

LIGNICOAT

Sustainable coatings based on lignin resins and bio-additives with improved fire, corrosion and biological resistance

tecnalia
MEMBER OF BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

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This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 101023342. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.

Introduction



LIGNICOAT aims to demonstrate the technical and economic feasibility of the use of **lignin as raw material** to produce **3 bio-resins** for wood, metal, furniture, automotive, flooring, machinery and paints industry.



The Coating Industry Challenge



The environmental impact of **fossil-based coatings** and volatile organic compounds (**VOCs**) emissions has raised concerns, and regulations were implemented to diminish their use in coatings.

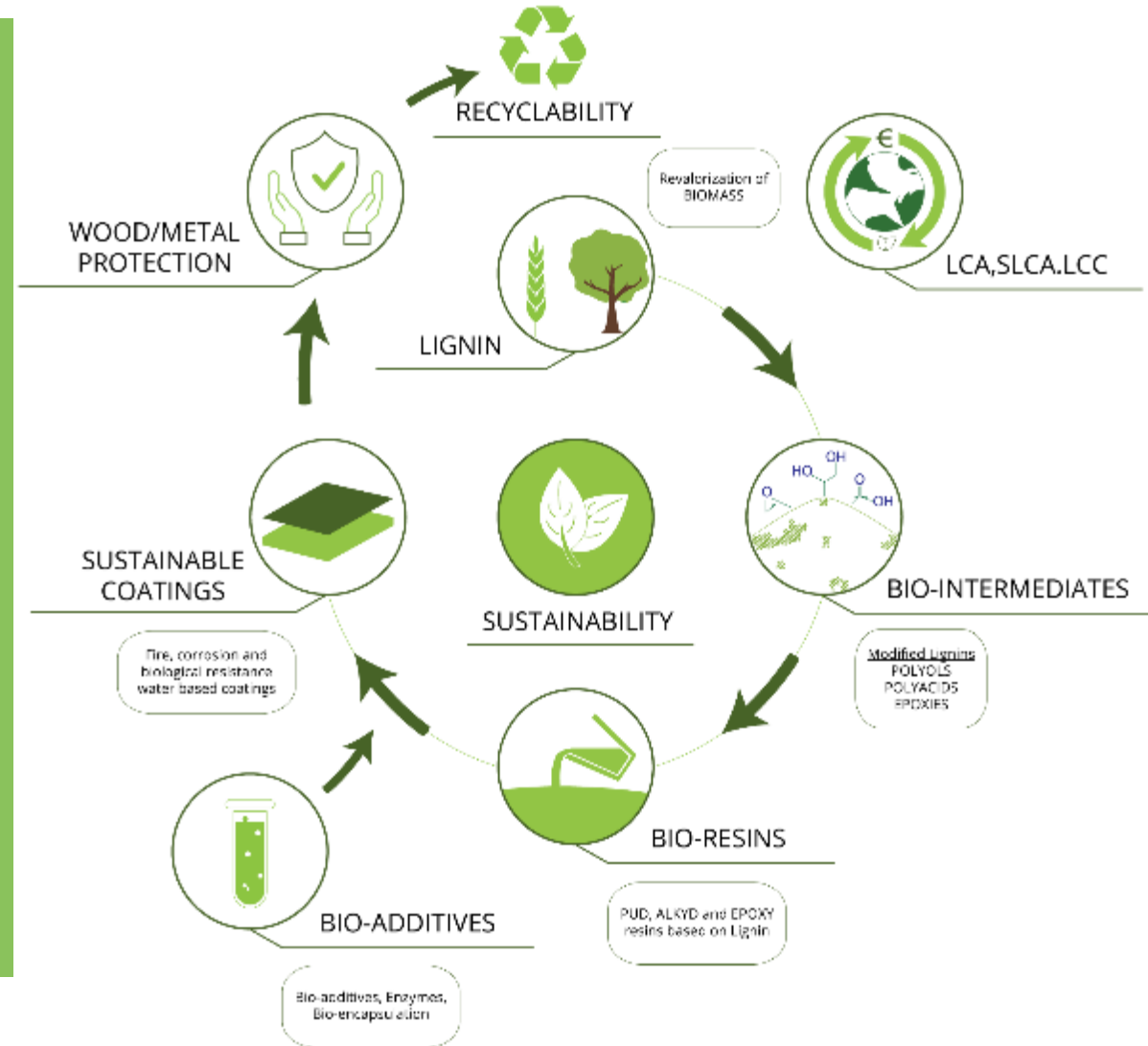


LIGNICOAT's Sustainable Solution



LIGNICOAT's solutions involve the use of **lignin**.

Lignin provides a **sustainable alternative** compared to traditional fossil-based raw materials, as it is obtained from agricultural, forestry, pulp, and paper **industry wastes**.

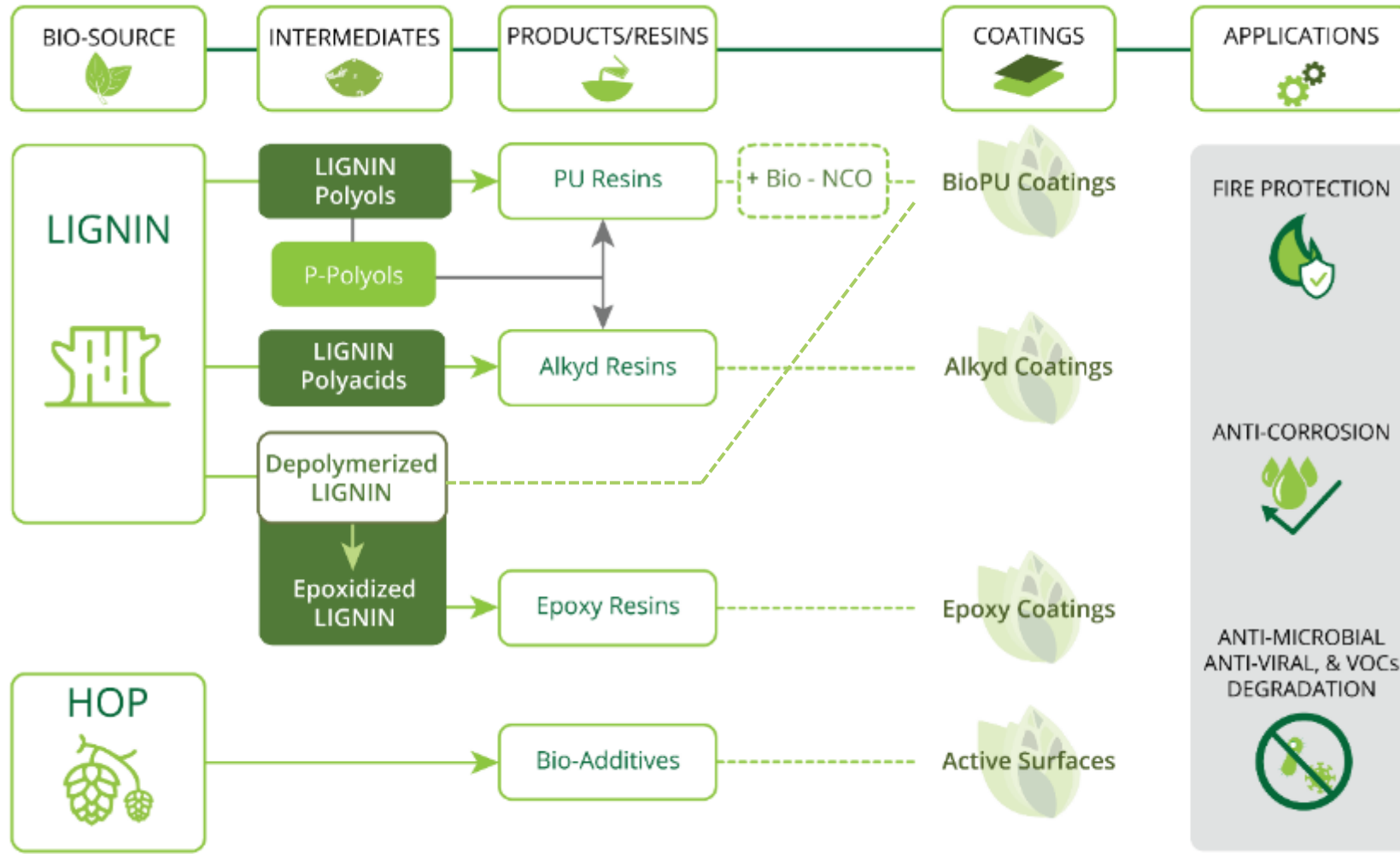


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What Sets LIGNICOAT Apart



Given the possibility of obtaining polymers and many products from lignin, it can be used as a building block for producing bio-resins for coatings.

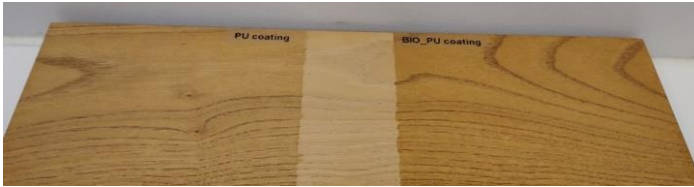


Anticipated Benefits

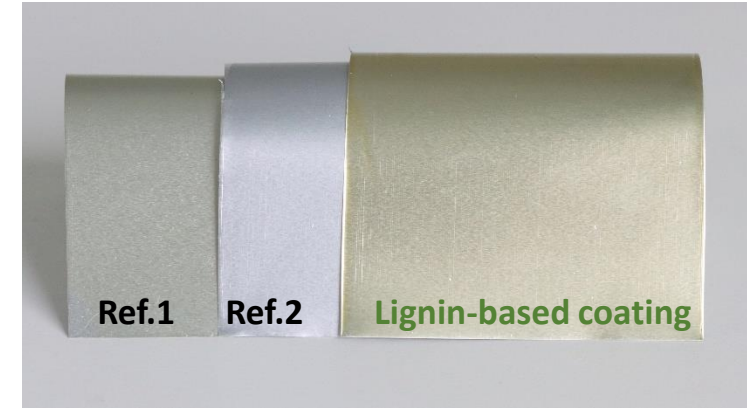


PU Ref

Bio-PU coating



Ref Lignin-based FR Wood biocoatings



1. PU coating on **wood** based on lignin polyols

3. Formulated epoxy lacquer for coil coating on aluminium

Lignin-based coating Alkyd paint Ref Bio-Alkyd paint



2. Alkyd resins on **metal** based on lignin polyacids

- ✓ Lignicoat solution is poised to reduce carbon emissions by 20-50% to fossil-based market references.
- ✓ The biobased content of Lignicoat biocoatings ranges between 10% and 50%.

FR clear wood biocoatings



Fire performance analysis by cone calorimeter testing (ISO 5660-2)

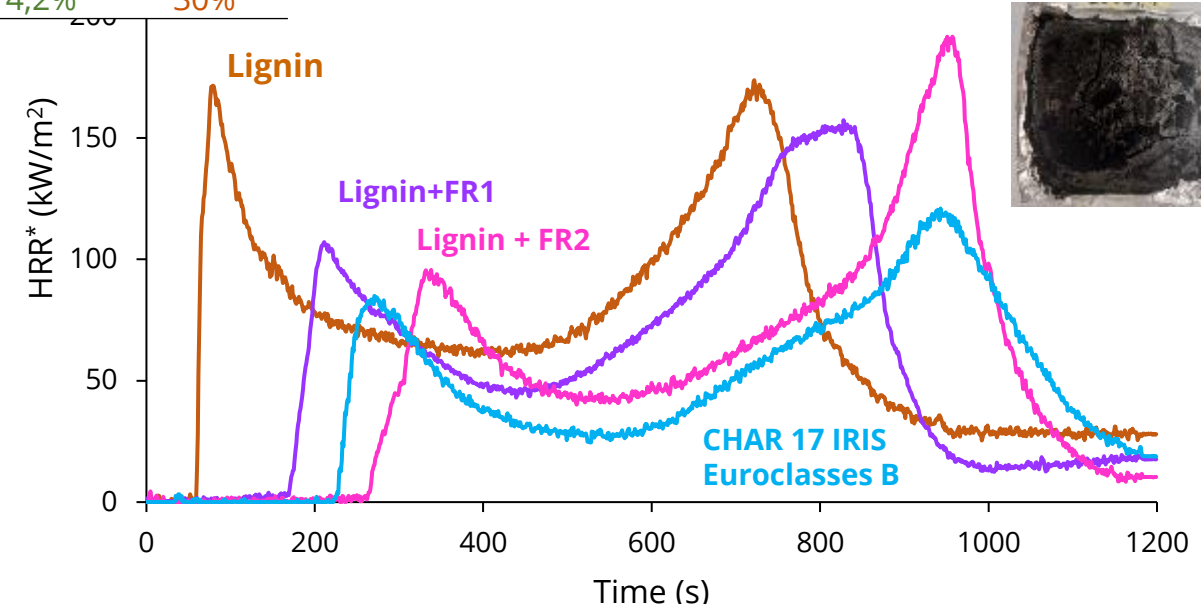
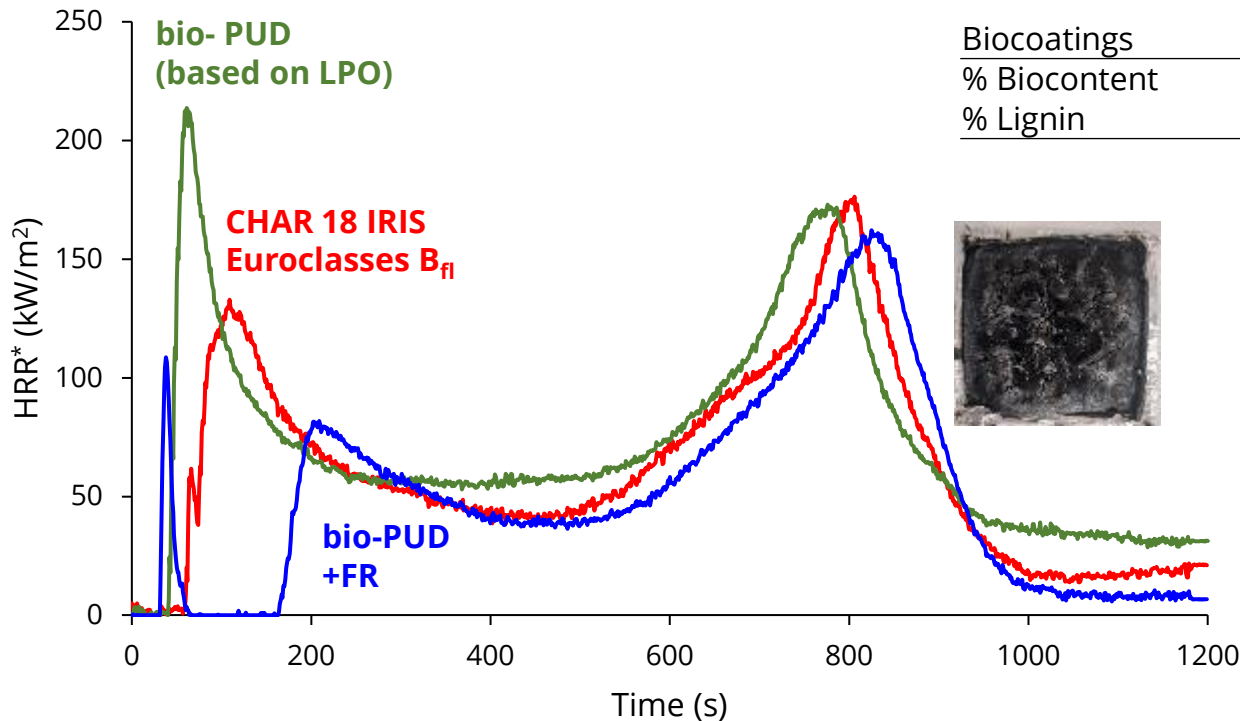
Heat Release Rate (HRR, kW/m²)



➤ 2K **WB** bio-PU based on lignin polyol resin

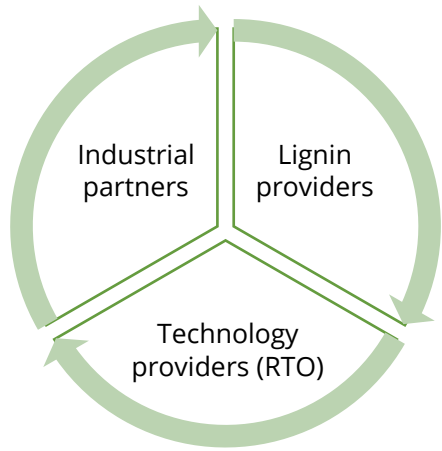


➤ 2K **SB** PU based on lignin



- The addition of FR additives improves a lot fire performance of original biocoatings based on lignin.
- **Bio-PUD + FR coating** show similar fire performance to IRIS CHAR 18 IRIS' benchmark (*Euroclasses B floors*).
- **Lignin + FR biocoatings** show much better fire performance, similar to CHAR 17 IRIS' benchmark (*Euroclasses B walls & ceilings*).

Impact Beyond the Coating Industry



A new cross-sector
interconnection



New bio-based chemicals
(lignin polyols, epoxies,
and polyacids) and resins
(PUD, alkyd, epoxy).



Coating formulations
>25% bio-based



1 new bio-based
value chain



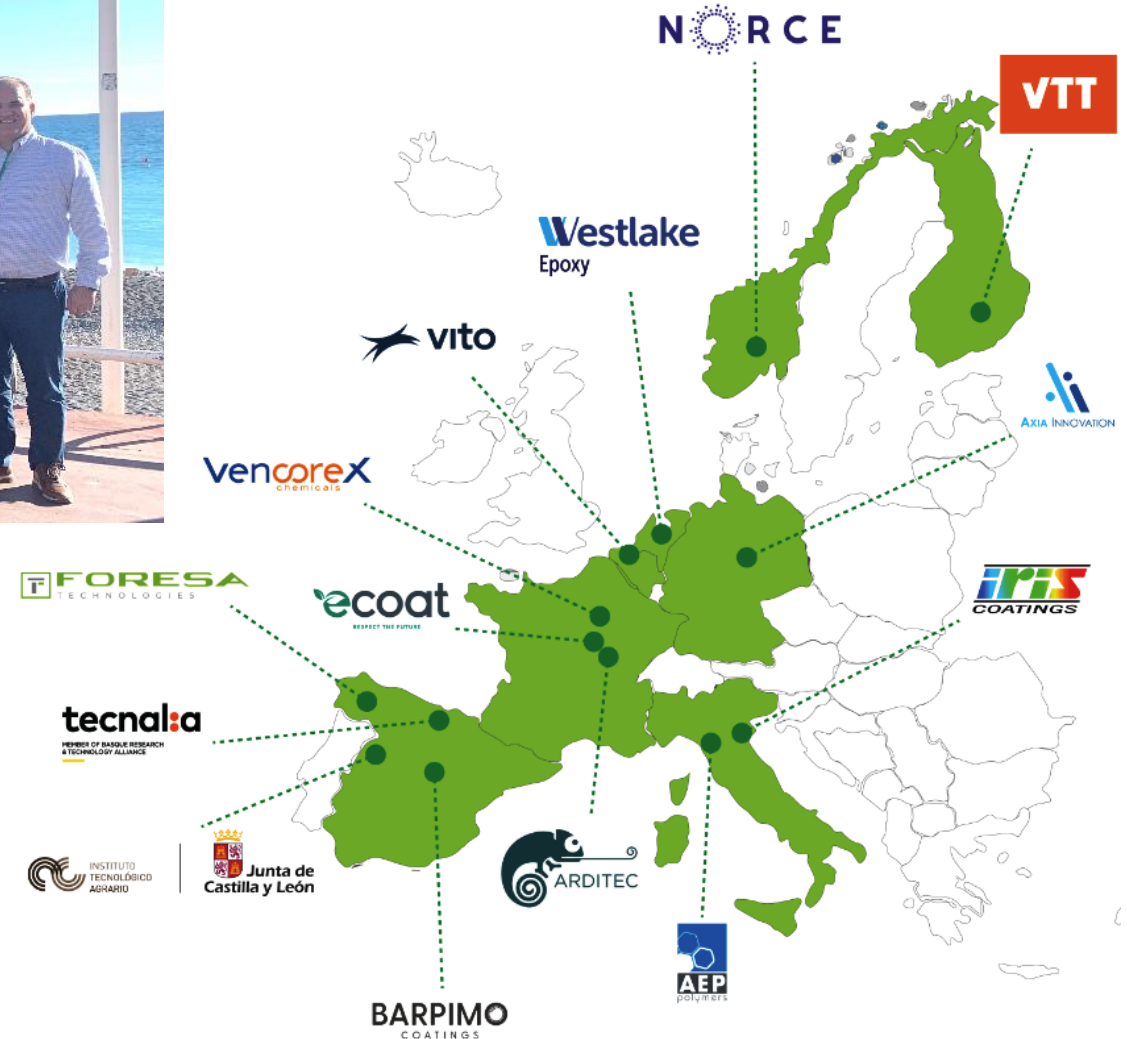
New job opportunities

Meet our Team



14 Partners from 8 countries

- 9 Industrials
- 4 RTOs
- 1 Non-profit



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Learn more about LIGNICOAT



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Thank you



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