Claims

1. A method for generating syngas comprising:

heating woodchips in a vessel comprising a pathway and a heat generator in thermal communication with the pathway to thermally degenerate the woodchips by pyrolysis, the woodchips forming biochar and releasing syngas when undergoing pyrolysis;

displacing the generated syngas along the pathway to thereby filter the syngas through at least one of the woodchips and the biochar undergoing pyrolysis;

discharging the filtered syngas from the vessel; and

ejecting the biochar from the vessel in response to the syngas being substantially discharged therefrom.

2. The method as in claim 1, the pathway comprising a closed-loop circuit for recirculating the syngas for filtering through at least one of the woodchips and the biochar.

3. The method as in claim 1, displacing the generated syngas along the pathway comprising:

displacing the woodchips along the pathway by a conveyor system for heating by the heat generator for forming the biochar, the conveyor system being one of a displacement screw conveyor and a gravity feed system.

4. The method as in claim 1, displacing the generated syngas along the pathway comprising:

displacing the generated syngas by a displacement system along the pathway and substantially through the woodchips undergoing pyrolysis.

5. The method as in claim 1, the heat generator being one an electrical heater; a heat-exchanger and an ablative heat-exchanger.

6. The method as in claim 1, further comprising:

injecting the woodchips into the pathway of the vessel by a displacement screw conveyor.

7. The method as in claim 1, discharging the filtered syngas from the vessel comprising:

discharging the filtered syngas from a port to one of a downstream process and a storage system,

wherein the port being defined by the vessel and configured for facilitating flow of the filtered syngas in a direction that is substantially against the flow of the woodchips along the pathway.

8. The method as in claim 7, further comprising:

generating at least one of heat energy and mechanical energy from the filtered syngas by a gas engine as part of the downstream process.

9. The method as in claim 1, the syngas being at least one of hydrogen, methane, carbon monoxide, and carbon dioxide.

10. A system for generating syngas comprising:

a vessel comprising:

a pathway for heating woodchips therein; and

a heat generator in thermal communication with the pathway to thermally degenerate the woodchips by pyrolysis, the woodchips forming biochar and releasing syngas when undergoing pyrolysis,

wherein the pathway is shaped and adapted for displacing the generated syngas along the pathway to thereby filter the syngas through at least one of the woodchips and the biochar undergoing pyrolysis,

wherein the filtered syngas is dischargeable from the vessel, and the biochar being ejected from the vessel in response to the syngas been substantially discharged therefrom.

11. The system as in claim 10, the pathway comprising a closed-loop circuit for recirculating the syngas for filtering through at least one of the woodchips and the biochar.

12. The system as in claim 10 further comprising:

a conveyor system for displacing the woodchips along the pathway for heating by the heat generator for forming the biochar, the conveyor system being one of a displacement screw conveyor and a gravity feed system.

13. The system as in claim 10, further comprising:

a displacement system for displacing the generated syngas along the pathway and substantially through the woodchips undergoing pyrolysis.

14. The system as in claim 10, the heat generator being one an electrical heater, a heat-exchanger; and an ablative heat exchanger.

15. The system as in claim 10, further comprising:

a displacement screw conveyor for injecting the woodchips into the pathway of the vessel by.

16. The system as in claim 10, the filtered syngas being discharged from a port to one of a downstream process and a storage system, the port being defined by the vessel and configured for facilitating flow of the filtered syngas in a direction that is substantially against the flow of the woodchips along the pathway.

17. The system as in claim 16, at least one of heat energy and mechanical energy is generated from the filtered syngas by a gas engine as part of the downstream process.

18. The system as in claim 10, the syngas being at least one of hydrogen, methane, carbon monoxide, and carbon dioxide.