RECREATE

Fiber-Reinforced Composite Materials for the Circular Economy: Challenges and Opportunities

RECREATE MOOC

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23/04/2026, Brussels

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No. 101058756

Funded by the European Union

MOOC description

The MOOC is available on **POK – Polimi Open Knowledge**, the MOOC platform of Politecnico di Milano: https://www.pok.polimi.it/course/view.php?id=191

This course provides a comprehensive overview of:

- end-of-life challenges (technical, logistic, legislative);
- reuse, repair, demanufacturing, remanufacturing, and recycling technologies;
- design strategies for recyclability (modular design, reversible materials).

The course also covers:

- circular economy principles;
- innovation management and business models;
- environmental and socio-economic sustainability assessment.

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MOOC structure

Weeks	Main topic	Learning Resources
Week 1	Supply Chain	Video lectures, PDFs, activities and quizzes
Week 2	De-manufacturing and Re-manufacturing of Composite Parts and Structures	Video lectures, PDFs, activities and quizzes + Digital Twin
Week 3	Next Generation Recyclable-by-Design Composites	Video lectures, PDFs, activities and quizzes
Week 4	Circular Economy and Sustainability	Video lectures, PDFs, activities and quizzes
Week 5	Gamification platform	Link to a game-based assessment

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MOOC structure: presentation on the platform

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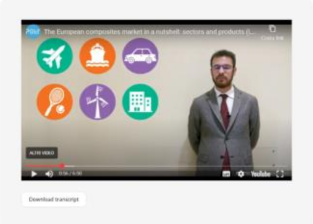
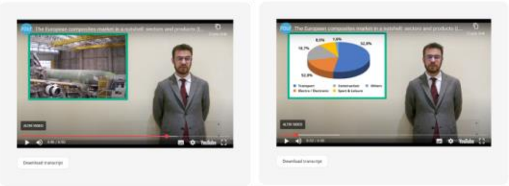
MOOC structure: videos on POK

Example of one video from Week 1

It is possible to watch videos on the platform, from YouTube, and download the transcripts.



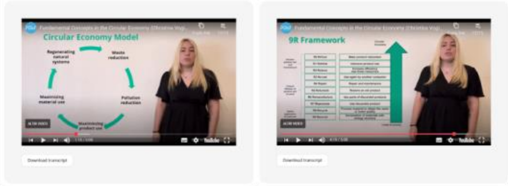
Example of graphics included in the videos: images, schemes, keywords and illustrations



Example of one video from Week 4

It is possible to watch videos on the platform, from YouTube, and download the transcripts.

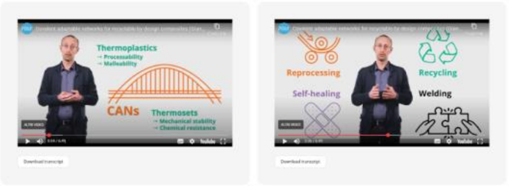
Example of graphics included in the videos: images, schemes, keywords and illustrations



Example of one video from Week 3

It is possible to watch videos on the platform, from YouTube, and download the transcripts.

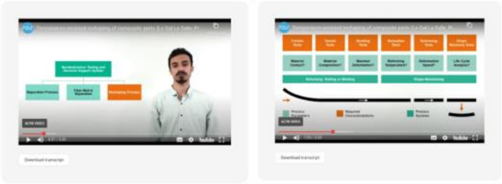
Example of graphics included in the videos: images, schemes, keywords and illustrations



Example of one video from Week 2

It is possible to watch videos on the platform, from YouTube, and download the transcripts.

Example of graphics included in the videos: images, schemes, keywords and illustrations



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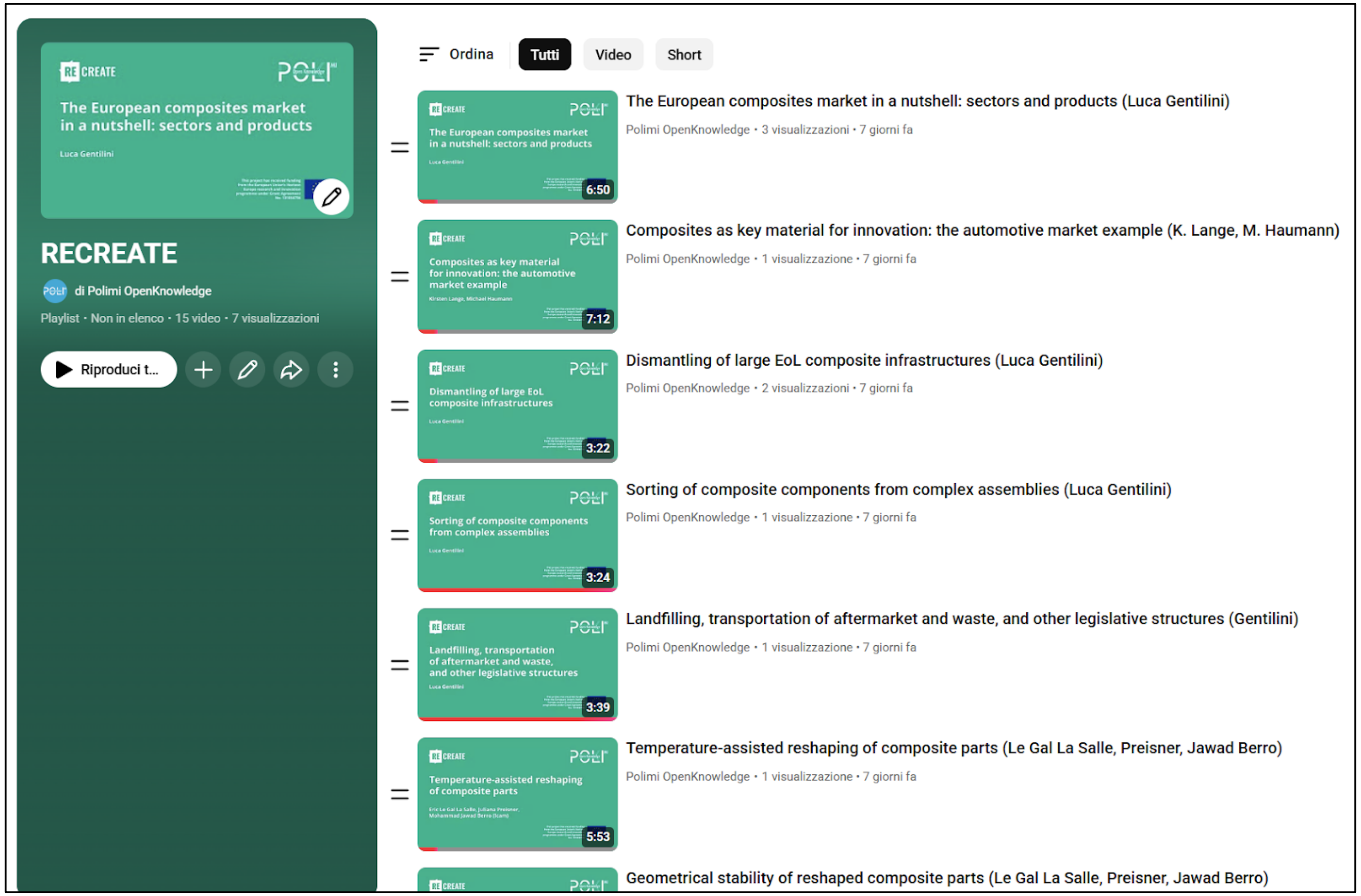
MOOC structure: videos on youtube



Youtube playlist:

The videos are also accessible directly from a YouTube playlist, so they can be watched without enrolling in the course on POK.

https://www.youtube.com/playlist?list=PLmKUwJ0KJQnUu3yueEiXAZqlpbeTVO2WD

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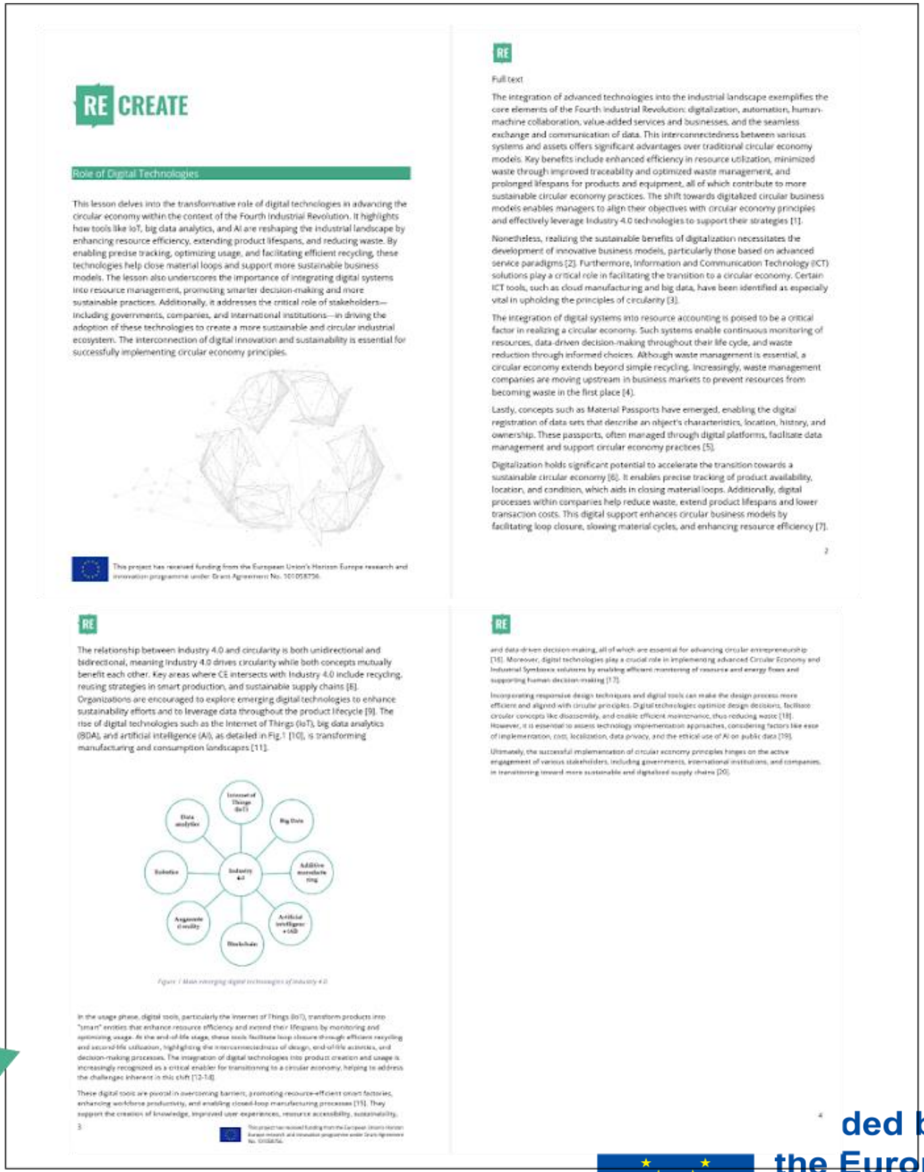
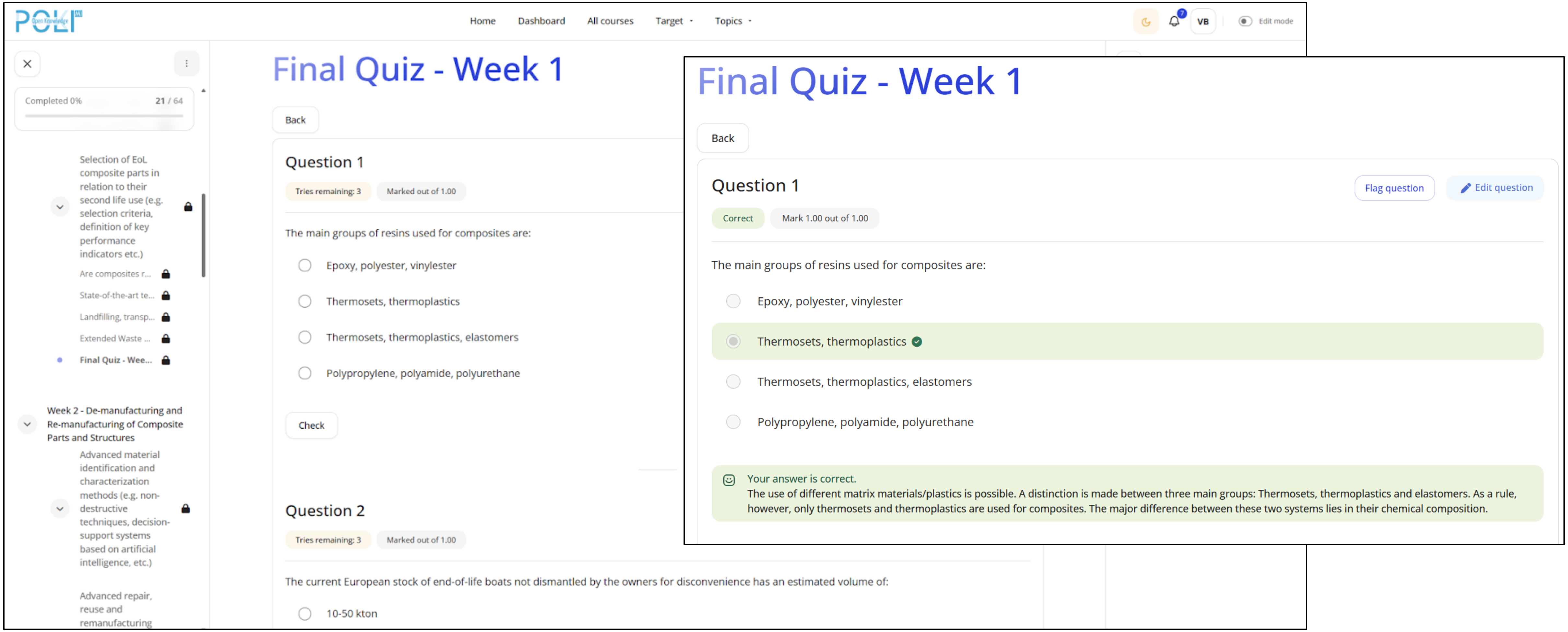
MOOC structure: PDFs

This is how the PDF looks like inside the platform: Title, abstract and the button to download the full paper.



MOOC structure: quizzes



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MOOC structure: Open Badge

The user can obtain the Open Badge by achieving 60% or more correct answers.

Fiber-Reinforced Composite Materials for the Circular Economy: Challenges and Opportunities

Disponibile dal: 2026-01-12

Emesso da: Politecnico di Milano

Emessi 22

Tipo Badge: Attestato di partecipazione

Tags: CHEMICAL ENGINEERING, COMPOSITE MATERIALS, CIRCULAR ECONOMY

Fiber-Reinforced Composite Materials for the Circular Economy: Challenges and Opportunities.
How advanced technologies and systemic solutions can promote the transition from a linear to a circular economy of fiber-reinforced composite materials.

Learning outcomes

Through this MOOC, the participant has developed a solid understanding of the challenges and opportunities related to the end-of-life management of fiber-reinforced composite materials within a circular economy framework. The badge certifies his/her ability to understand and evaluate sustainable strategies such as reuse, repair, remanufacturing, and recycling, as well as innovative design approaches aimed at improving the circularity of composite products. By earning this badge, the participant has demonstrated their knowledge of advanced technologies, circular

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MOOC structure: link to the gamification platform

Explore the "Game- based assessment tool"

You will reach the gamification platform aimed at providing a comprehensive assessment of knowledge and understanding about the specific topic of Circular Economy and Sustainability. This assessment is the last step in this MOOC.

No login is required. On accessing the platform, you will find in the homepage an interactive Map that serves as the central assessment hub.

In the interactive map there are three mission hotspots, each corresponding to a step in the assessment:

1. **Module 1 the Green Archive:** a questionnaire to test knowledge about Circular Economy and Sustainability;
2. **Module 2 Tech match:** a mini-game, where players see cards with problems and must combine each problem with the potential solution;
3. **Module 3 Manufacturing district:** a strategic simulation game that engages students in managing the activities of a hypothetical manufacturing company with the aim of improving its circularity performance through appropriate decisions on investments and business initiatives.

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Scan this Qrcode
and explore the MOOC!

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Thank you for your kind attention

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