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## Energy integration of the construction waste management

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Among the many environmental interactions with human activities, the construction and building materials (bricks, plaster, asphalt or cement concrete, clay materials and slurry) are recognized as a no negligible source of pressure on the environment. Basically, it is defined as the product of the linear economy, that is, an economy which digs resources out of the ground (e.g. rock materials), transforms them into products and buries in the ground, that is, in landfill sites, at the end of the life cycle of the product. Such an approach is wasteful, for both money and resources. An alternative, the circular economy (cradle to cradle), consists in remanufactured and/or reused materials such as today's goods become tomorrow's goods. The French energy transition law claims that by 2020, 60% of the building and construction materials will come from recycling also called CDW (construction and demolition waste). The process integration of the construction waste management can be considered as one of the large challenge for the civil engineering community leading to several scientific issues to overcome. Two research questions connected to two scales are presently considered. At the scale of the materials, the understanding of the mass transfer between solid inclusions and the working fluids is fundamental to make emerge the cross-cutting technologies (e.g. gravity sorting, carbonation of recycled aggregates concrete) into construction waste management platform. At the scale of the processes, energy integration by using heat recovery and pre-heating systems is a needing to reduce the economic and environmental costs of these new production tools.

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