



AMANAC WORKSHOP

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WHAT KIND OF BUILT ENVIRONMENT FOR FUTURE GENERATIONS?

“Challenges and needs for the actors in the construction industries”
The perspectives of a precast company

Edoardo Segù
Tesi System – V&P



The projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760639 (EnDurCrete), 760824 (ReSHEALience) and 761072 (DACOMAT)

Tesi System Srl – Grigolin Group



TesiSystem is a precast company of the **Grigolin Group** sited in nord-east of Italy with 3 production sites with more then 160.000m² production, fully dedicated to various products such as **panels, pillars, truss, shingles of different dimensions**

TesiSystem has 60 employee and around 50 million euro turnover (2018)

Reference market: **Italy**

Average daily concrete capacity production: **+/- 600m³**



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Starting point

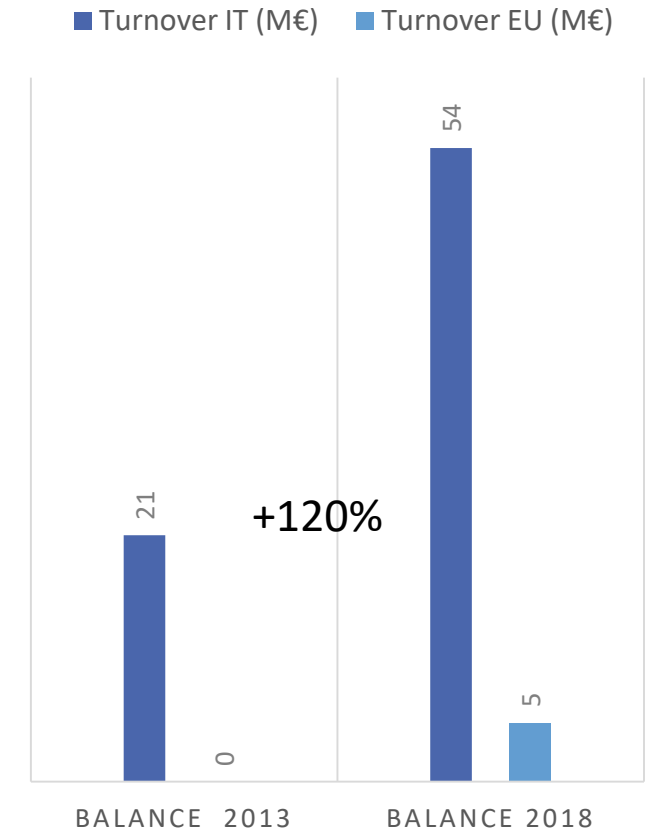
MARKET MUST

- Flexibility in the operations
- Fast production, delivery and installation process
- «Cheap» prices
- High performances, always

INNOVATION IN THE PAST

- Investment in available technologies/equipments
 - low commitment to test new materials
- Low commitment to sustainability, just selling
 - «price centric» production approach

NTS TURNOVER

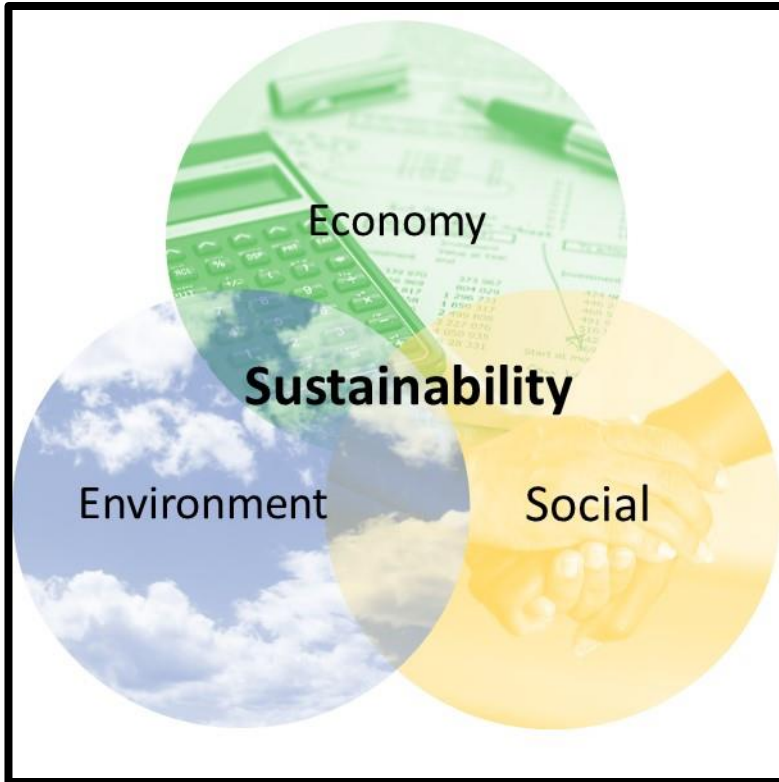


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Market trends

MARKET DEMANDS



- **Reducing construction costs and contributing to more affordable housing**
Our challenge: buildings costs are critical for billions of people worldwide. We must offer affordable and cost-effective building solutions to our customers and end-users.
- **Improving energy efficiency of buildings**
Our challenge: providing highly efficient insulating solutions for builders.
- **Improving aesthetics & strength to create unique structures**
Our challenge: meeting the needs of architects and engineers by providing a building solution with qualities of resistance to compression, ductility, longevity, eco-efficiency, insulation and aesthetics.
- **Minimizing our environmental footprint through process innovation**
Our challenge: cooperate in reducing the CO₂ emissions resulting from cement manufacturing to minimize our impact on climate change.

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What we are doing to answer to market

PROJECT	TOPIC	Focus
ECO-BINDER (GA 637138) EeB-01-2014:	The main objective is to replace Ordinary Portland Cement and OPC based concrete (products) with new products based on the innovative low-CO2 binders. ECO-Binder aims to address the vast market for envelope retrofitting. Reduction of 40% of the casting time. -->VIDEO EURONEWS	Reduction of CO2 emission in a cement production
VEEP (GA 72358)	New technologies and strategies for the development of pre-fabricated elements through the reuse and recycling of construction materials and structures Developments of new lightweight panel made by 75% CDW materials.	Valorization of CDW materials in a panel production
ENDURCRETE (GA 760639) H2020	The project aims to develop a new cost-effective sustainable reinforced concrete for long lasting and added value applications. The final result will be an high resistant panel for application in aggressive environments	Reduction of CO2 emission in panel production
LIGHTCOCE (GA 814632) H2020	Building an Ecosystem for the up-scaling of lightweight multi-functional concrete and ceramic materials and structures. The final product will be a panel with self sensing materials for the monitoring of the product life cycle	New product with self sensing material



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How the innovation impacted on TesiSystem

SKILLS

- Knowledge of binder performance in application and new concrete mix design
- Knowledge of use of new insulation materials
- Knowledge of production process for the panels
- New finishing multifunctional material New methods to characterize the innovative concrete/binders
- Production process optimization

OPPORTUNITIES

- Possibility to demonstrate the concepts in different part of EU supported by official monitoring data
- Improve the social acceptance of concrete/precast products and its sustainability in the life cycle
- Introduce circular economy and reuse concepts in product design
- Improve workers skills and their commitment on daily job
- Access to international consortium and TT logics
- Access to business opportunity abroad
- Better understanding of “*who is doing what*” across Europe
- Visibility and marketing opportunities



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Needs

Work together for **COST-EFFECTIVE SOLUTIONS** not just SOLUTIONS



Precast market is a very competitive market, innovation in new products should consider the final cost of the solution as key point to innovate

Improve the cooperation along the supply chain



"United we stand, divided we fall" - sensibilization

Sustainability in the production process and in new business models



Improve sustainability strategy for the future according with other companies

Requirements and standards



We need to work more together -> standards review in order to introduce new ranges and tollerances -> new products

Access to further source of finance/incentives



Innovation costs!

Ehnance the cooperation with scientific partners



Technology transfer is the way to innovate easily

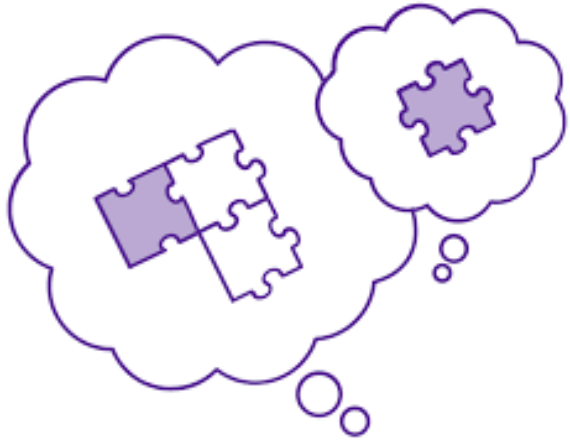
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Future steps and challenges



- Sustainability isn't a cost, but an **opportunity!**
- Develop new load-bearing panels for new residential concept; (**Eurocode 2 EN 1992**)
- Think to Geometry and weight reduction of the structures though the creation of hiperstatic joints (**Eurocode 2 EN 1992**)
- Development of lightweight panels with high insulation properties, improved durability, service life, features
- Adopt regularly LCA approach for the recycling of the materials and the use of sustainable resources (**EN ISO 14040 - EN ISO 14044**)
- Investigate offsite manufacturing: intelligence platform for the coordination of the precast manufacturing process and on site actions (*BIM/Digital Twin* along supply chain)

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Thank you!

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