SusChem 2017 Brokerage Event

Project Proposal: Increase Recyclability of FRP
Bax & Company, Brussels, October 2017
• Multi-disciplinary (science, engineering, sustainability, business) team applying well structured methods and tools to deliver tangible results

• Broad portfolio of innovation management services applied to high-tech sectors for leading actors at EU level (academia, industry and public administration)

• Support scientists and innovators in commercialising their innovations

• Decades of experience in pan-European collaborative projects in high performance materials for various end-user sectors

• Supports R&D leaders to conceptualise, plan, and secure co-funding for their R&D collaborations, with around 70% success rate
Demonstrate circular economy principles in the FRP industry by bringing together partners from the whole value chain:

- **Raw materials** (e.g. materials designed for increased recyclability, such as reversible thermoset matrices through solvolysis)
- **Suppliers** (e.g. automotive suppliers developing processes with reduced energy consumption, and willing to demonstrate closed loop recycling)
- **End-users**

The activities are expected to be supported by partners who will:

- Monitor the **environmental performance** of the innovations (through means of LCA)
- Monitor the **cost performance** of the innovations (through means of LCC)

**CE-SPIRE-10-2018**: Efficient recycling processes for plastic containing materials (IA, DL: 22/2)

**OR**

**CE-NMBP-26-2018**: Smart plastic materials with intrinsic recycling properties by design (RIA, DL: S1 – 23/1; S2 – 28/6)
Expected Impact

Current Lifecycle of Composite Materials…
...or in the best case
Expected Impact

...or in the best case

Value

Time

Virgin Material

Manufacturing

Material Recovery

Recovered Material

Manufacturing

Material Recovery

Recovered Material

Manufacturing

Inchentation

Energy

High Value Application

Lower Value Application

Recovered Material

Lower Value Application

Recovered Material

Energy
→ still significant loss of value in a relatively short timeframe compared to material inherent lifetime
...while significant energy is consumed during the process
we want to increase value and material lifetime

and reduce the cumulative energy investment
Each year some 40,000 tons of composites are deposited in EU landfills.

Combined worldwide FRP recycling capacity amounts to <10,000 tons annually.

Some 40% of total FRP material used in production ends up being wasted, either as scrap or defective parts.

We want to:

- Demonstrate a pilot FRP value chain that can achieve:
  - Decreased utilization of primary fossil resources by 30%.
  - Decreased CO₂ emissions by 20%.
  - Re-utilization of waste of at least 70%.
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