

WHAT IS CLAIMED IS:

1. A system comprising:
 - one or more computer-readable storage media having instructions stored thereon that, when executed by one or more processors, cause the one or more processors to:
 - provide a user interface to a user via a computing device, the user interface comprising a symbol palette with selectable symbols representing resource suppliers, subplants, energy loads, and resource storage devices associated with a central plant;
 - receive a first input from the user via the user interface, the first input comprising placement of symbols from the symbol palette on a workspace of the user interface, the symbols placed on the workspace comprising at least a resource supplier, a subplant, and an energy load;
 - receive a second input from the user via the user interface, the second input comprising a connection between two of the symbols on the workspace;
 - evaluate the second input according to a set of rules to determine that the connection is invalid;
 - prevent the user from making the connection;
 - receive a third user input from the user via the user interface, the third user input comprising additional connections between the symbols on the workspace, the third user input completing a valid model of the central plant according to the set of rules; and
 - simulate operation of the central plant in accordance with the valid model to provide the user with insight regarding how to optimize the central plant.
2. The system of claim 1, wherein:
 - the resource suppliers comprise an electricity supplier, a water supplier, a natural gas supplier, and a steam supplier;
 - the subplants comprise a chiller plant, a boiler plant, a tower plant, and a heat recovery chiller plant;
 - the energy loads comprise a chilled water load and a hot water load; and
 - the resource storage devices comprise a thermal storage tank.

3. The system of claim 1, wherein the set of rules defines valid relationships between the resource suppliers and the subplants.
4. The system of claim 1, wherein the set of rules defines valid relationships between the subplants and the energy loads.
5. The system of claim 1, wherein the set of rules defines valid relationships between the subplants and the resource storage devices.
6. The system of claim 1, wherein the instructions cause the one or more processors to receive a fourth user input via the user interface, the fourth user input comprising equipment contained within the subplant.
7. The system of claim 6, wherein the set of rules defines equipment that is required to be contained within one or more of the subplants.
8. The system of claim 1, wherein the instructions cause the one or more processors to display the additional connections between the symbols on the workspace as colored objects, and wherein a color of the colored objects corresponds to a resource type.
9. The system of claim 1, wherein the instructions cause the one or more processors to present a list of missing connections between the symbols on the workspace to the user via the user interface in accordance with the set of rules.
10. The system of claim 1, wherein the computing device comprises a smartphone, a tablet, a personal computer, or a laptop.
11. A method for providing a user with insight regarding how to optimize a central plant, the method comprising:
 - providing a user interface to the user via a computing device, the user interface comprising a symbol palette with selectable symbols representing resource suppliers, subplants, energy loads, and resource storage devices associated with the central plant;
 - receiving a first input from the user via the user interface, the first input comprising placement of the symbols from the symbol palette on a workspace of the user interface, the

symbols placed on the workspace comprising at least a resource supplier, a subplant, and an energy load;

receiving a second input from the user via the user interface, the second input comprising a connection between two of the symbols on the workspace;

evaluating the second input according to a set of rules to determine that the connection is improper;

preventing the user from making the connection;

receiving a third user input from the user via the user interface, the third user input comprising additional connections between the symbols on the workspace, the third user input completing a valid model of the central plant according to the set of rules; and

simulating operation of the central plant in accordance with the valid model to provide the user with the insight regarding how to optimize the central plant.

12. The method of claim 11, wherein:

the resource suppliers comprise an electricity supplier, a water supplier, a natural gas supplier, and a steam supplier;

the subplants comprise a chiller plant, a boiler plant, a tower plant, and a heat recovery chiller plant;

the energy loads comprise a chilled water load and a hot water load; and

the resource storage devices comprise a thermal storage tank.

13. The method of claim 11, wherein the set of rules defines valid relationships between the resource suppliers and the subplants.

14. The method of claim 11, wherein the set of rules defines valid relationships between the subplants and the energy loads.

15. The method of claim 11, wherein the set of rules defines valid relationships between the subplants and the resource storage devices.

16. The method of claim 11, further comprising receiving a fourth input from the user via the user interface, the fourth input comprising equipment contained within the subplant.

17. The method of claim 16, wherein the set of rules defines equipment that is required to be contained within one or more of the subplants.

18. The method of claim 11, further comprising displaying the additional connections between the symbols on the workspace as colored objects, wherein a color of the colored objects corresponds to a resource type.

19. The method of claim 11, further comprising presenting a list of missing connections between the symbols on the workspace to the user via the user interface in accordance with the set of rules.

20. The method of claim 11, wherein the computing device comprises a smartphone, a tablet, a personal computer, or a laptop.

What is claimed is:

1. A system comprising:

one or more computer-readable storage media having instructions thereon that, when executed by one or more processors, cause the one or more processors to:

provide a user interface to a user via a computing device, the user interface comprising a symbol palette with selectable symbols representing resource suppliers, subplants, energy loads, and resource storage devices associated with a central plant;

receive a first input from the user via the user interface, the first input comprising placement of symbols from the symbol palette on a workspace of the user interface, the symbols placed on the workspace comprising at least a resource supplier, a subplant, and an energy load;

receive a second input from the user via the user interface, the second input comprising a connection between two of the symbols on the workspace;

evaluate the second input according to a set of rules to determine that the connection is invalid;

prevent the user from making the connection;

receive a third user input from the user via the user interface, the third user input comprising additional connections between the symbols on the workspace, the third user input completing a valid model of the central plant according to the set of rules;

simulate operation of the central plant in accordance with the valid model;

generate control decisions or design decisions for physical equipment of the central plant represented by the selectable symbols based on simulation results; and

operate or design the physical equipment of the central plant in accordance with the control decisions or the design decisions.

2. The system of claim 1, wherein:

the resource suppliers comprise an electricity supplier, a water supplier, a natural gas supplier, and a steam supplier;

the subplants comprise a chiller plant, a boiler plant, a tower plant, and a heat recovery chiller plant;

the energy loads comprise a chilled water load and a hot water load; and

the resource storage devices comprise a thermal storage tank.

3. The system of claim 1, wherein the set of rules defines valid relationships between the resource suppliers and the subplants.

4. The system of claim 1, wherein the set of rules defines valid relationships between the subplants and the energy loads.

5. The system of claim 1, wherein the set of rules defines valid relationships between the subplants and the resource storage devices.

6. The system of claim 1, wherein the instructions cause the one or more processors to receive a fourth user input via the user interface, the fourth user input comprising equipment contained within the subplant.

7. The system of claim 6, wherein the set of rules defines equipment that is required to be contained within one or more of the subplants.

8. The system of claim 1, wherein the instructions cause the one or more processors to display the additional connections between the symbols on the workspace as colored objects, and wherein a color of the colored objects corresponds to a resource type.

9. The system of claim 1, wherein the instructions cause the one or more processors to present a list of missing connections between the symbols on the workspace to the user via the user interface in accordance with the set of rules.

10. The system of claim 1, wherein the computing device comprises a smartphone, a tablet, a personal computer, or a laptop.

11. A method for providing a user with insight regarding how to optimize a central plant, the method comprising:

providing a user interface to the user via a computing device, the user interface comprising a symbol palette with selectable symbols representing resource suppliers, subplants, energy loads, and resource storage devices associated with the central plant;

receiving a first input from the user via the user interface, the first input comprising placement of the symbols from the symbol palette on a workspace of the user interface, the symbols placed on the workspace comprising at least a resource supplier, a subplant, and an energy load;

receiving a second input from the user via the user interface, the second input comprising a connection between two of the symbols on the workspace;

evaluating the second input according to a set of rules to determine that the connection is improper;

preventing the user from making the connection;

receiving a third user input from the user via the user interface, the third user input comprising additional connections between the symbols on the workspace, the third user input completing a valid model of the central plant according to the set of rules;
and

simulating operation of the central plant in accordance with the valid model;

generating control decisions or design decisions for physical equipment of the central plant represented by the selectable symbols based on simulation results; and

operating or designing the physical equipment of the central plant in accordance with the control decisions or the design decisions.

12. The method of claim 11, wherein:

the resource suppliers comprise an electricity supplier, a water supplier, a natural gas supplier, and a steam supplier;

the subplants comprise a chiller plant, a boiler plant, a tower plant, and a heat recovery chiller plant;

the energy loads comprise a chilled water load and a hot water load; and

the resource storage devices comprise a thermal storage tank.

13. The method of claim 11, wherein the set of rules defines valid relationships between the resource suppliers and the subplants.

14. The method of claim 11, wherein the set of rules defines valid relationships between the subplants and the energy loads.

15. The method of claim 11, wherein the set of rules defines valid relationships between the subplants and the resource storage devices.

16. The method of claim 11, further comprising receiving a fourth input from the user via the user interface, the fourth input comprising equipment contained within the subplant.

17. The method of claim 16, wherein the set of rules defines equipment that is required to be contained within one or more of the subplants.

18. The method of claim 11, further comprising displaying the additional connections between the symbols on the workspace as colored objects, wherein a color of the colored objects corresponds to a resource type.

19. The method of claim 11, further comprising presenting a list of missing connections between the symbols on the workspace to the user via the user interface in accordance with the set of rules.

20. The method of claim 11, wherein the computing device comprises a smartphone, a tablet, a personal computer, or a laptop.