

## Advanced Gasification

As resources become scarce it makes sense to make the most of what you have, yet we still throw things away.

Waste not, want not. An old truth, hiding in plain sight, and Advanced Gasification is the solution.



# Innovation that Works

Advanced Gasification uses steam to turn a wide range of wastes and biomass into heating, cooling and electricity, char, synthetic natural gas, liquid fuels and other valuable resources. In use since 2002, The systems are high yielding, stable, resilient and above all, proven.

Advanced Gasifiers are multi-fuel, polygeneration systems. That is, they can operate with a wide range of feedstocks but can be adapted to generate many products, making them flexible to meet local resources and needs.

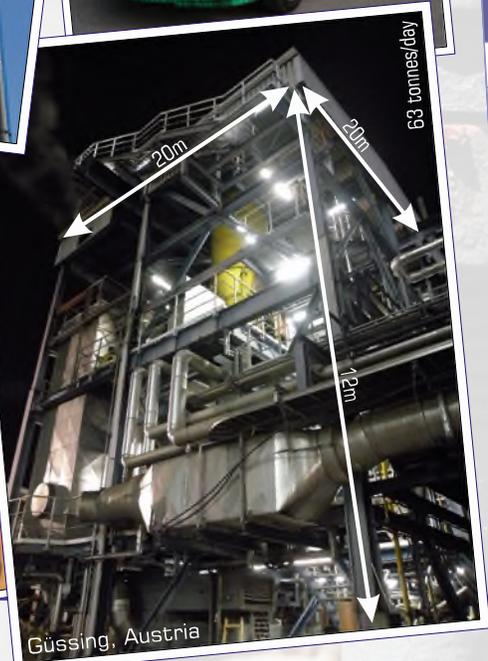
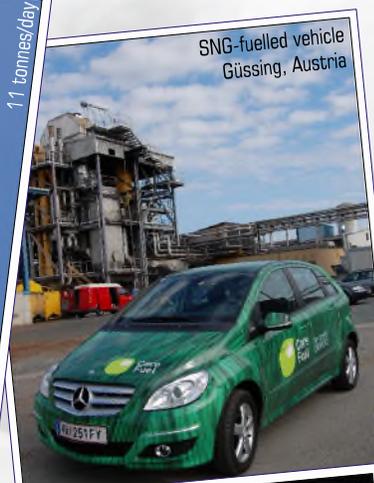
Virtually silent and small in size, existing plants range from 6 dry tonnes per day right up to major urban city-scale systems, suitable for municipal, agricultural, commercial and industrial applications. This helps Advanced Gasifiers maximize sustainable energy generation while optimizing GHG reductions, efficiently, reliably and viably.



# Technology Summary

Advanced Gasifiers use super heated steam to rapidly heat the feedstock and convert it to syngas. A clean-up system captures and recycles particulates and tars, and the syngas is run in cogeneration engines or other systems to generate saleable and valuable resources.

Any residual ash and char is captured and can be used as a soil amendment or concrete supplement. Emissions are typically similar to natural gas boilers but avoid the GHGs from using fossil fuels. Essentially, everything can be reused or recycled.



System Specifications	
Fuel Types	Multi-Fuel
Gasification Agent	Steam/Air Mixture
Optimal Size	Minimum 0.5mW el.
Scaleable Increments	0.5mW el.
Working Temperature	350°C – 1,050°C

System Production	
Gasifier Efficiency	65% - 80%
Generator Efficiency	28% - 35%
System CHP Efficiency	72% - 80%
Power Output	0.5 – 5.0 mW
Heat Output	7.0 – 42.6 MMBtu/hr/mW
Char Production	200-300 dry lb/hr/mW
Syngas Heating Value	180 – 335 Btu/scf

Feedstock Specifications	
Heating Value	>7,000 Btu/dry lb
Moisture Content	15% - 40%
Nominal Feed Rate	~2,000 dry lb/hr/mW

Gas Composition	
Hydrogen	22% - 45%
Carbon Monoxide	18% - 25%
Methane	1% - 10%
Carbon Dioxide	11% - 20%
Nitrogen	1% - 50%
H <sub>2</sub> :CO	1:1 – 2:1
Tars	<20mg/Nm <sup>3</sup>
Tar Dew Point	15°C

# Advantages

- Generate new revenues, reduce both operating and energy costs
- Turn waste into electricity, heating, cooling, natural gas, char & more
- Small and fast to implement
- Adaptable & flexible feedstock
- Scalable, virtually silent systems
- Emissions similar to natural gas boilers
- Reduces GHGs, increases recycling
- Generate clean, green energy
- Community economic development & leadership

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