



Reverse Innovation in Action: Jet-Flame to Heating Stoves

ETHOS 2023

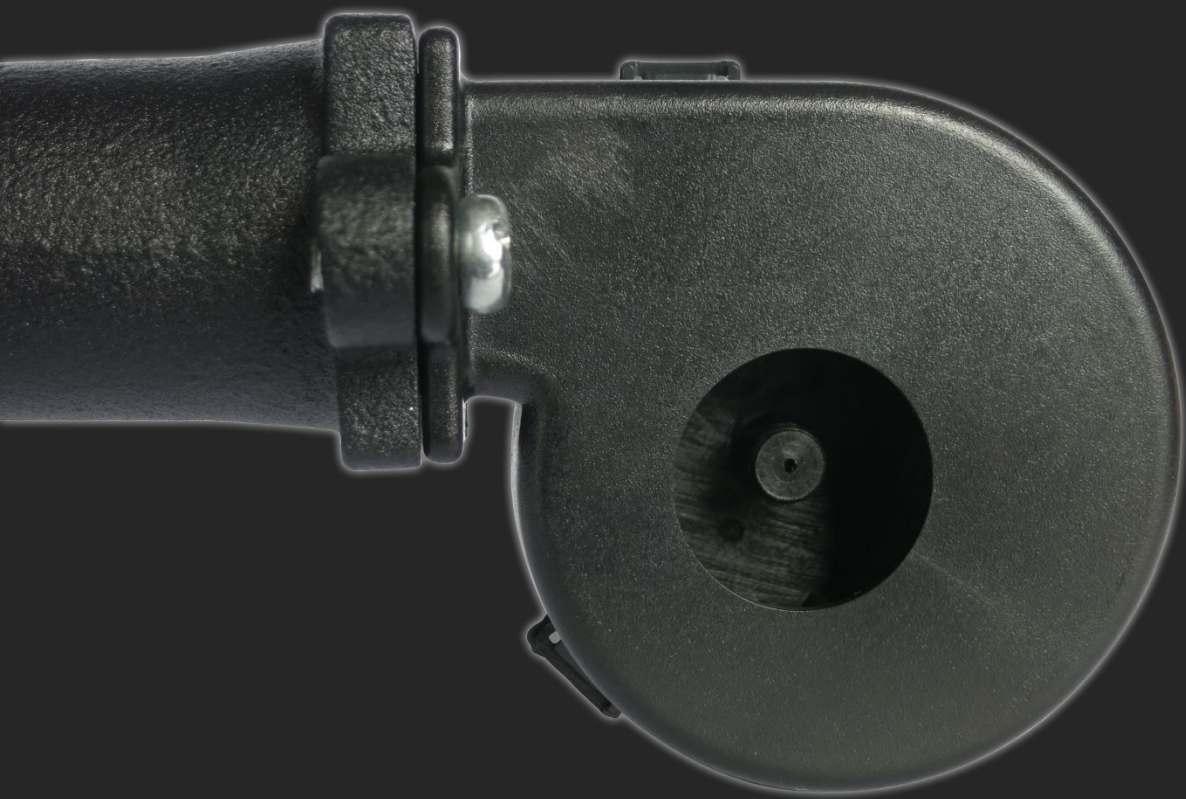


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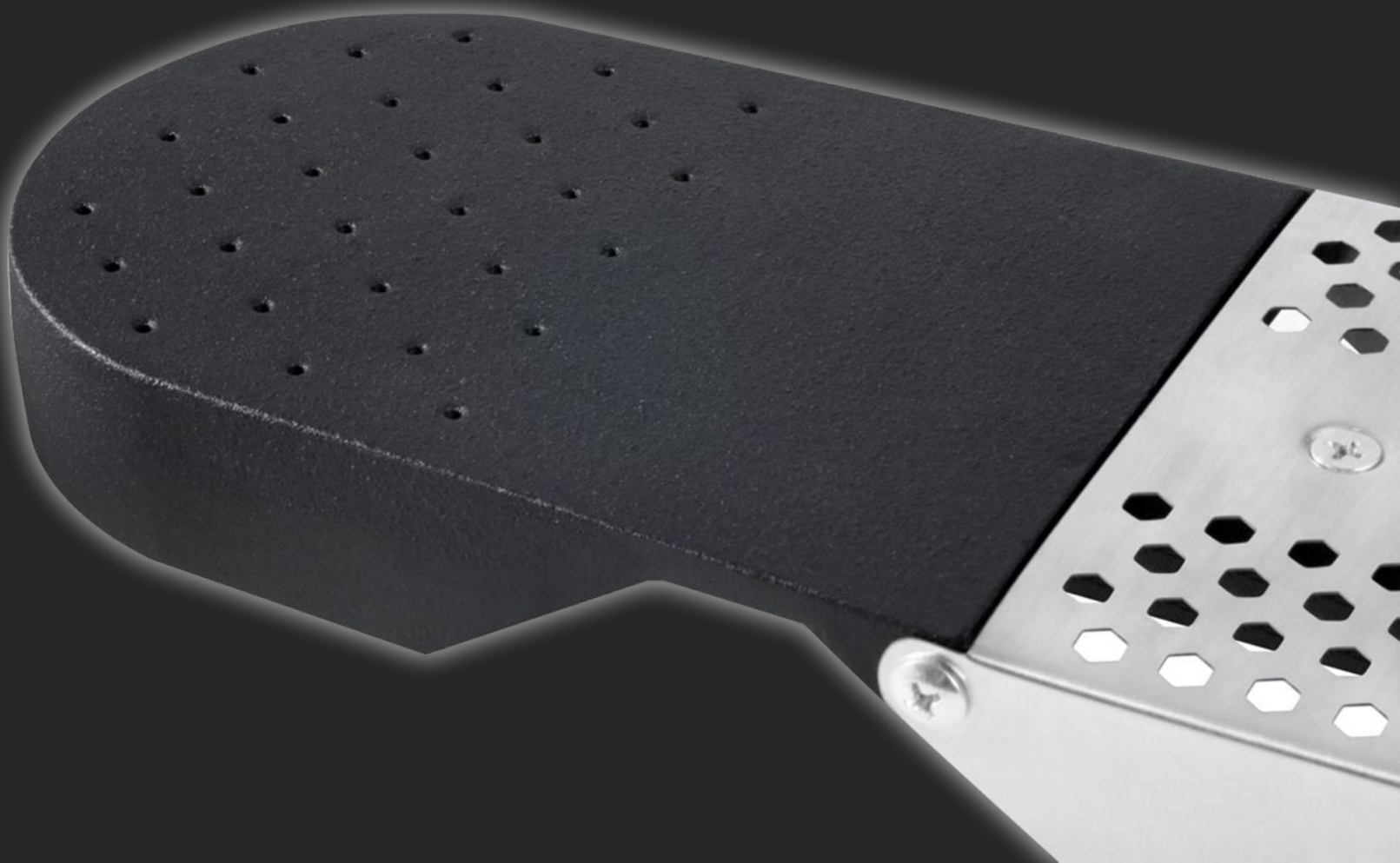


Jet-Flame









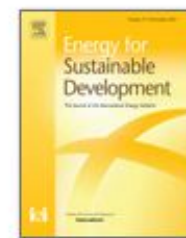






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Retrofitting stoves with forced jets of primary air improves speed, emissions, and efficiency: Evidence from six types of biomass cookstoves

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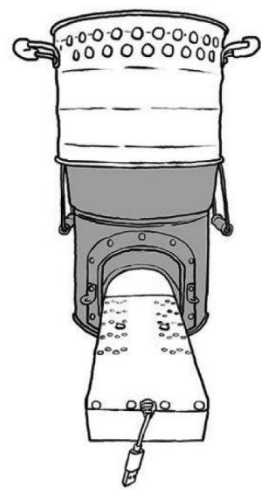
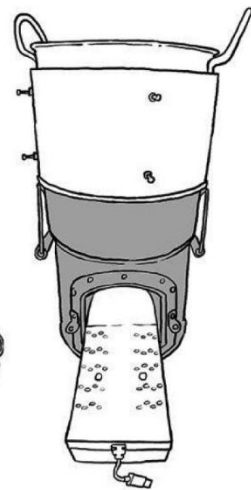
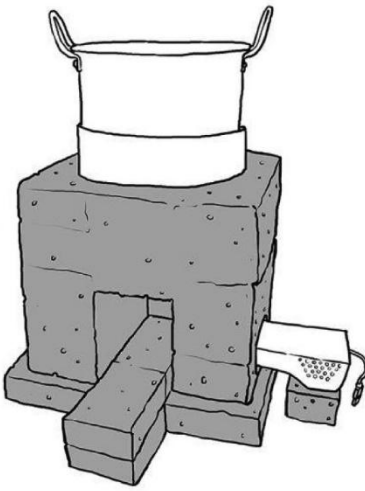
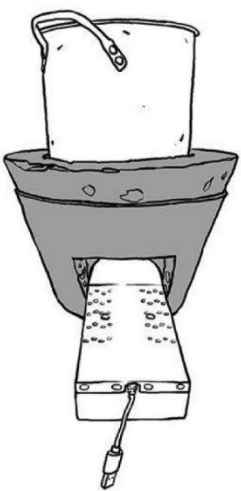
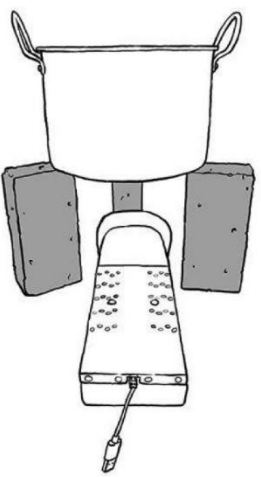
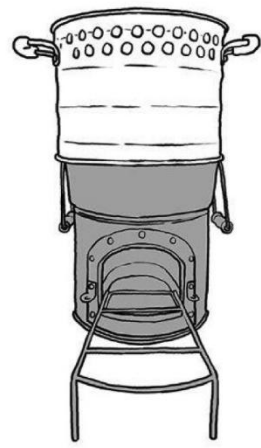
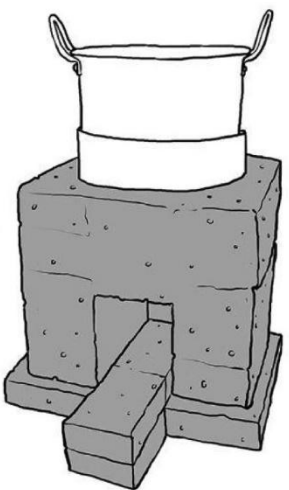
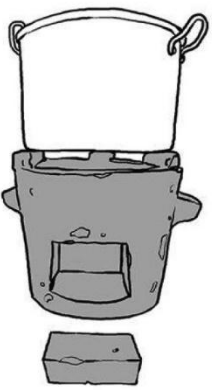
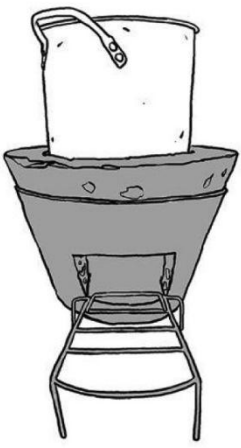
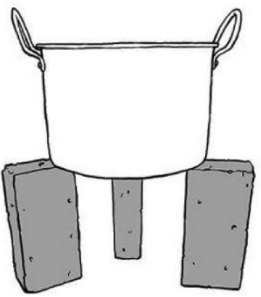
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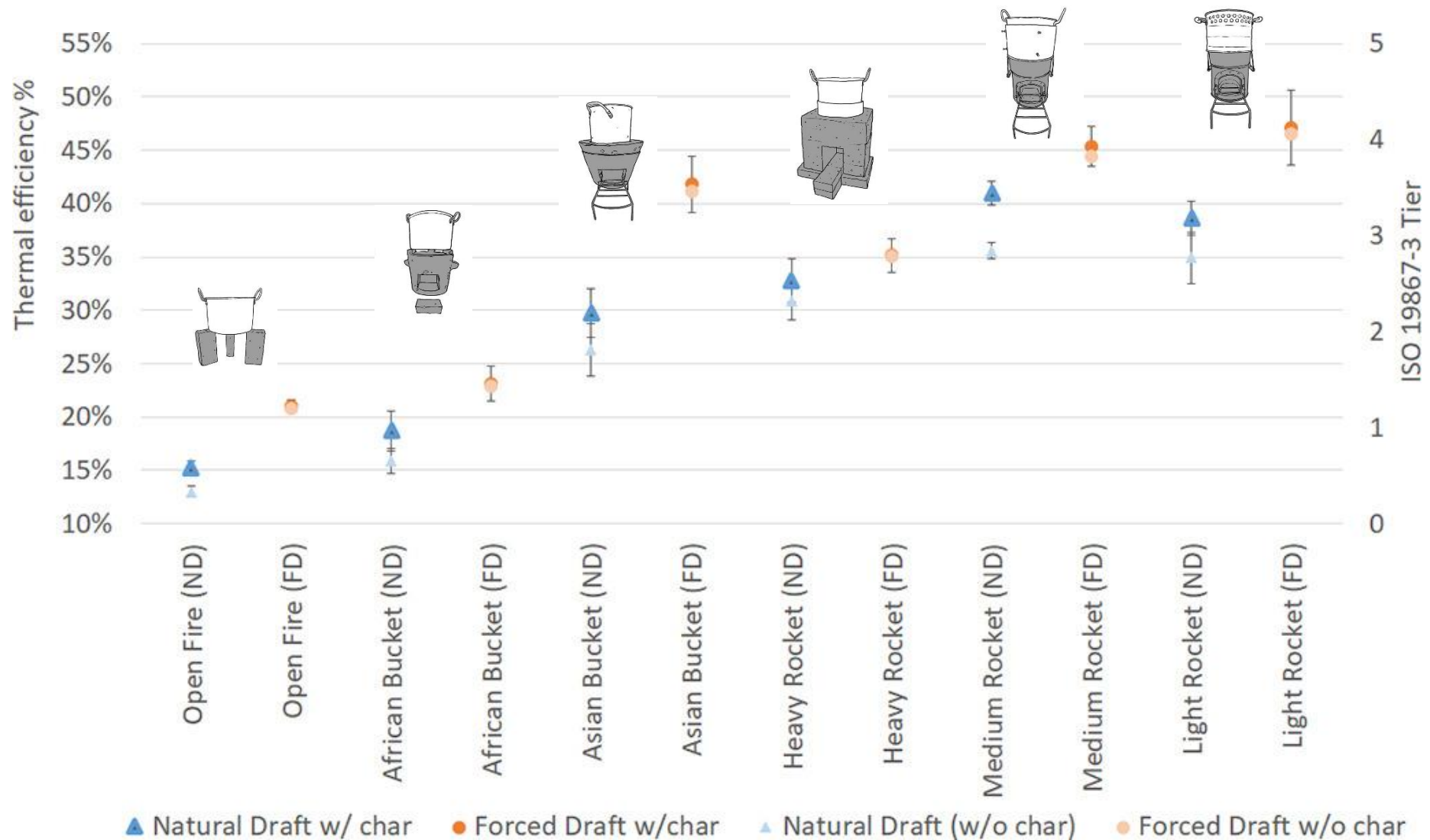
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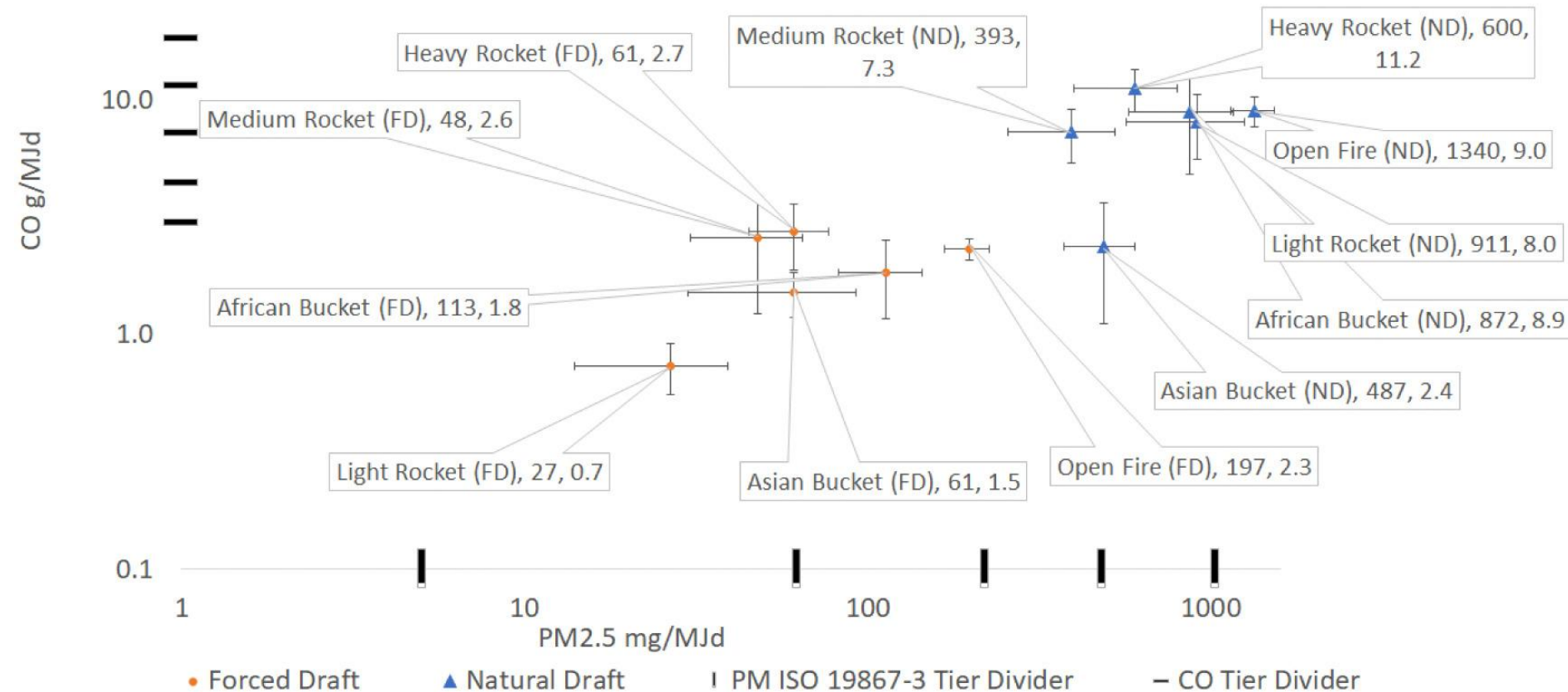


Thermal Efficiency With and Without Char and Jet-Flame





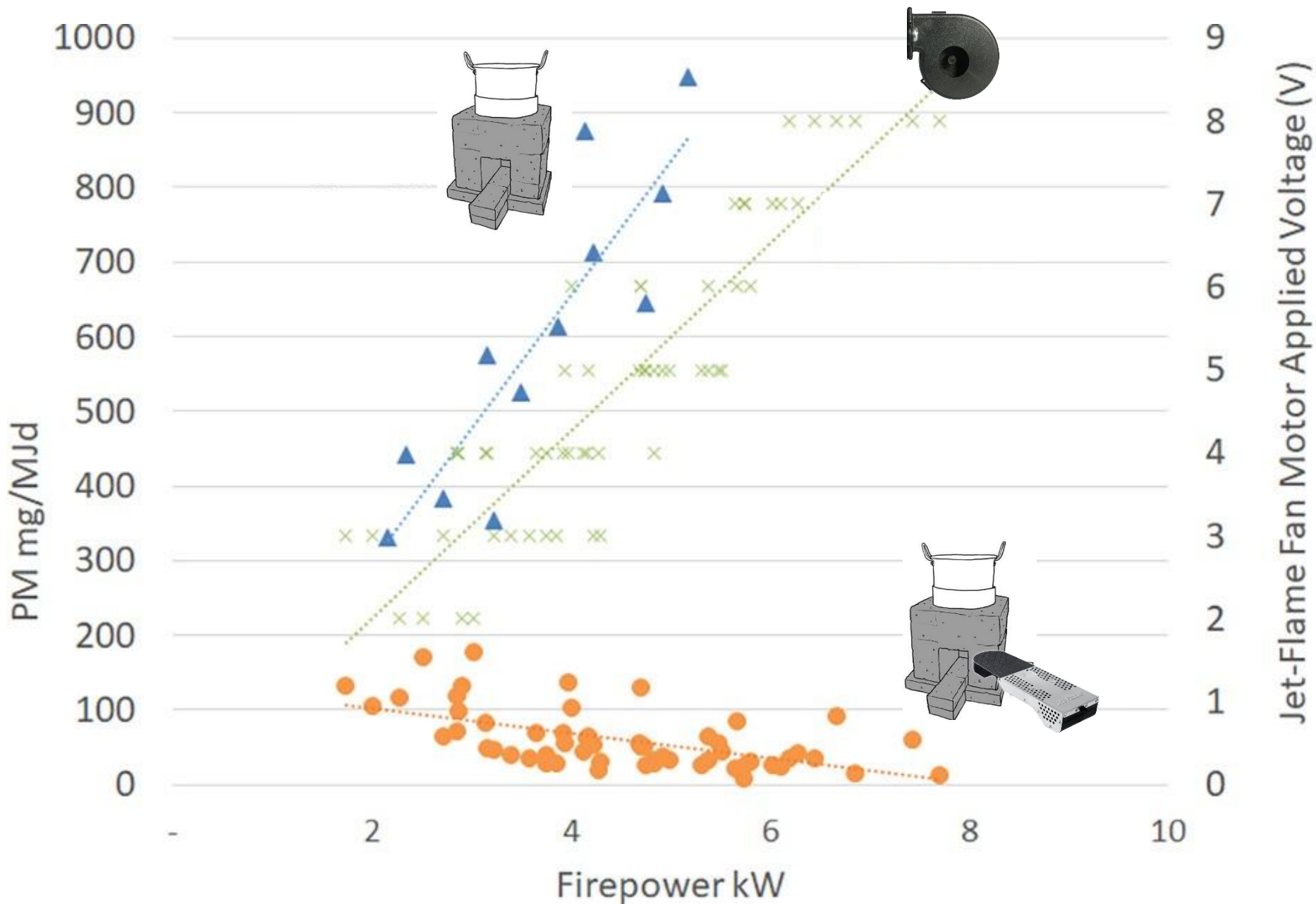
CO and PM_{2.5} Emissions Factor With and W/O Jet-Flame



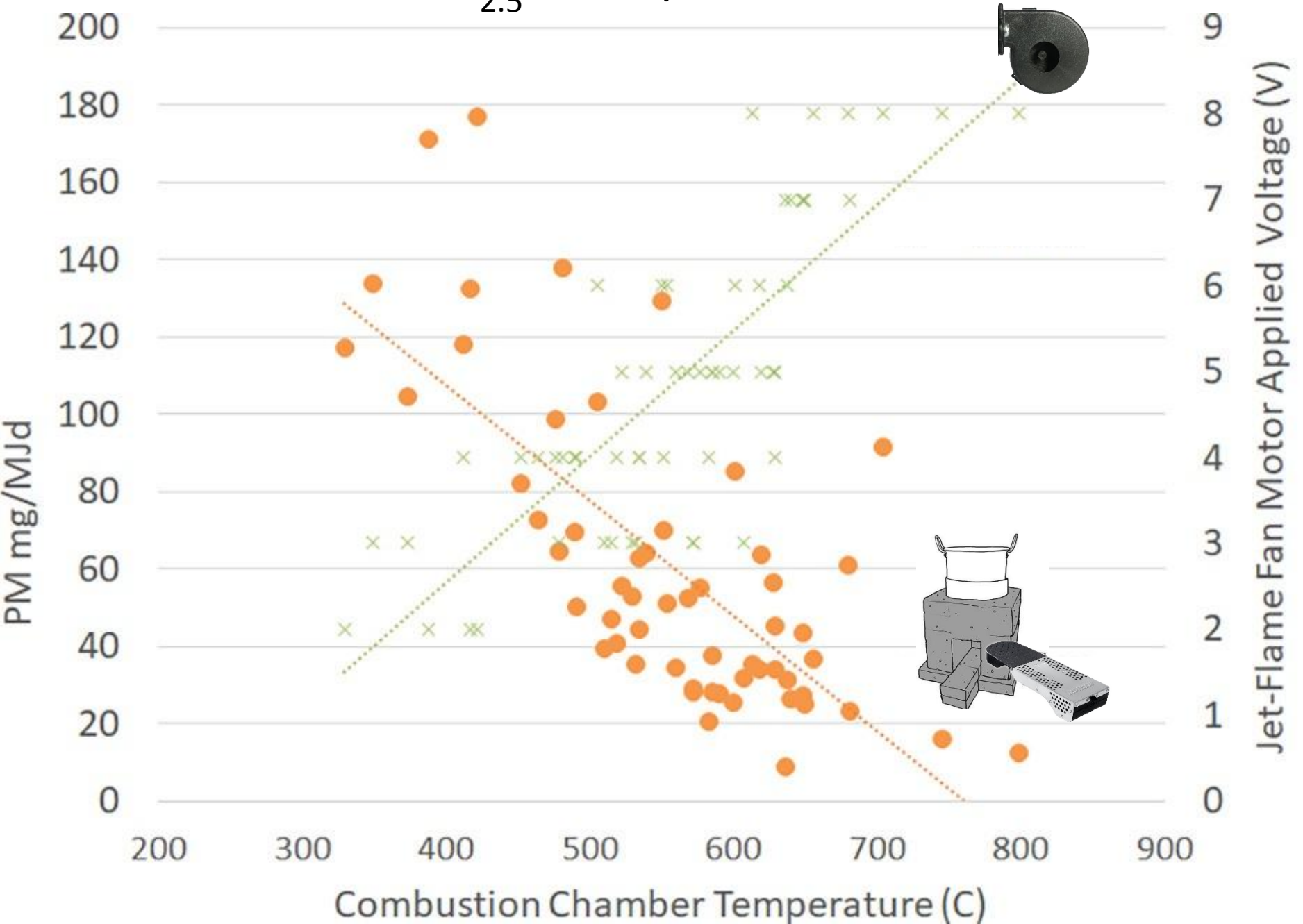
PM_{2.5} emissions factor was reduced by a global average of 89 %



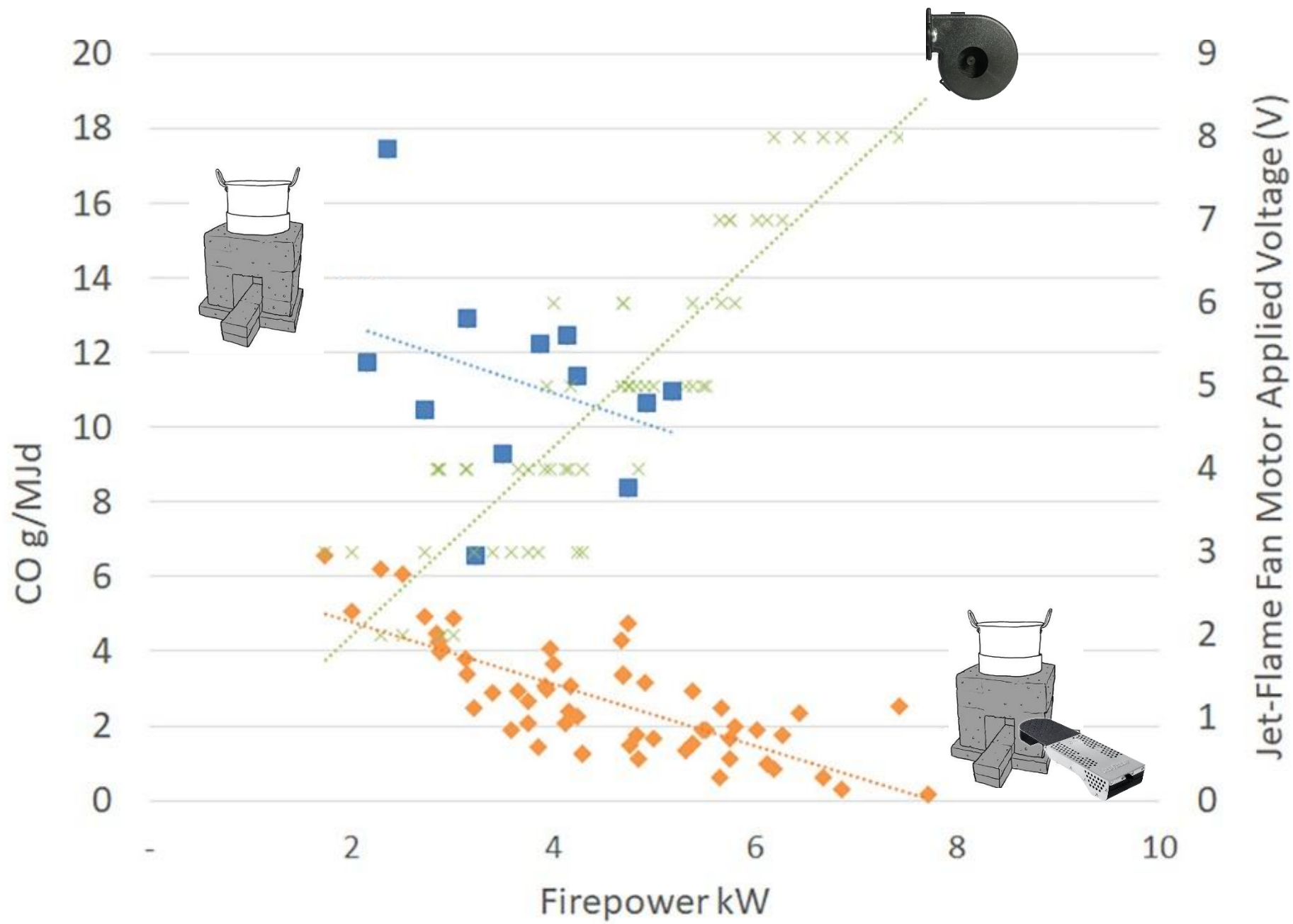
PM_{2.5} – Firepower Trend



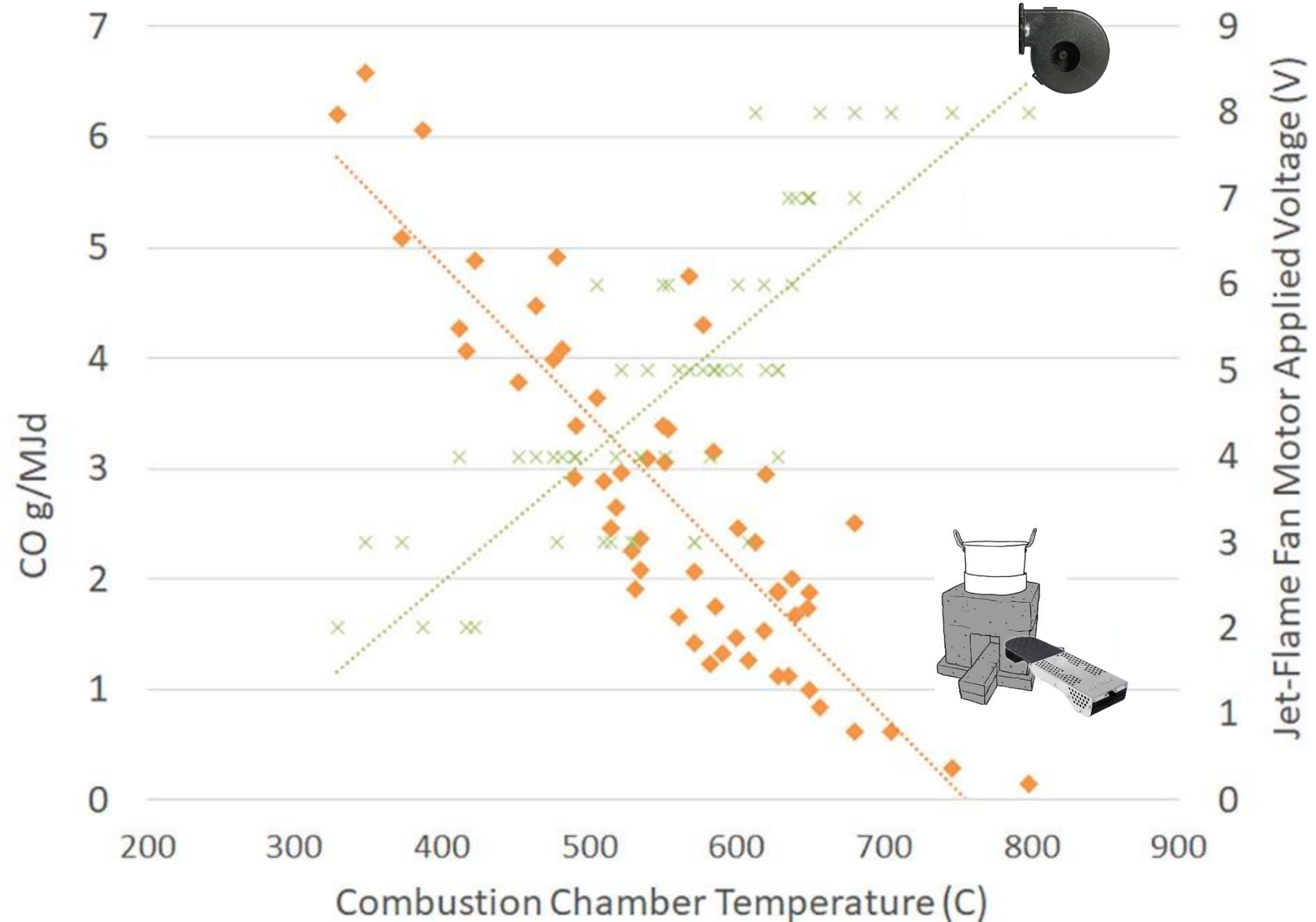
PM_{2.5} – Temperature Trend



CO – Firepower Trend

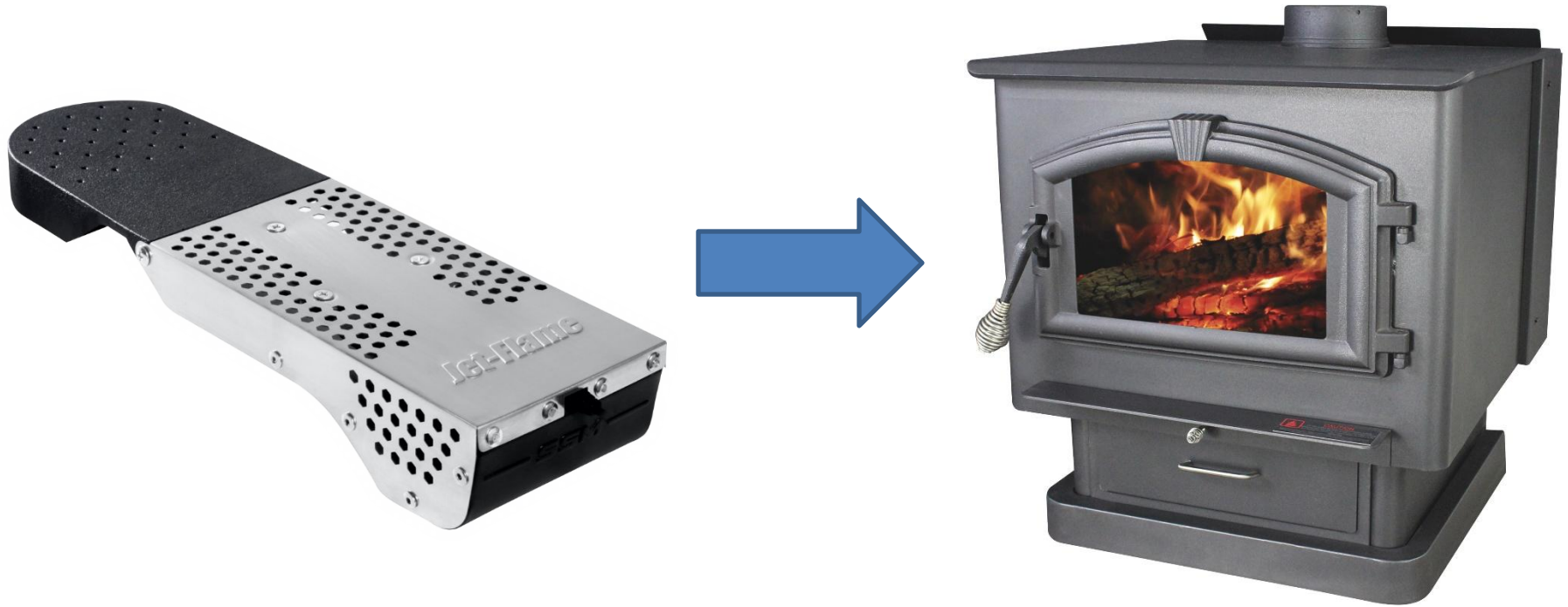


CO – Temperature Trend





Reverse Innovation: Turbulent Jets of Air for US Heating Stoves

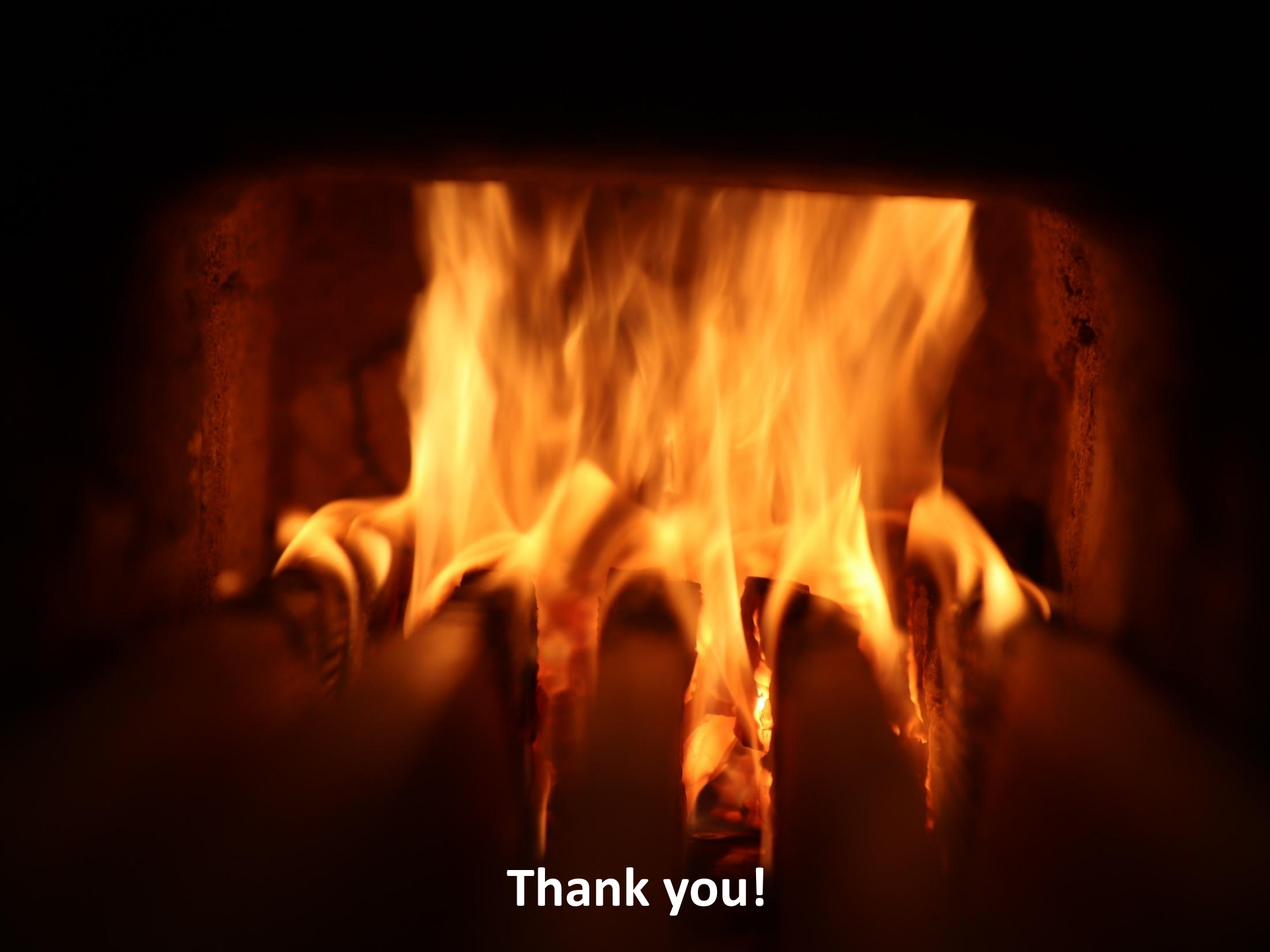






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Thank you!