

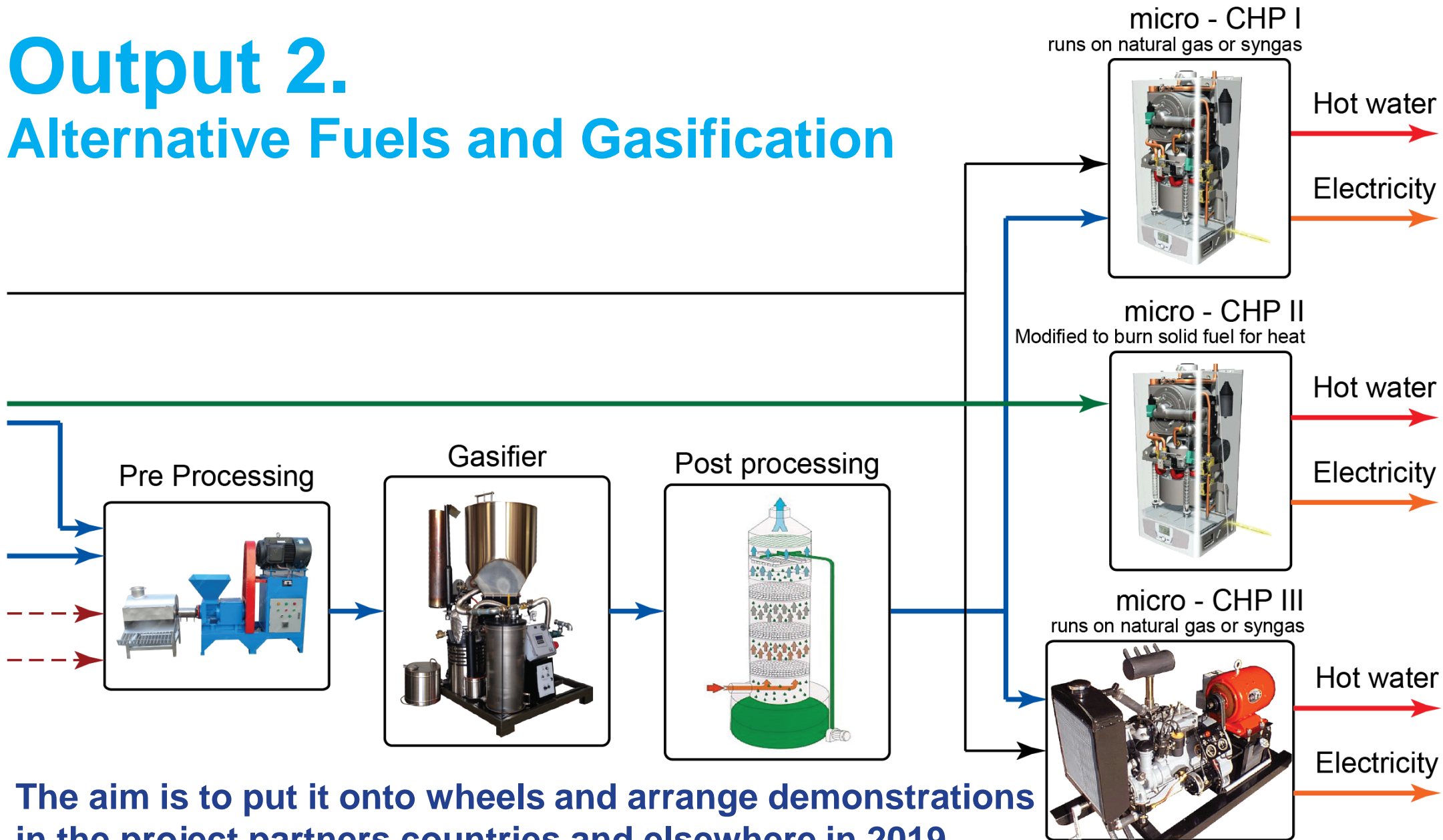
Output 2. Alternative Fuels and Gasification

Feedstock

Currently available:
Natural gas/methane

From nature
Wood
Short rotation forestry
Peat

Waste
paper
wood
plastics
food

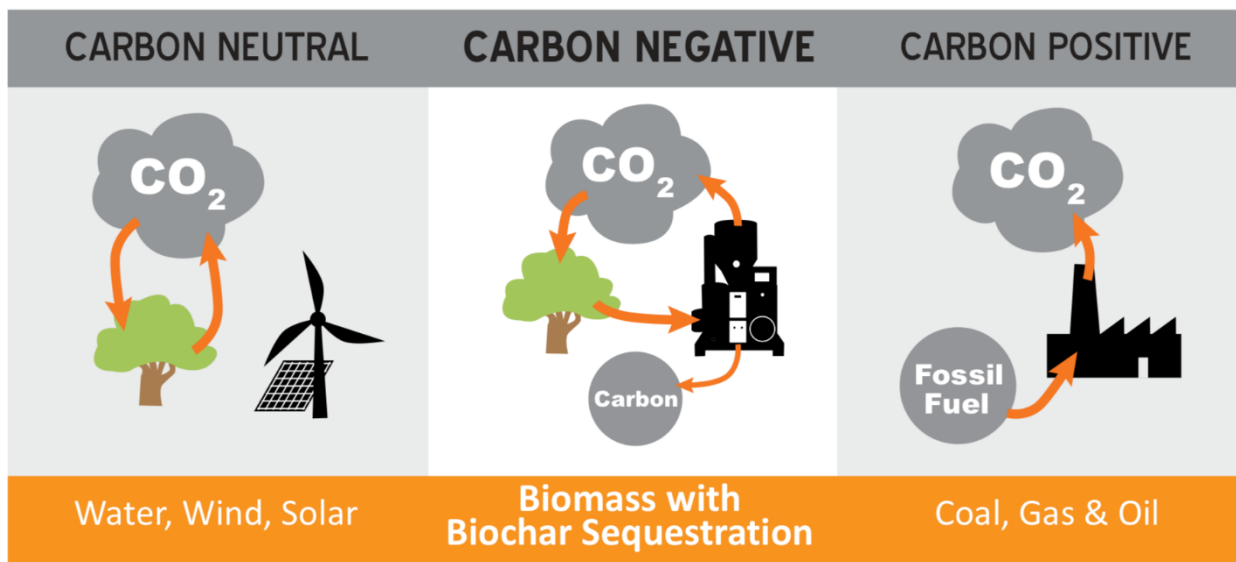


The aim is to put it onto wheels and arrange demonstrations in the project partners countries and elsewhere in 2019



Progress so far – Gasification (University of Iceland)

➤ Gasification Combined Heat and Power (CHP)





Progress so far – Gasification (University of Iceland)

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Offset and Sequestration Compared with Fossil Fuels*

QUANTITIES:	POWER PALLET @15 kW
OUTPUT (MWh/yr) @3500 hr/yr	53
CONSUME (tonne biomass/yr) @1.2 kg/kWh	63
SEQUESTER (tonne CO ₂ /yr) @5% biochar output (tonne C/yr)	11 3
OFFSET Electrical (tonne CO ₂ e/yr)	15-93
CHP (tonne CO ₂ e/yr)	28-211

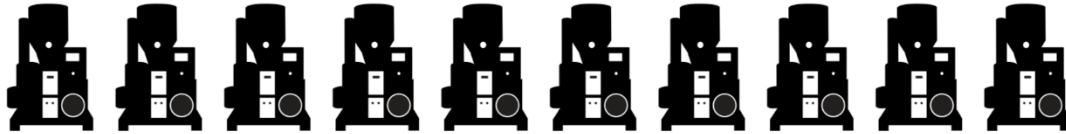




Progress so far – Gasification (University of Iceland)

➤ Gasification Combined Heat and Power (CHP)

In other words, 10 PP20's operating 10 hrs. per day for 1 year



would offset about the amount of CO₂ released in 1 year from:

• 23,500 Gallons of gasoline. That's about 8 tanker trucks:



• Or the energy used by 30 average American homes:



• While sequestering as much carbon as 100 acres of forest:





Progress so far – Gasification (University of Iceland)

➤ Gasification Combined Heat and Power (CHP)

- *Combustion engine and generator integrated to the system.*
- *Power pellet 20kW produces hot water and electricity, while disposing of bio waste.*
- *For producing up 15-18 kilowatt of electricity (kWe).¹*
- *The engine coolant is run through heat exchanger to deliver hot water (20kWt).*
- *Biomass consumption is 1.2kg/kWh approx. 22 kg per hour at 18kW. Feedstock is 330 liters.*





Progress so far – Gasification (University of Iceland)

➤ Gasification CHP – Preprocessing Waste into pellets

- *Dry biomass*
- *Biomass is fed into shredder.*
- *Pelletizer produces pellets from biomass stock*
- *Power pallet produces electricity.*

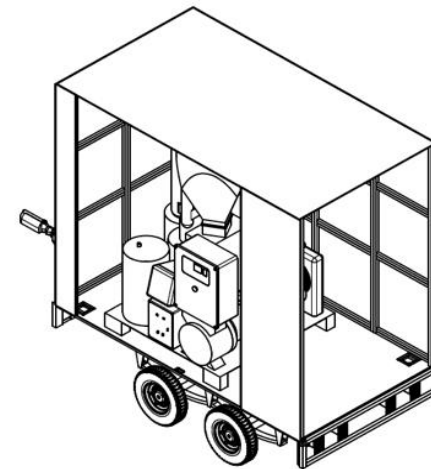
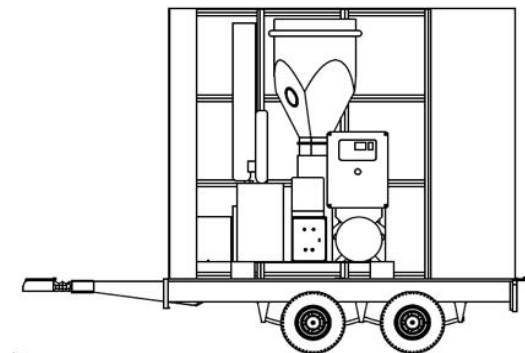
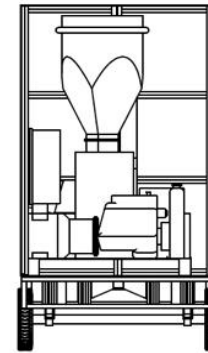




Progress so far – Gasification (University of Iceland)

➤ Gasification CHP

- *The equipment on wheels*





Progress so far – Gasification (University of Iceland)

➤ Gasification CHP

- *Research & development facilities under construction.*

