Method for a component-based economic optimisation in design of whole building renovation versus demolishing and rebuilding - DTU Orbit (05/01/2019)

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Aim: This paper presents a two-fold evaluation method determining whether to renovate an existing building or to demolish it and thereafter erect a new building. Scope: The method determines a combination of energy saving measures that have been optimised in regards to the future cost for energy. Subsequently, the method evaluates the cost of undertaking the retrofit measures as compared to the cost of demolishing the existing building and thereafter erecting a new one. Several economically beneficial combinations of energy saving measures can be determined. All of them are a trade-off between investing in retrofit measures and buying renewable energy. The overall cost of the renovation considers the market value of the property, the investment in the renovation, the operational and maintenance costs. A multi-family building is used as an example to clearly illustrate the application of the method from macroeconomic and private financial perspectives.

Conclusion: The example shows that the investment cost and future market value of the building are the dominant factors in deciding whether to renovate an existing building or to demolish it and thereafter erect a new building. Additionally, it is concluded in the example that multi-family buildings erected in the period 1850–1930 should be renovated.

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