process and apparatus incudes steps and elements useful for reducing the amount of physical contaminants in the digestate.

[0005] In a process described herein, solid waste is pressed at a high pressure, for example 50 bar or more, to separate the solid waste into a dry fraction and a wet fraction. The wet fraction is diluted and floatables (i.e. pieces of plastic and/or paper) in the wet fraction are comminuted. The wet fraction is then de-gritted before being sent to an anaerobic digester. Digestate is withdrawn from the digester, including at least some withdrawal from a free liquid surface of the digester. The digestate is filtered to extract comminuted floatables. The floatables can be disposed of. Optionally, the resulting filtrate is then dewatered to produce a cake, for example with over 18% solids content, which then can be composted or directly applied to land.

[0006] A system described herein comprises a press, a grinder, a hydrocyclone, an anaerobic digester, a filter screw press and a dewaterer. These units can be configured and/or arranged to perform the process described above.

SUMMARY

[0006a] In one aspect, the present disclosure refers to a process comprising steps of, pressing solid waste to produce a wet fraction; comminuting floatables in the wet fraction; degritting the wet fraction; treating the wet fraction in an anaerobic digester; withdrawing digestate including floatables from the digester; and, separating comminuted floatables from digestate.

[0006b] In another aspect, the present disclosure refers to a system comprising, a press; a grinder; a hydrocyclone; an anaerobic digester; and, a filter.

BRIEF DESCRIPTION OF THE FIGURES

[0007] Figure 1 is a process flow diagram of a process for treating solid waste.

[0008] Figure 2 is an isometric drawing of a press.

[0009] Figure 3 is a process flow diagram for the grit removal unit in Figure 1.

[0010] Figure 4 shows an anaerobic digester and downstream units for the process of Figure 1.

DETAILED DESCRIPTION

[0011] Solids waste can be partly or even mostly organic but typically also includes various non-organic components and components that are non-volatile in the sense that theydo not biodegrade rapidly. Household derived waste such as municipal solid waste (MSW) and source separated organics (SSO) in particular has material amounts of non-organic material such as plastic and/or non-volatile material such as paper. Processing solid waste can include various pretreatment steps depending on the source and condition of the waste. These steps can include, for example, bag opening, coarse screening, and steps to remove ferrous metals or other large or particularly valuable recyclable materials.

[0012] In a process described herein, solid waste is treated in a high-pressure press without or without pre-treatment as described above. In the press, organic material becomes

CLAIMS:

We claim:

1. A process comprising steps of,
pressing solid waste to produce a wet fraction;
comminuting floatables in the wet fraction;
degritting the wet fraction;
treating the wet fraction in an anaerobic digester;
withdrawing digestate including floatables from the digester; and,
separating comminuted floatables from digestate.

2. The process of claim 1 further comprising diluting the wet fraction before degritting the wet fraction.

3. The process of claim 2 wherein the wet fraction is diluted with digestate.

4. The process of any of claims 1 to 3 wherein the solid waste is pressed at a high pressure, for example 50 bar or more.

5. The process of any of claims 1 to 4 comprising removing digestate from at or near a free liquid surface of the digester.

6. The process of any of claims 1 to 5 comprising dewatering the filtered digestate.

7. The process of any of claims 1 to 6 wherein the digester is operated at a solids content in the digester of about 4% DS or less or 3% DS or less.

8. The process of any of claims 1 to 7 wherein the wet fraction is diluted or co-digested with wastewater treatment plant sludge.

9. The process of any of claims 1 to 8 wherein the wet fraction is diluted to 10-15%, or 14-15% solids.

10. The process of any of claims 1 to 9 wherein degritting is performed with a hydrocyclone.

11. A system comprising,
a press;
a grinder;
a hydrocyclone;
an anaerobic digester; and,
a filter.

12. The system of claim 11 further comprising a dewaterer.

13. The system of claim 11 or 12 further comprising a PC pump.

14. The system of claim 13 wherein the PC pump has a discharge outlet connected to the grinder.

15. The system of any one of claims 11 to 14 wherein the grinder is downstream of the press and upstream of the anaerobic digester.

16. The process of any one of claims 1 to 10 wherein the floatables are communited to sizes of from 3 mm to 6 mm.