Alliance for the European Battery of the Future
2018 ~ 2025
28th March 2018
IFRI – in a few words

– WHO?

– THE LANDSCAPE …

– WHAT?

– WHY?

– HOW?
WHO?
SAFT: a world leader in high performance batteries for demanding applications

SAFT at a glance

<table>
<thead>
<tr>
<th>Icon</th>
<th>Text</th>
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</thead>
<tbody>
<tr>
<td><img src="image" alt="Battery" /></td>
<td>14 production sites including 7 in EU, 3 in FR: Bordeaux, Nersac, Poitiers</td>
</tr>
<tr>
<td><img src="image" alt="People" /></td>
<td>4,300+ employees</td>
</tr>
<tr>
<td><img src="image" alt="Customers" /></td>
<td>3,000+ customers</td>
</tr>
<tr>
<td><img src="image" alt="Market" /></td>
<td>Market leader on 75-80% of revenue base</td>
</tr>
<tr>
<td><img src="image" alt="R&amp;D" /></td>
<td>9.7% invested in R&amp;D in 3 main technologies</td>
</tr>
<tr>
<td><img src="image" alt="Revenue" /></td>
<td>$840 million in revenue in 2017</td>
</tr>
</tbody>
</table>

Our 4 divisions

- **Transportation, Telecom & Grid**
- **Industrial Standby**
- **Space & Defense**
- **Civil Electronics**

**SPOTLIGHT: ENERGY STORAGE PROJECT IN THE FAROE ISLANDS**

A wind farm with a maximum production capacity of 12 MW, connected to a 2.3 MW lithium-ion battery system.

Alliance for EU battery of the Future
THE LANDSCAPE HAS SOMEWHAT OF A FAVORABLE FLAVOR

– CHINA
  • Using the EV transition to gain market prominence in cars (and batteries)
  • Could well pose a challenge to western car manufacturers

– CHINESE BATTERY MANUFACTURERS
  • Perform or die
  • Not free agents: they do what the party tells them
  • Could well pose a challenge to western car manufacturers

– ACTIVE MATERIALS MANUFACTURERS
  • What about further upstream integration?
  • They have a long term interest in having a healthy EU customer base

– TIER ONE AUTOMOTIVE SUPPLIERS
  • What about their ability to source on an equal footing with Asian suppliers?
  • They have a long term interest in not having all their cells sourced in Asia

– THE EU COMMISSION
  • The European Battery Initiative
  • A different perception of industrial activities

– CAR MANUFACTURERS
  • Are present and can tell us their views
WHAT?
A multi year research / development / industrialization plan

Technology Alliance for EU battery of the Future
WHY?
And why not?

- Why not a Gigafactory tomorrow?
  - Clearly a challenging volume/price situation
  - Differentiation at GEN 1 and GEN 2 not that clear

- Why have we chosen this approach?
  - Technical disruptions creates opportunities
  - We can regain differentiation
  - We are open to widen the consortium

- Why do we have confidence?
  - Saft and Alliance members are experienced
  - Saft and Alliance have superior competence
  - We have already done it!

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**GEN 4 advantages**
- Solid state means no liquid electrolyte, higher intrinsic safety
- Simplified BMS
- Higher volumetric energy density

**GEN 4 challenges**
- The right electrolyte material
- The proper contact between the electrolyte and the electrodes
- The manufacturing process
  - ...

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Saft proprietary information – Confidential
HOW?

- **Build a Consortium with European companies, expert in complementary fields beyond Saft’s expertise**
  - A Core Group, and other partners
  - Experts in Materials, Recycling
  - Experts in Manufacturing, Modelling, Automation, Digitization

- **Secure support from the EU and National governments**
  - Use the toolbox: H-2020 and FP-9
  - Pick your locations smartly
  - Push for fairness: on import duties, on reciprocity of public procurement, rules

- **Build on our values**
  - Climate change cannot be built by “below standard” actors in the supply chain
  - Carbon content: how (how much) can EU leadership in CO₂ emissions reduction become a competitive advantage?
  - Ressources management: can we extract and use/recycle in a sustainable way?
  - High CSR expectations: can we get our supply chain to comply with fair labor rules: General human rights, Adequate Health and Safety, Proper implementation of the fundamental rights of workers?
HOW?
Key success factors

- Performance
  - Cycling ability
  - Calendar life
  - Energy density
- Competitive
- Safe
- Focus on time to market