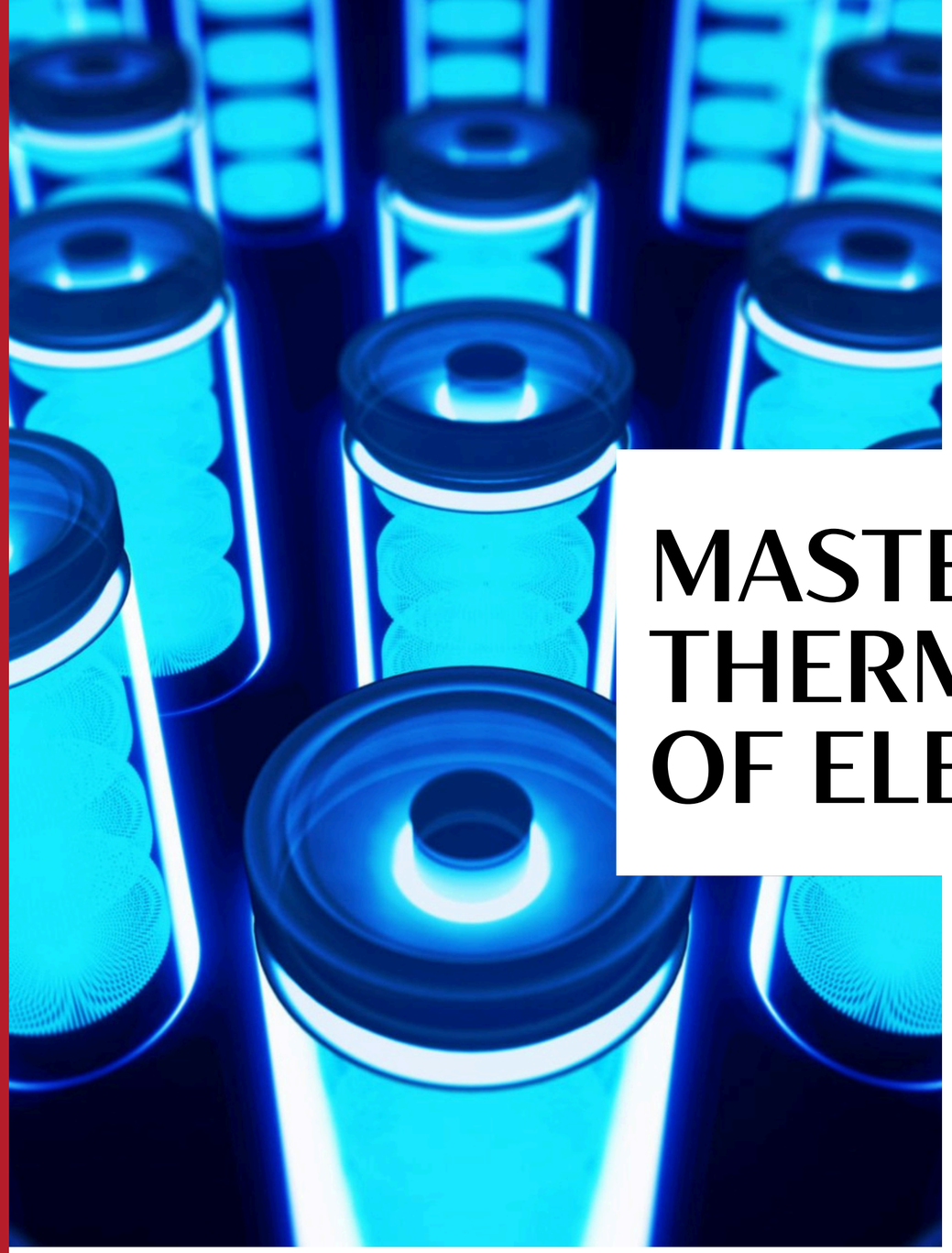
MESUREX
Fabricant de capteurs et systèmes de mesures



MASTERING THE THERMAL CHALLENGES OF ELECTRIC BATTERIES

Implementing an effective thermal-management system is key to ensure efficiency, safety, and longivity of electrical batteries

www.mesurex.fr

Electrification stands out as a pivotal solution

In a world grappling with increasing energy demands and the imperative to mitigate climate change, the **transition to sustainable energy sources** is more critical than ever.
By 2050, forecasts suggest continued reliance on fossil fuels, emphasizing the urgency of shifting towards renewable alternatives to curb greenhouse gas emissions.
Electrification, particularly through electrical batteries, stands out as a pivotal solution in various applications from portable electronics to electric vehicles and renewable energy storage.
However, there are significant challenges and stakes associated with their development and deployment.

Still many challenges to overcome...

Scarcity of essential raw materials (lithium, cobalt, and nickel)
Environmental impact of mining and processing of battery materials

Thermal runaway possibly causing **significant safety risks**
Handling and disposal to prevent **environmental hazards and health risks**

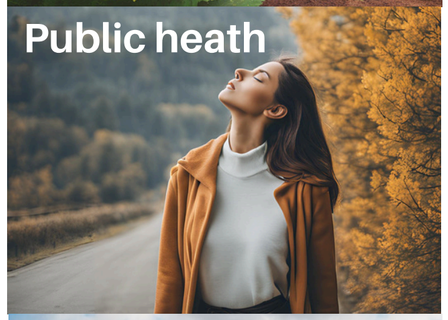
Limited lifespan (frequent replacements & complex waste management)
Recycling challenges (valuable materials recovery & limitation of environmental impact)

High costs (both material costs & complex manufacturing processes)
Economic Viability (make energy storage solutions more affordable)

Limited capacity (frequent charging need)
Efficiency losses over time

... but huge potential impacts

Reducing greenhouse gases & mitigating global warming
Improving the carbon footprint of the transportation sector

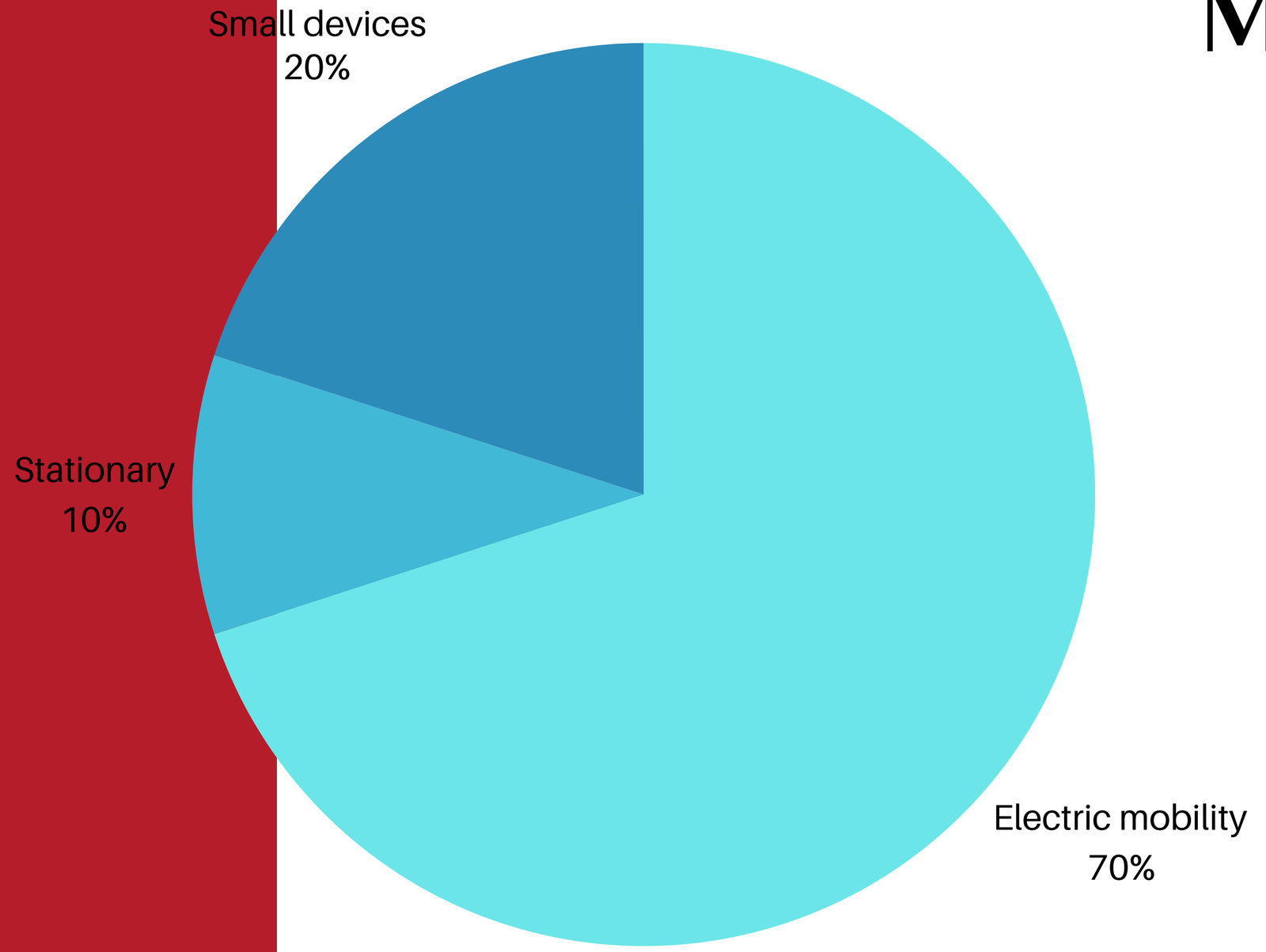


Reducing the air pollution & **improving public health** and life expectancy

Improving **renewable integration** (storing / balancing intermittent renewable energy sources)
Providing **grid stability** through backup power and demand response services

Creating **job opportunities** in numerous sectors (research, manufacturing, recycling)
Boosting **technological research**, and driving **economic growth**

Major uses of electric batteries



Electric batteries cater to 3 main market segments and address numerous decarbonization applications:

1. **Mobility** (EV, etc.), today 70% of market demand and expected to increase tenfold, reaching 30% of global car sales by 2030.
2. **Small electronics & household appliances** (phone, etc.), 20% of the market.
3. **Stationary** (grid-scale storage, outdoor power storage for events etc.), the remaining 10% of the market but growing with the development of renewable power.

Understanding the thermal phenomena of lithium-ion batteries

Central to the electrification transition, notably in the mobility sector, are lithium-ion batteries (LIBs), renowned for their high energy and power density, efficiency, and cycle life.
However, LIBs face significant thermal challenges that hinder their widespread adoption, especially during turbo charging, when exposed to high temperature or when continuously used for many hours in a row...

- Overall battery life
- Autonomy of the vehicle
- Recharge time
- Security and risk of fire

At MESUREX, we have been designing and building temperature sensors since 1972.

For many years already, we have been collaborating closely with research labs, test centers, equipment manufacturers or directly with end users from the mobility industry.

Specific & reliable solutions have been developed to meet the constraints of temperature of course, but also of size, installation and budget.

www.mesurex.fr

Our sensors for testing surface thermal phenomena

DS2047

FLEXIBLE ULTRA-THIN PT100

- Measuring range : -70°C to 200°C
- Response time : 0.1 s
- Dimensions : 20 x 47 x 0.1 mm (Teflon wire thickness: 0.3/0.5mm)
- 2, 3, or 4-Wire on demand, length on demand

DS48

ULTRA-MINIATURE PT100/PT1000/THERMOCOUPLE (T/K)

- Measuring range : -100°C to 200°C
- Response time : 0.5 s
- Dimensions (on demand) : standard 4 x 8 x 2 mm (Kapton / or Teflon wire thickness: 0.8 mm)
- 2, 3, or 4-Wire on demand (PT100/PT1000), length on demand

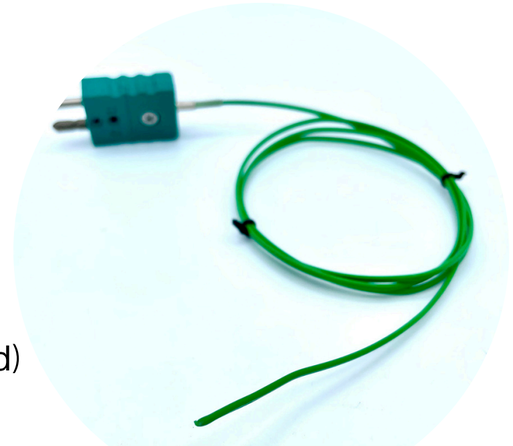
DS7

THIN KAPTON® TAPE THERMOCOUPLE (K/T)

- Measuring range : -200°C to 200°C
- Response time : 0.1 s
- Dimensions : 7 x 0.25 mm (length on demand)
- Connection : Miniature male or female connector, Standard male or female connector

FIT / FTT

TEFLON® INSULATED PT100/PT1000/THERMOCOUPLE (K/J/T)



LOW-COST sensor for consumables

- Measuring range : -200°C to 250°C
- Response time : 0.5 s
- Cable diameter : 0.1 / 0.2 / 0.5 / 0.8 mm (length on demand)
- Connection : 2, 3 or 4-wire (PT100), bare wire or insulated
- Connector: Miniature or standard

LOW-COST sensor for consumables

FKK

KAPTON® INSULATED THERMOCOUPLE (K/T)

- Measuring range : -200°C to 300°C
- Response time : 0.3 s
- Cable diameter : 0.25 or 0.5 mm (length on demand)
- Connection : bare wire standard
- Connector: Miniature or standard

ISO 9001
BUREAU VERITAS
Certification

EN 9100
BUREAU VERITAS
Certification

Mesurex, 50 years of knowledge & know-how in the measurement sector

Since 1972, Mesurex has been **designing and producing complete sensors and measurement systems** in its factory in the Paris region.

We keep up with technological developments while **remaining attentive to customer needs**. Based on their specifications, we manufacture **tailor-made products - small or large series** - to meet the most demanding demands in the **aeronautics**, **automotive**, **defense**, ma**nufacturing industry**, **research & test centers**, etc.

Our turnkey solutions integrate **every step of the project**: from sensor design, manufacturing, wiring, signal processing to final calibration.

www.mesurex.fr

Contact-us

+33 (0)1 30 41 23 62

mesurex@mesurex.fr

www.mesurex.fr/en

Share your pioneering research and innovations with us,
and we'll tailor the perfect measuring solution just for you!
MESUREX, sensor manufacturer since 1972