

DEFINING BEST PRACTICES INDICATORS FOR DECONSTRUCTION OF GYPSUM BASED PRODUCTS TOWARDS AN EFFECTIVE CLOSED-LOOP

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Key words: Plasterboard, Deconstruction, Parameters, Indicators, GtoG Project

Gypsum products are considered amongst the very few construction material whose closed-loop recycling is possible, being increasingly into widespread used. In 2012, 1.15 million tonnes of plasterboard waste were generated in Europe. This is predominantly plasterboard in the form of offcuts from construction sites and stripped-out plasterboard from demolition and renovation sites.

Deconstruction is identified as an effective means for reducing C&D mixed waste at a time of diminishing landfill capacities and increasing environmental awareness. However deconstruction is still perceived as more costly and its economic viability differs considerably according to local condition.

The research conducted in this paper, in the framework of the Life+ GtoG Project “From Production to Recycling, a Circular Economy for the European Gypsum Industry with the Demolition and Recycling Industry”, exposes the methodology developed for the formulation of a set of indicators for monitoring deconstruction practices, considered the most suitable for data collection, analysis and evaluation of the end of life stage of gypsum base products.

These indicators are grouped into four categories: technical, economic, social and environmental. Its application in a series of case studies, located in Germany, Belgium, France, The Netherlands, and The UK, will assess their suitability. The deconstruction techniques from the different construction projects were monitored in order to compare and quantify the different category impacts as well as validate their feasibility. In all cases gypsum waste was dismantled manually or mechanically, segregated at source and transported to different recycling facilities according to the project’s respective locations, for a posteriori processing into recycled gypsum.

The first part of the methodology consists on selecting the parameters that will constitute the indicators according to the impact to be measured. Such impacts were determined and obtained from a previous study conducted within the GtoG project, in which current practices in deconstruction demolition, C&D waste characterization, processing of the gypsum waste for the production of recycled gypsum and its reincorporation into the manufacturing process were analysed and evaluated.

Parameters were combined together to give rise to the associated key assessment indicators, resulting on the definition of a set of 14 key indicators classified into the four main impact categories (technical, social economic and environmental), developed to monitor deconstruction practices.

Results evidence the feasibility of implementing deconstruction techniques instead of applying demolition practices for gypsum products. Therefore, priority ought to be given to efforts to promote dismantling of gypsum systems.