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Design, Development and Testing of Small Downdraft Gasifiers for Domestic Cookstoves

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Highlights

- Developed a design methodology for small downdraft gasifiers by adapting guidelines meant for larger gasifiers.
- Developed two prototypes of gasifiers: 4 kW_{th} and 2.5 kW_{th} with gasification efficiency ~80%.
- Reactor temperature and total particle surface area available for reactions affect the gasifier performance.
- The optimal gasification air flow rate and particle size for best gasification efficiency have been explained using the above.
- Producer gas versus air flow rate gives a single straight line for different gasifiers, fuel types and sizes.

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