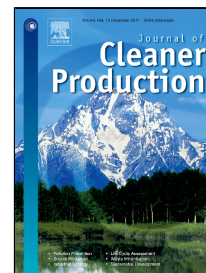


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Water Footprint and Water Pinch Analysis Techniques for Sustainable Water Management in the Brick-Manufacturing Industry

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1 **Water Footprint and Water Pinch Analysis Techniques for Sustainable Water Management in**
2 **the Brick-Manufacturing Industry**

3

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15 **Highlights**

- 16 • Water footprint and pinch analysis are effective tools to manage water consumption.
- 17 • Current water consumption footprint for the production of a brick is 2.02 L.
- 18 • Direct re-use/recycle reduced the water consumption footprint by 15.6%.
- 19 • Water regeneration reduced the water consumption footprint by 80.4%.

20

21 **Abstract**

22 Brick-manufacturing is an intensive water-consuming industry that requires a sustainable and
23 integrated water management strategy to reduce reliance on freshwater consumption. This study aims
24 to develop a rigorous analytical tool based on water footprint principles and water pinch analysis
25 techniques that can be used to manage and optimise water consumption. By performing thorough
26 water audits, the water consumption footprint (the sum of blue and green water footprints) and the
27 theoretical water pollution footprint (grey water footprint) were quantified. The total water
28 consumption footprint of a brick is determined as 2.02 L, of which blue water is identified as 1.71 L
29 (84.8%) and green water as 0.31 L (15.2%). The theoretical grey water footprint of a brick was found

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