

Sizing of thermal energy storage devices for micro-cogeneration systems for the supply of domestic hot water

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Abstract- Cogeneration technologies are increasingly being utilised in the construction sector. Micro-cogeneration technologies only become economically feasible after they have been in operation over a lengthy period of time and this makes necessary the sizing of appropriate storage systems. The integration of cogeneration within overall heating and cooling loads requires the use of complicated simulation codes. However the need for this integration can be removed with the design of a cogeneration system which only covers the thermal demand required for the provision of domestic hot water, this demand being relatively easy to forecast. Based on a given domestic hot water demand, a calculation procedure for sizing the storage system is presented. This procedure is experimentally validated with only minor differences between expected and actual results, this being attributable to the limitations of the experimental set-up. It achieves more than acceptable results when compared with other model designed for heating applications in the building sector.

Index Terms- Cogeneration; Domestic hot water; Stratified hot water storage system

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