Catalytic, environmental-friendly, fuel flexible and cost effective burner for domestic boiler

Results in Brief

Upgrading domestic boilers for cleaner energy

Manufacturers of household appliances have a major part to play in meeting the challenges of reduced greenhouse gas emissions and energy savings. An EU-funded project has contributed by improving the catalytic burners used for domestic boilers with optimised burner design.

ENERGY

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The 'Catalytic, environmental-friendly, fuel flexible and cost effective burner for domestic boiler' (Burnercat) project worked to arrive at a cost-effective solution to the manufacture of efficient and reliable catalytic burners. Burnercat aimed at delivering a cost-effective catalytic burner with ultra-low NOx emissions and operating abilities at heating powers below 3 kW.

Technical specifications were defined for burner design and catalyst support. For the latter, ceramic and metallic technologies were considered for arriving at the lowest cost system. Project partners defined best catalytic supports and determined the best compositions of noble metals. Combustion supports were then characterised with regard to new materials so as to find valid economic alternatives to metallic supports used as a reference.

During the latter phase of the project, Burnercat researchers proceeded with activities on the preparation of second-generation catalysts in order to optimise the preparation procedure and parameters needed to realise the most efficient catalyst. Study results verified the best catalyst on the basis of specific materials showing superior catalytic performance. Related studies of this performance included quantifying CO and NO emissions.

Catalysed supports were also submitted to an ageing process and then characterised. Results indicated that among the three substrates studied, only one (Worgas) displayed constant stability regarding function of time. However, two substrates were found to present a decrease in NOx emissions in function of time.

Improvements in burner design and function stand to greatly contribute to enhanced energy savings and more environmentally friendly household appliances.

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Project Information

BURNERCAT

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Project closed

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