



## **THERMOFIRE Newsletter #2**

### ***Bio-based fire-retardant thermoplastic composites reinforced with natural fibres***

#### **Welcome to THERMOFIRE's Second Newsletter**

Dear readers, Welcome to the second edition of the THERMOFIRE newsletter! In this issue, we share exciting updates from the project partners, recent technical progress, and highlights from project outreach activities. THERMOFIRE continues its mission to revolutionize fire-safe, lightweight, and sustainable thermoplastic composites based on bio-based raw materials for the textile, automotive, and aerospace industries.

Warm regards,  
The THERMOFIRE Team

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The **THERMOFIRE** project aims to develop novel, lightweight, and recyclable thermoplastic composites with improved fire-retardant properties. These composites are based on **100% bio-based thermoplastic polymers, natural fibres, and halogen-free flame-retardant additives**, addressing the performance, sustainability, and safety needs of key industrial sectors including **aerospace, automotive, and textiles**.

The THERMOFIRE project has fifteen specific objectives that are designed to deliver the project goal of developing bio-based and recyclable TP composites with bio-based flame retardants. The specific objectives cover 3 areas: **Technological Objectives, Environmental Objectives and Economic Objectives**.

[For more information, visit our official website](#)

## Looking Back: Key Event

THERMOFIRE was proud to be featured at JEC World 2025, the leading international trade show dedicated to composite materials. This year's edition provided a major platform to highlight Europe's drive toward bio-based, high-performance, and recyclable composite solutions.

## JEC World 2025 – Showcasing Bio-Based Innovation in Composites

Paris Nord Villepinte  
5–7 March 2025

THERMOFIRE was proud to be featured at JEC World 2025, the leading international trade show dedicated to composite materials. This year's edition provided a major platform to highlight Europe's drive toward bio-based, high-performance, and recyclable composite solutions.

**Event Highlights:** 🍸 Networking Cocktail with POLYMERIS

The project was showcased during a networking event hosted by POLYMERIS, alongside other EU-funded initiatives. This gathering enabled valuable connections and fostered discussions around innovation, collaboration, and sustainability in composite technologies.



🎤 **Joint Project Presentation with BIO-UPTAKE**

Gilles Hochstetter (ARKEMA) and Thibaut Lefort (POLYMERIS) took the stage for a joint presentation of THERMOFIRE and BIO-UPTAKE, emphasizing their complementary approaches to overcoming manufacturing and performance challenges in bio-based composites.

📺 Replay available on [JEC TV](#)



💬 **Roundtable on Bio-Based Alternatives for Lightweighting**

Teddy Fournier (CANOE) represented THERMOFIRE in a panel discussion focused on bio-based alternatives to reduce weight and improve performance in mobility sectors.

📺 Replay available on [JEC TV](#)



This presence at JEC confirmed THERMOFIRE's positioning at the forefront of European innovation in sustainable, fire-retardant composite materials, while reinforcing partnerships across the bioeconomy and materials ecosystems.

# Progress Updates

## CANOE: Advancing Bio-Based Fiber Treatments and Thermoplastic Composites

As a key partner in THERMOFIRE, CANOE, a French technological center, brings its expertise in advanced materials and processing technologies to three major work packages: the development of fire-safe natural fibers (WP2), bio-based semi-finished products for aerospace applications (WP3), and end-of-life analysis of thermoplastic composites (WP5). The challenge lies in enhancing both the mechanical properties and flame resistance of natural fibers like cellulose and flax to meet demanding industrial standards.

### Key Innovation:

CANOE is developing customized sizing treatments for flax and cellulose fibers, focusing on two integration pathways:

- Introducing flame retardants during the wet spinning process of cellulose dissolution
- Applying sizing agents on the surface of dry-spun fibers This dual approach aims to boost fire performance while preserving fiber integrity.

The renewable fibers are currently being tested by AVANZARE according to UL94 standards.

### Highlights of Recent Progress:

- Custom-made cellulose fibers were successfully developed and benchmarked against commercial alternatives such as CORDENKA.
- CANOE adapted its thermoplastic tape production line, originally designed for carbon fiber, to bio-based fibers with a PA11 matrix.
- These tapes were woven and thermo-compressed into samples, then subjected to mechanical testing and fire qualification procedures.



### Next Steps:

CANOE will now focus on developing a bio-based composite capable of meeting the FAR25 fire safety standard.

## CTME: Designing Bio-Based Battery Casings and Leading LCA Analysis

The Technological Centre of Miranda de Ebro (CTME) plays a central role in THERMOFIRE, leading the work on composite manufacturing and characterization (WP3) and performing the Life Cycle Assessment (WP6) of developed materials. CTME's objective is to formulate bio-based, recyclable thermoplastic composites tailored for demanding applications like battery casings in electric vehicles, replacing heavier metal alternatives.

### Key Innovation:

CTME has developed a novel composite formulation using bio-based PA11 and natural short fibers, processed through extrusion and injection molding. Even without flame retardants, the material shows enhanced tensile and flexural strength, confirming its potential for lightweight, sustainable casings.

### Highlights of Recent Progress:

- First-generation PA11 composites were successfully formulated and mechanically tested.
- Upcoming work will focus on improving polymer-fiber compatibility and incorporating bio-based, halogen-free flame retardants.

On the sustainability front, CTME is assessing the environmental footprint of THERMOFIRE's composites using LCA tools, benchmarking them against fossil-based counterparts.



### Next Steps:

CTME will finalize composite formulations with flame retardants and continue LCA evaluations to support data-driven decisions on material sustainability.

### Workshop Spotlight:

CTME presented THERMOFIRE's LCA approach during the "Anticipatory LCA to Promote Informed Decision-Making" online workshop, organized by the BIORING and SuperBark projects in December 2024. They highlighted challenges like data availability, geographic variability, and upscaling issues—reinforcing how LCA can inform sustainable innovation.

🌐 Missed the webinar? Watch the replay and access the presentations here: [Replay](#)

## UPCOMING EVENT

### Consortium 24M Meeting

Date: 21 May 2025

Location: Serquigny, France

The follow-up meeting for the THERMOFIRE CBE-JU will take place in Serquigny, held by the project partner Arkema. The opportunity to review the progress and advancements achieved at the mid-term of the project.



### NeMMO 2025

Date: 2-3 July 2025

Location: Rennes, France

Meet the THERMOFIRE CBE-JU on the NeMMo 2025 congress, two days of discussions and conferences, around an exhibition, to imagine the future of mobility. The project will be presented during the “Polymer session” toward “New materials for current & new mobilities” (on 2 July, at 15:15 CET).

→ Programme and registration: [🔗 NeMMO 2025](#)

## Stay connected

Stay updated with the latest news from THERMOFIRE:

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Email: [elvira@avanzarematerials.com](mailto:elvira@avanzarematerials.com)

LinkedIn: <https://www.linkedin.com/company/thermofire-cbe-ju/>

Register to our newsletter: <https://www.thermofire-project.eu/newsletter.html>

**We welcome your questions, feedback, and ideas. Let's work together to revolutionize fire safety!**

Thank you for your interest and support of the THERMOFIRE project. Stay tuned for more updates in the next edition of our newsletter.

Warm regards,

The THERMOFIRE Team

[Register to our newsletter](#)



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