



**“Gheorghe Asachi” Technical University of Iasi, Romania**



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## **INNOVATIVE USE OF SCRAP AND WASTE DERIVING FROM THE STONE AND THE CONSTRUCTION SECTOR FOR THE MANUFACTURING OF BRICKS. REVIEW OF THE INTERNATIONAL SCENARIO AND ANALYSIS OF AN ITALIAN CASE STUDY**

**Marco Migliore<sup>1\*</sup>, Mauro Carpinella<sup>2</sup>, Giancarlo Paganin<sup>3</sup>,  
Franco Paolieri<sup>2</sup>, Cinzia Talamo<sup>1</sup>**

<sup>1</sup>*Department of Architecture, Building Environment and Construction Engineering (ABC), Politecnico di Milano,  
via Ponzio 31, 20133 Milano, Italy*

<sup>2</sup>*Catalyst srl, Borgo Santa Croce 6, 50122 Firenze, Italia*

<sup>3</sup>*Department of Architecture and Urban Studies (DASTU), Politecnico di Milano, via Bonardi 3, 20133 Milano, Italy*

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### **Abstract**

The construction sector has evolved a lot over the last few years promoting the design and manufacturing of innovative and environmentally sustainable materials and products. In accordance with European and national guidelines, with a growing awareness of environmental issues several experiences are showing the interest of companies to qualify their products as green and environmentally sustainable. In the European context many directives have been introduced which, among their themes, speak of circular economy, reduction of the use of resources, better efficiency of production, etc. At the same time, initiatives related to the GPP were activated in the Italian context, that foresee an increase of the recycled content in building materials. Especially the brick manufacturing industry is very sensitive to the issue of the waste recovery and many experiences show that is possible to obtain optimum products with weighted material mixes (virgin raw materials and secondary raw materials). This procedure also contributes to a gradual recovery of waste otherwise disposed of in landfills. In the international scenario there are many studies about the reuse of waste and scraps in the bricks material mixes; the studies mainly derive from heterogeneous sectors as, for example: fly ash from coal plants, scraps and waste from the natural stone extraction, ceramic production residue, aggregates from demolition, waste oil, slag from steel mills, sawmill sludge and dust, glass powdered, recycled plastic, textile fibers, etc. The analysis of many experiences highlighted two key issues: the importance of cross-sectorial exchanges as a condition for enabling strategies of circular economy and the high intrinsic value of the material scrap. Particular attention has been paid to the Catalyst case study, a company that has developed different types of bricks, produced almost entirely with secondary raw material.

**Key words:** bricks, circular economy, reuse, scraps, sustainable production, waste

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\* Author to whom all correspondence should be addressed: e-mail: [marco.migliore@polimi.it](mailto:marco.migliore@polimi.it); Phone: +39 02.2399.5172