CLAIMS

1. A data cleansing system [10] for improving operation of a plant [12a-12n], the data cleansing system [10] comprising:

a server [14] coupled to the cleansing system [10] for communicating with the plant [12a-12n] via a communication network [16];

a computer system [18] having a web-based platform for receiving and sending plant data related to the operation of the plant [12a-12n] over the network [16];

a display device [20] for interactively displaying the plant data;

a data cleansing unit [28] configured for

i. receiving a process model data of a simulation engine, plant process data associated with the equipment of the plant [12a-12n], and plant laboratory data associated with the equipment of the plant [12a-12n],

ii. analysing the received plant process data for completeness and correct an error in the received plant process data from a measurement issue and an overall mass balance closure to generate a set of reconciled plant data,

iii. calculating an offset amount representing a difference data, and thereby evaluating the calculated offset amount based on at least one environmental factor for detecting an error of equipment during the operation of the plant, and

a feed estimation unit [30] configured for receiving offset amount calculated from the data cleansing unit [28] based on feed and product information of the plant , and estimating feed composition associated with the equipment of the plant [12a-12n] based on the calculated offset amount between the feed and product information,

wherein the feed estimation unit [30] evaluates the calculated offset amount based on the at least one environmental factor for detecting the error of the equipment during the operation of the plant [12a-12n],

wherein the at least one environmental factor includes a temperature, a pressure, feed flow, a product flow, a density, a specific composition and the like.

2. The data cleansing system of claim 1, wherein the feed estimation unit [30] is configured to establish a last known feed composition as a base point, and to modify the last

known feed composition for providing more accurate composition data based on the calculated offset amount.

3. The data cleansing system of claim 1, wherein the data cleansing unit [28] is configured such that the corrected data is used as an input to a simulation process in which a process is tuned to ensure that the simulation process matches the reconciled plant data.

4. The data cleaning system of claim 3, wherein the data cleaning unit [28] is configured such that an output of the reconciled plant data is input into a tuned flowsheet, and is generated as a predicted data, and

wherein the data cleansing unit [28] is configured such that a delta value representing a difference between the reconciled plant data and the predicted data is validated to ensure that a viable optimization case is established for a simulation process run.

5. The data cleansing system of any of claims 1-4, further comprising a reconciliation unit [22] configured for reconciling actual measured data from the plant [12a-12n] in comparison with a performance process model result from a simulation engine based on a set of predetermined reference or set points,

wherein the reconciliation unit [22] is configured to perform a heuristic analysis against the actual measured data and the performance process model result using a set of predetermined threshold values, and

wherein the reconciliation unit [22] is configured to receive the plant data from the plant [12a-12n] via the computer system [18], and the received plant data represent the actual measured data from the equipment in the plant [12a-12n] during a predetermined time period.

6. The data cleansing system of any of claims 1-4, further comprising a diagnosis unit [32] configured for diagnosing an operational status of the equipment by calculating the offset amount based on the at least one environment factor without distributing a measurement error for the rest of the equipment for the plant [12a-12n],

wherein diagnosis unit [32] is configured to receive the feed and product information from the plant [12a-12n] to evaluate the equipment, and to determine a target tolerance level of a final product based on at least one of: an actual current operational parameter and a historical operational parameter for detecting the error of the equipment based on the target tolerance level.

7. The data cleansing system of any claims 1-4, wherein the data cleansing unit [28] is configured to transmit the calculated offset and at least one plant performance fit parameter to the feed estimation unit [30] for evaluation.

8. The data cleansing system of any of claims 1-4, wherein the data cleansing unit [28] is configured to perform a tuning of a process model of a simulation engine, and determine a state of health of the process model based on a tuning result, and

wherein a new plant operating parameter is generated based on the state of health of the process model to optimize a performance of the equipment of the plant [12a-12n].

9. The data cleansing system of any of claims 1-4, wherein the feed estimation unit [30] is configured to perform a feed estimation analysis for inferring the feed composition based on a product composition associated with the equipment of the plant [12a-12n].