CLAIMS

1. Apparatus comprising:

a signal processor or processing module configured at least to:

receive signaling containing information about a measurement of one or more constituents of an output stream from a centrifuge in a dry corn milling process, the one or more constituents forming part of a syrup or oil input stream produced by an evaporation after fermentation to create Ethanol, and received and separated from the syrup or oil input stream by the centrifuges in the dry corn milling process; and

determine corresponding signaling containing information about a real time feedback control of the dry corn milling process, based upon the signaling received.

2. Apparatus according to claim 1, wherein the signal processor or processing module is configured to provide the corresponding signaling as control signaling to provide the real time feedback control of the dry corn milling process.

3. Apparatus according to claim 1, wherein the one or more constituents of the output stream are selected from the following group:

corn oil,

corn syrup,

one or more proteins, and

leftover yeast solids.

4. Apparatus according to claim 1, wherein the measurement of the one or more constituents of the output stream are selected from the following group:

the purity of corn oil in the output stream, including the fat content;

the purity of the syrup in the output stream, including the carbohydrate content;

the amount of protein in the output stream, including proteins useful in animal foods;

the amount of water in the output stream; and

the amount of leftover yeast solids in the output stream.

5. Apparatus according to claim 1, wherein the measurement of the one or more constituents of the output stream is based upon an optical interrogation of the output stream.

6. Apparatus according to claim 5, wherein the optical interrogation of the output stream includes processing optical signaling provided and sensed in relation to the output stream.

7. Apparatus according to claim 5, wherein the optical interrogation of the output stream includes using a near-infrared spectroscopy technique for optically interrogating the output stream.

8. Apparatus according to claim 5, wherein the optical interrogation of the output stream includes using a Raman optical scattering technique for optically interrogating the output stream.

9. Apparatus according to claim 1, wherein the apparatus comprises an optical measurement/interrogation device configured to provide optical interrogation signaling, receive sensed optical interrogation signaling containing information about the one or more constituents of the output stream and provide the signaling, including where the optical measurement/interrogation device includes an optical probe.

10. Apparatus according to claim 1, wherein the measurement of the one or more constituents of the output stream is based upon a chemical interrogation of the output stream.

11. Apparatus according to claim 10, wherein the chemical interrogation of the output stream includes processing a sample/portion of the output stream based upon determining a chemical content of the portion of the output stream.

12. Apparatus according to claim 11, wherein the apparatus comprises a chemical measurement/interrogation device configured to receive the sample/portion of the output stream containing the one or more constituents of the output stream, process the sample/portion and provide the signaling containing the chemical interrogation information about the one or more constituents of the output stream.

13. Apparatus according to claim 1, wherein the real time feedback control of the dry corn milling process includes providing a control signal to adjust one or more parameters of

the dry corn milling process, including where the control signal is used to control the centrifuge, a backend process such as a fermentation process, or both.

14. Apparatus according to claim 13, wherein the one or more parameters include some combination of the following:

a chemical parameter adjustment to one or more sub-processes in the dry corn milling process, including an adjustment to the amount, or timing, or location, of a de-emulsifier dosed to the centrifuge; or

a lever parameter adjustment of one or more components in the dry corn milling process, including adjusting a control or throughput lever in the centrifuge; or

a throughput parameter adjustment of one or more components in the dry corn milling process, including adjusting a throughput in the centrifuge; or

a flow parameter adjustment in the one or more components in the dry corn milling process, including adjusting a flow parameter of the centrifuge; or

a cycle time parameter adjustment in the one or more components in the dry corn milling process, including varying the cycle time of the centrifuge; or

a backflush parameter adjustment in the one or more components in the dry corn milling process, including setting up backflush cycles for the centrifuge; or

a diversion parameter adjustment in the one or more components in the dry corn milling process, including diverting a portion of the output stream of the centrifuge to another component in the dry corn milling process.

15. Apparatus according to claim 1, wherein the centrifuge is configured to receive an input stream containing syrup/oil and provide a co-product stream containing the one or more constituents having corn oil and light, low density solids.

16. Apparatus according to claim 15, wherein the centrifuge is configured to receive the input stream and provide a second co-product stream containing the one or more constituents having corn syrup and higher density solids.

17. Apparatus according to claim 8, wherein the Raman optical scattering technique includes comparing a sensed optical scattering signaling in the output stream to a signature

optical scattering signaling stored in an optical scattering database and determining the purity of corn oil in the output stream based upon the comparison.

18. Apparatus according to claim 13, wherein the real time feedback control of the dry corn milling process includes sensing a desired level of corn oil capture, and providing the control signal to divert a portion of corn oil from the output stream to a distillation process in the dry corn milling process for producing dried distillers grain (DDGs) that goes into animal feed to increase its fat content.

19. Apparatus according to claim 13, wherein the real time feedback control of the dry corn milling process includes controlling a split of corn oil and corn syrup provided from the centrifuge, and determining whether to feed either the corn oil or the corn syrup back to the centrifuge for further purification, or claim the corn oil, or sending some portion of the corn oil to a backend process of the dry corn milling process.

20. A method comprising:

receiving in a signal processor or processing module signaling containing information about a measurement of one or more constituents of an output stream from a centrifuge in a dry corn milling process, including to produce Ethanol; and

determining in the signal processor or processing module corresponding signaling containing information about a real time feedback control of the dry corn milling process, based upon the signaling received.

21. A method according to claim 20, wherein the method also comprises providing from the signal processor or processing module the corresponding signaling as control signaling to provide the real time feedback control of the dry corn milling process.

22. A method according to claim 20, wherein the one or more constituents of the output stream are selected from the following group:

corn oil,

corn syrup,

one or more proteins, and

leftover yeast solids.

23. A method according to claim 20, wherein the measurement of the one or more constituents of the output stream are selected from the following group:

the purity of corn oil in the output stream, including the fat content;

the purity of the syrup in the output stream, including the carbohydrate content;

the amount of protein in the output stream, including proteins useful in animal foods;

the amount of water in the output stream; and

the amount of leftover yeast solids in the output stream.

24. A method according to claim 20, wherein the measurement of the one or more constituents of the output stream is based upon an optical interrogation of the output stream.

25. Apparatus comprising:

means for receiving in a signal processor or processing module signaling containing information about a measurement of one or more constituents of an output stream from a centrifuge in a dry corn milling process, including to produce Ethanol; and

means for determining in the signal processor or processing module corresponding signaling containing information about a real time feedback control of the dry corn milling process, based upon the signaling received.

26. Apparatus according to claim 25, wherein the apparatus also comprises means for providing the corresponding signaling as control signaling to provide the real time feedback control of the dry corn milling process.