

Small Scale Cogeneration; a new tar free gasifier

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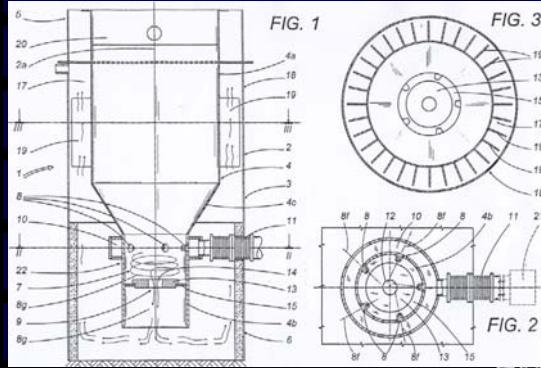
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Introduction

- The use of biomass for energy production is one of the more powerful way to preserve the atmosphere from the increasing of CO₂
- Biomass gasification to fuel commercial engines is considered to be one of the most promising techniques for an efficient production of electricity at a small or medium scale
- Unfortunately most of gasifiers produce gas incompatible with engine manufactures specification (high content of tar and dust) so a very expensive and no profitable purification is needed
- As result of a demanding study and a long experimentation, a novel type downdraft gasifier actually tar and dust free was designed and constructed
- The performance of the producer gas were evaluated coupling the gasifier with a 40 kWe cycle otto engine electricity generator

Reactor



Analysis of the producer gas

		A	B	C	D	E
Methane (CH ₄)	%	0.15	0.19	0.31	0.14	0.19
Carbon dioxide (CO ₂)	%	20.3	19.7	18.4	20.6	21.3
Nitrogen (N ₂)	%	51.7	52.4	50.6	54.5	52.3
Oxygen (O ₂)	%	1.3	1.7	0.2	0.4	0.7
Carbon monoxide (CO)	%	13.2	14.7	16.6	14.2	13.7
Hydrogen (H ₂)	%	13.2	11.2	14.7	10.0	11.7
Tars and dusts	ppm	<2	<2	<2	<2	<2