

Building Information Modeling Applied for the Measurement of Water Footprint of Construction Supplies

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Abstract : Water is used, directly and indirectly, in all activities of the construction productive chain, making it a subject of worldwide relevance for sustainable development. The ongoing expansion of urban areas leads to a high demand for natural resources, which in turn cause significant environmental impacts. The present work proposes the application of BIM tools to assist the measurement of the water footprint (WF) of civil construction supplies. Data was inserted into the model as element properties, allowing them to be analyzed by element or in the whole model. The WF calculation was automated using parameterization in Autodesk Revit software. Parameterization was associated to the materials of each element in the model so that any changes in these elements directly alter the results of WF calculations. As a case study, we applied into a building project model to test the parameterized calculus of WF. Results show that the proposed parameterization successfully automated WF calculations according to design changes. We envision this tool to assist the measurement and rationalization of the environmental impact in terms of WF of construction projects.

Keywords : building information modeling, BIM, sustainable development, water footprint

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