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The potential impact of low thermal transmittance construction on the European design guidelines of residential buildings

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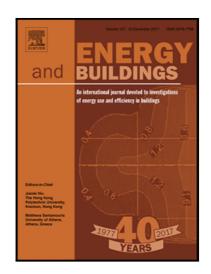
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#### ACCEPTED MANUSCRIPT

#### **Highlights**

- $\bullet$  The U-value impact on the thermal performance of residential buildings was analyzed
- 96 000 buildings were randomly generated and evaluated using dynamic simulation
- Six geometry-based indexes were correlated with the buildings performance
- Low *U*-values can increase energy consumption in warm and moderate climates
- Adequate U-values allow designers to explore new building forms and window designs

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