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Experimental investigation on performance of a condensing boiler and economic evaluation in real operating conditions

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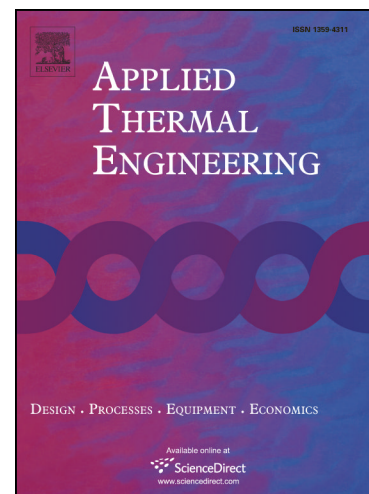
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Title: Experimental investigation on performance of a condensing boiler and economic evaluation in real operating conditions

Abbreviated title (maximum 40 characters): Condensing boiler technical & economic study

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Abstract: Implementation of Energy-related Products Directive issued in September 2015 raised throughout Europe the interest concerning real performance of the condensing boilers, which currently are mostly assumed as stated by manufacturer's data sheets. In this regard, an experimental study on an advanced condensing boiler system (representative for current condensing technology level) was performed under specifications of the currently in-force European standard on boilers performance and testing. Efficiency in terms of the fuel's higher heating value was renamed in order to avoid any potential misunderstanding due to values of this parameter exceeding 100 % versus the classic notion of efficiency. The study concludes that annual fuel savings up to 17.5 % in real operating conditions are possible. By evaluating the real fuel savings in three typical cases, the payback period for the transition from traditional to condensing boiler is close to the average lifespan of a boiler or longer. Hence, household upgrade from a traditional to a condensing boiler is economically unattractive as long as no convenient financial measures, like subsidies is in place. This may significantly delay the targeted achievement of the directive objective – reduction of the pollutant emissions throughout the entire supply chain, from the design stage to the exploitation.

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