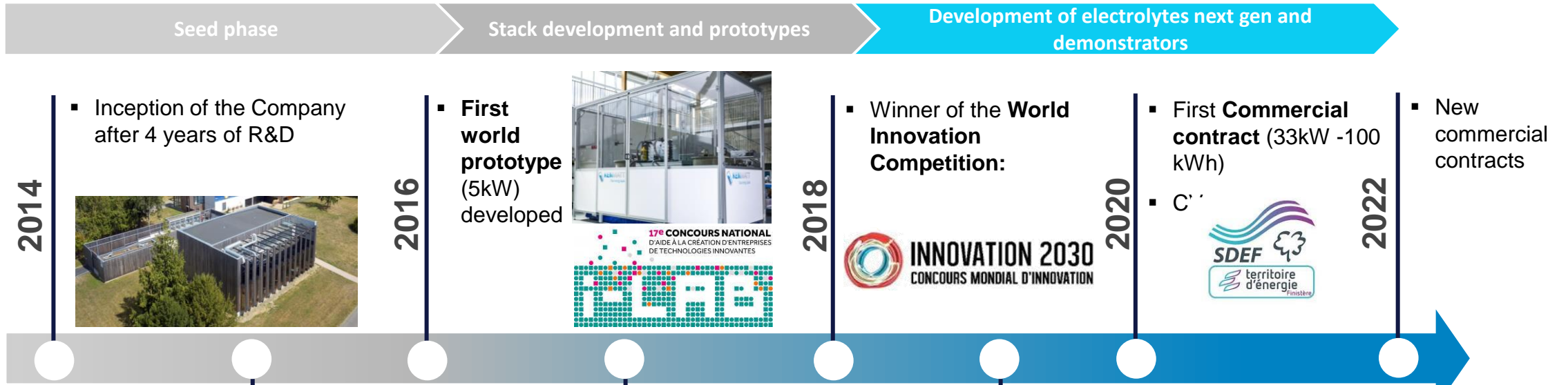


Market access




	Grid Services		Behind the meter				Off Grid	
Suitability of KEMIWATT technology for	Frequency restoration reserve	Energy Shifting / Load levelling	Self-consumption	Community Storage	Peak Shaving	Time-of-use	Village Electrification	Island Grid

A FLOW BATTERY LEADER WITH FIRST COMMERCIAL SUCCESSES





2014

- Inception of the Company after 4 years of R&D



2016

- First world prototype (5kW) developed

2018

- Winner of the **World Innovation Competition:**



2020

- First **Commercial contract** (33kW -100 kWh)
- Contract with SDEF and territoire d'énergie



2022



- New commercial contracts

2015

- The Company focused on **stack development** and managed to increase the capacity of its stack from monocells to industrial size

2017

- World's first full-scale demonstrator** (20 kW)

2019

- First demonstrator **connected to building**



Key R&D partnerships signed






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- 20-year durability with low LCOS
- High operational flexibility



Greener

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Safer

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Compared to alternative technologies

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