

euINDTech2

5
KRAKOW
02.06.2025



EU-Japan Dialogue on Advanced Materials



**"Risks and Perspectives of
Circular Economy and Advanced Materials
in Construction Sector"**

**Dr. Maddalena Rostagno, Head of R&D, Gae Engineering
(IT)**



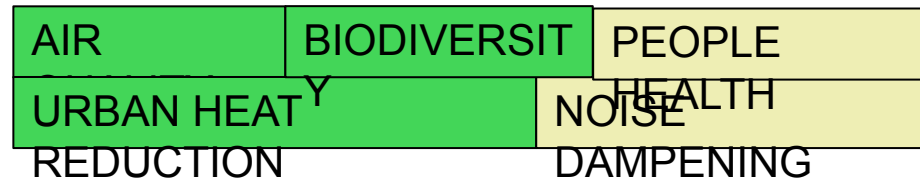
OUTLINES

- ❖ **ADVANCED MATERIALS AS A PATHWAY TO DECARBONIZATION**
- ❖ DESIGN FOR ENVIRONMENT
- ❖ CULTURAL HERITAGE, ADVANCED MATERIALS AND BIM
- ❖ CONCLUSIONS: EU/JAPAN EXCELLENCE IN ACTION

VERTICAL FOREST, Milano (IT)

NATURE ALWAYS WINS

SUSTAINABILITY



PERFORMANCES



30 tons of CO₂ adsorbed annually



Equivalent to 30000 sqm forest



21000 plants

PIRELLI 39, Milano (IT)



□ CONCEPT

Between 2026 and 2030: reconstruction and renovation of the historic building with the purpose to qualify it as a **greenhouse**, a space where sustainability, inclusivity and design coexist at the same time.

✓ GREEN INTEGRATION

Transformation of the famous building in an open space where 700 mq of vegetation will be integrated in the overall structure contributing to adsorb 14 tons of CO₂/year and releasing **9 tons of CO₂/year**, equivalent to a forest of 10000 sqm.

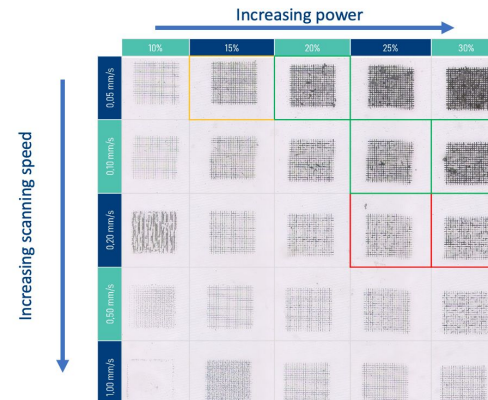
✓ RECYCLABLE AND SUSTAINABLE MATERIALS

Prioritize materials that are recycled or recyclable, **such as bio – based materials (panels/modular concepts)**. Ensure materials are certified and traceable to maintain quality and structural safety while minimizing environmental impact. **DPP contribution**

RECYCLABLE AND SUSTAINABLE MATERIALS



From sawdust waste to
bio-based/biodegradable alternatives to
fossil based polymers + Additive
Manufacturing



The project has received funding from the European Union's
Horizon 2020 Research and Innovation Programme under
Grant Agreement No. 952941

2020 – 2025

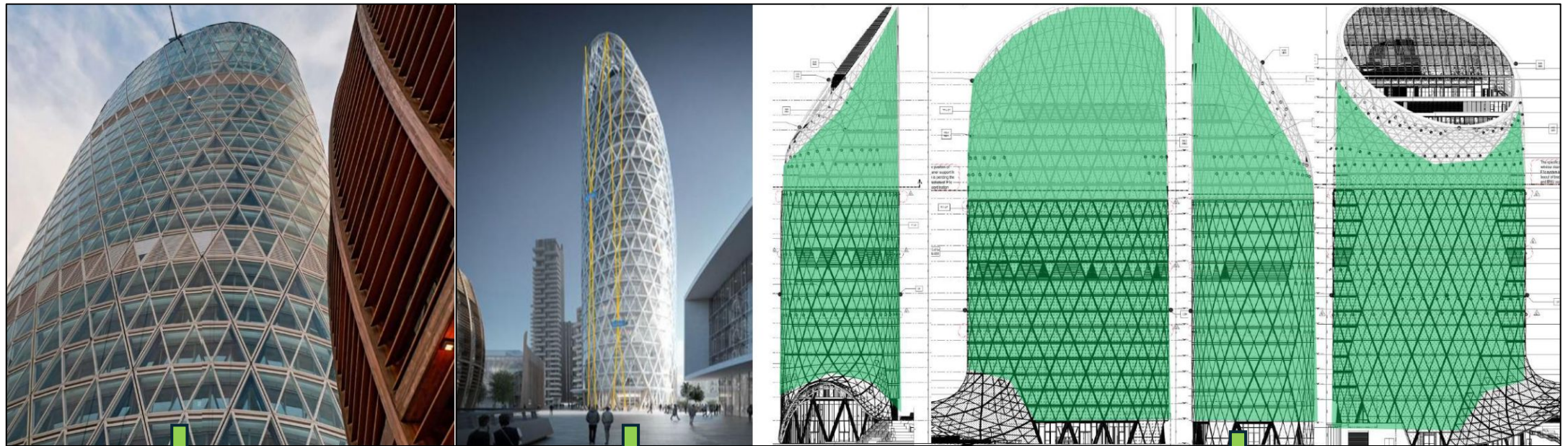
33 Partners, 14.8 MEuros

Construction, Automotive, Energy,
Agriculture, Food Packaging

www.biomac-oitb.eu

Unipol Tower, Milano (IT)

ADVANCED MATERIALS SOLUTIONS CAN COME FROM STANDARD MATERIALS



Steel/Crystal nest X
skin
02/06/25

Modern creativity and Design for
Deconstruction
EU – JAPAN
DIALOGUE

FUINDTECH2

OUTLINES

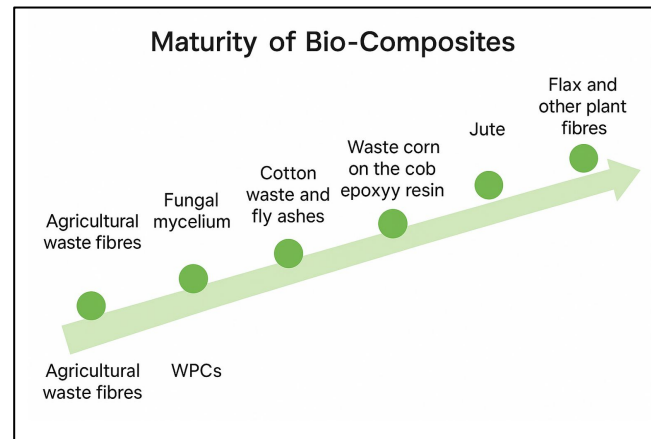
- ❖ ADVANCED MATERIALS AS A PATHWAY TO DECARBONIZATION
- ❖ DESIGN FOR ENVIRONMENT
- ❖ CULTURAL HERITAGE, ADVANCED MATERIALS AND BIM
- ❖ CONCLUSIONS: EU/JAPAN EXCELLENCE IN ACTION

Advanced materials & CPR 2024/3110

TRL1 – TRL3

New concepts

?

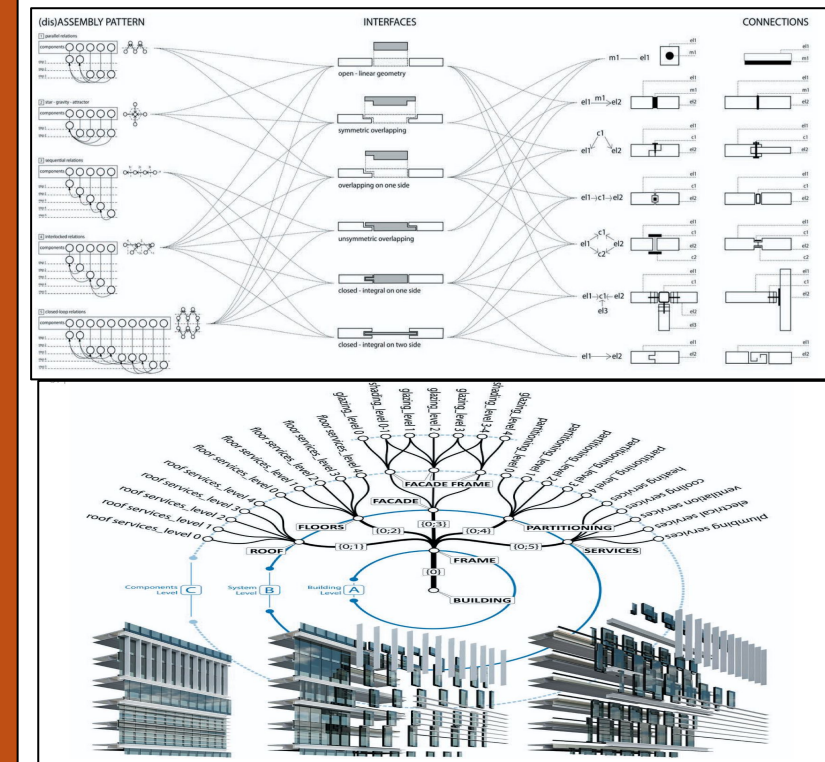


DESIGN for D ECON STRUC TION	Designing Out of Waste (DoW)	COMPLIANCE & STANDARDS
	Design for Recovery (DfR)	
	Design for Manufacture DfM	
	Design for Dysposal (DfD)	
	Design for Manufacture and assembly (DfMA)	
	Design for Recycling (DfR)	
	Digital Product Passport	
	...	



TRL 5 - TRL8

Effective deployment



Source:
S.Viscuso

OUTLINES

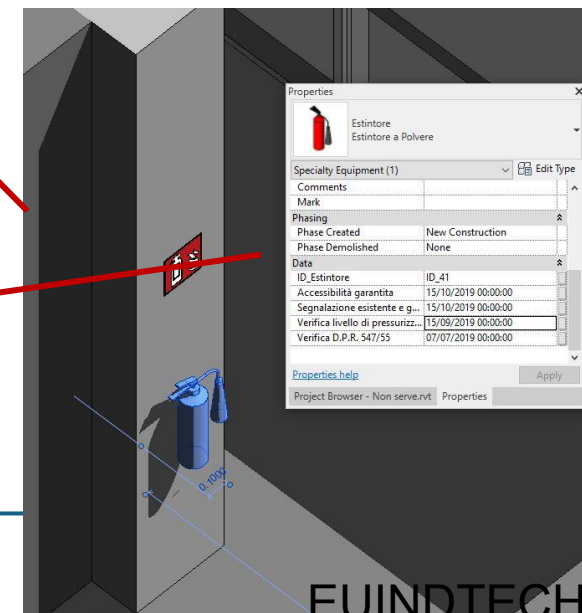
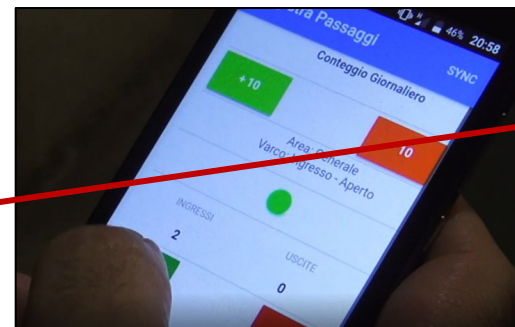
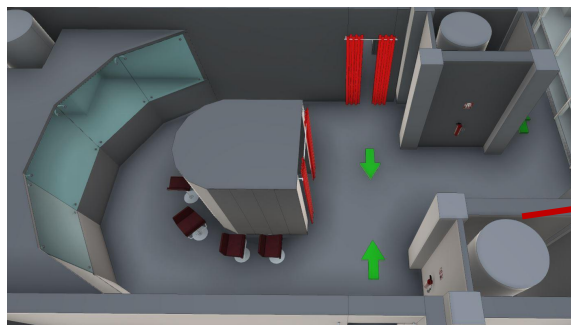
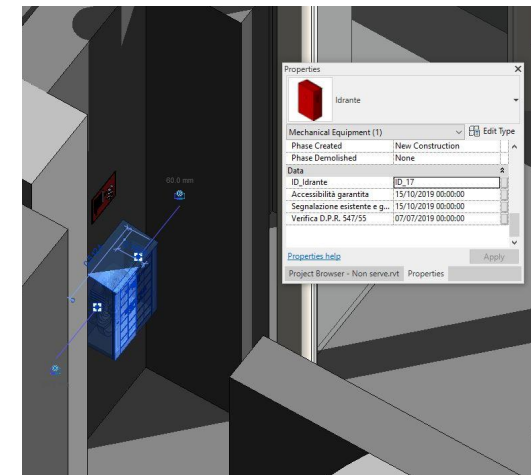
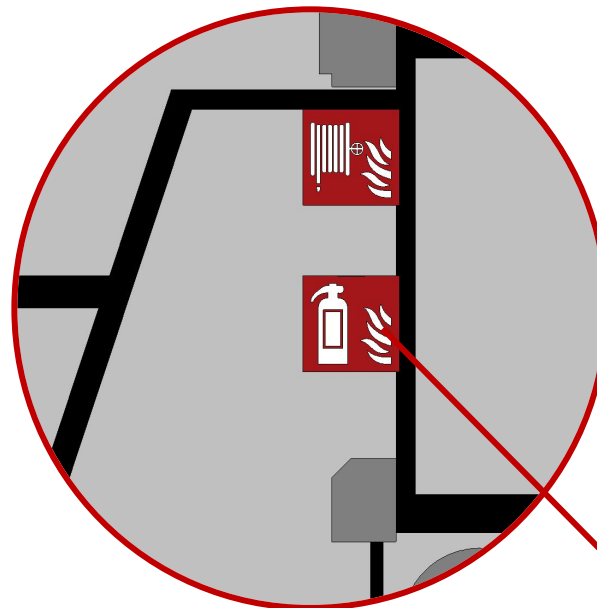
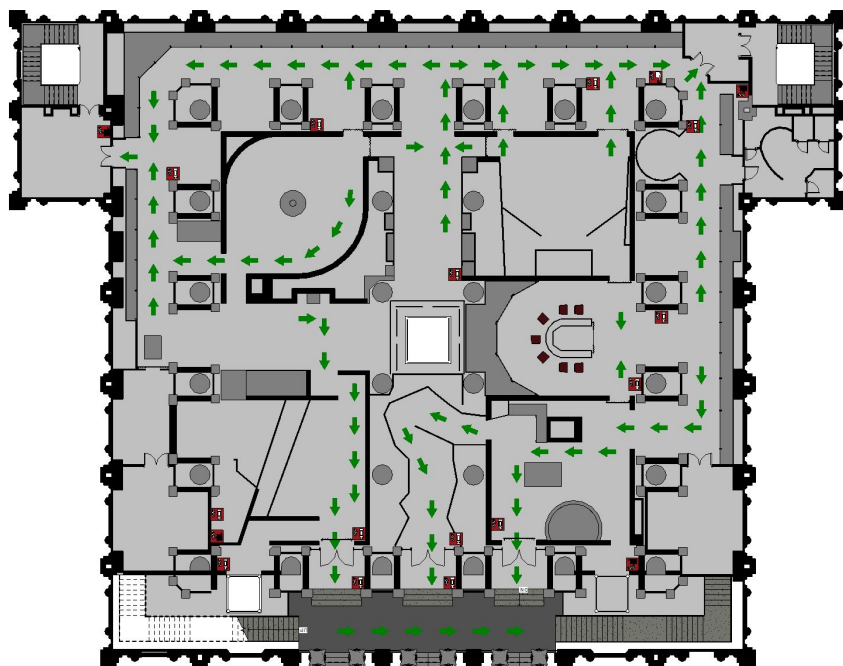
- ❖ ADVANCED MATERIALS AS A PATHWAY TO DECARBONIZATION
- ❖ DESIGN FOR ENVIRONMENT
- ❖ **CULTURAL HERITAGE, ADVANCED MATERIALS AND BIM**
- ❖ CONCLUSIONS: EU/JAPAN EXCELLENCE IN ACTION

**CINEMA MUSEUM, MOLE ANTONELLIANA
TURIN (IT) - 1863**



Among the most important in the world for the richness of its heritage and the diversity of its scientific and educational activities, the **National Cinema Museum** owes its uniqueness to the distinctive layout of its exhibition. Housed in the **Mole Antonelliana**, the **symbolic monument of Turin**, the Museum spirals upward across multiple exhibition levels, offering a spectacular presentation of its extraordinary collections and retracing the history of cinema from its origins to the present day through a captivating interactive journey. Set against a backdrop of stage sets, projections, and lighting effects, enhanced by displays of photographs, sketches, and objects, the visitor pathways create a spectacular experience and allow guests to personally discover the hidden secrets behind the camera and the stages leading up to the film screening. The Museum encapsulates and illustrates the entire history of cinema in a fantastic and interactive journey: from shadow theater and the first fascinating magic lanterns that formed the prehistory of the ‘seventh art’ to today’s most spectacular special effects

ADVANCED MATERIALS + BIM +



02/06/25

EU – JAPAN
DIALOGUE

EUINDTECH2

OUTLINES

- ❖ ADVANCED MATERIALS AS A PATHWAY TO DECARBONIZATION
- ❖ DESIGN FOR ENVIRONMENT
- ❖ CULTURAL HERITAGE, ADVANCED MATERIALS AND BIM
- ❖ **CONCLUSIONS: EU/JAPAN EXCELLENCE IN ACTION**

Italian Pavillon at Expo Osaka 2025



Mario Cucinella Architects, Lead member and designer of the consortium composed by **Yoshiki Matsuda Architects** as Architect of Record, **GAE Engineering**, Nishio Rent All, Nomura Co, Beyond Limits, Milan Ingegneria, Tekser, Zeranta Edutainment, Claudio Preci e con Yoshiki Matsuda Architects in qualità di Architect of Record.

Italian Pavillon at Expo Osaka 2025

REVERSIBLE ARCHITECTURE (laminated modular wood + DfD + DfMA)

ENERGY EFFICIENCY AND RESOURCE MANAGEMENT
(natural ventilation + smart external skin for thermo regulation)



"Every element (from structure and materials, technologies to furnishings) has been designed with traceability, reversibility and flexibility in mind, aiming to minimize waste and maximize the long-term value of public investment" Source: MCA

euINDTech2

**5
KRAKOW**

02.06.2025



EU-Japan Dialogue on Advanced Materials



Thank you for your kind attention

ご清聴ありがとうございました。