CLAIMS

1. A method, comprising:

- determining a set of key performance indicators (KPIs) associated with an industrial process;
- receiving process information associated with the set of KPIs from a user, wherein the process information comprises a set of semantic human-readable variable names and a mapping of the variable names to a set of industrial process data streams;
- generating a custom objective function based on the process information;
- using a trained artificial intelligence agent, determine a set of actions for optimizing the set of KPIs based on the custom objective function and sensor data from a set of cooling equipment components of the industrial process, the set of cooling equipment components comprising at least one of a chiller, a pump, an air handler, a fan, or a cooling tower; and
- controlling the set of cooling equipment components based on the set of actions, comprising selectively activating or deactivating a cooling equipment component of the set of cooling equipment components based on the set of actions.

2. The method of claim 1, wherein determining the set of actions comprises: predicting a future state of the industrial process based on the sensor data; and determining the set of actions based on the future state of the industrial process.

3. The method of claim 1, wherein the artificial intelligence agent is trained using the custom objective function.

4. The method of claim 1, wherein the sensor data comprises historical sensor data and real-time sensor data from the set of cooling equipment components.

5. The method of claim 1, wherein the process information comprises a set of process variables associated with the custom objective function, wherein the set of actions are further determined based on a relationship between the set of process variables and the set of actions.

6. The method of claim 1, wherein the artificial intelligence agent comprises at least one of: a reinforcement learning agent, a neural network model, or a neural network model and search.

7. The method of claim 1, wherein the industrial process comprises at least one of a chemical manufacturing process, a heating and cooling process, a pharmaceutical manufacturing process, an oil and gas manufacturing process, a paper and pulp manufacturing process, a metal manufacturing process, a cement manufacturing process, a glass manufacturing process, or a power generation process.

8. A system, comprising:

a processing system configured to:

- receive a set of key performance indicators (KPIs) from a user, wherein the process information comprises a set of semantic human-readable variable names and a mapping of the variable names to a set of industrial process data streams;
- determine process information associated with the set of KPIs;
- generate a custom objective function for the set of KPIs comprising the set of human-readable variable names from the process information;

- using a trained artificial intelligence agent, determine a plan for optimizing the set of KPIs based on the custom objective function and sensor data from a set of equipment of an industrial process, the set of equipment comprising cooling equipmentand
- controlling the set of equipment based on the plan, comprising controlling the cooling equipment based on the plan.

9. The system of claim 8, wherein the artificial intelligence agent is trained using the custom objective function.

10. The system of claim 8, wherein the process information comprises at least one of: a set of process variables associated with the custom objective function, a set of constraints associated with the set of process variables, or a dependency between process variables in the set of process variables.

11. The system of claim 8, wherein the process information comprises a mapping between a set of elements of the objective function and the sensor data.

12. The method of claim 8, wherein the process information comprises a set of responses to a set of queries.

13. The system of claim 8, wherein the artificial intelligence agent comprises at least one of: a reinforcement learning agent, a neural network model, or a neural network model and search.

14. The system of claim 8, wherein the equipment further comprises at least one of: a chiller, a pump, a fan, or a cooling tower.

15. The system of claim 8, wherein the set of KPIs comprises at least one of: energy usage, product quality, product yield, or process stability.

16. A method, comprising:

- generating an objective function associated with a set of key performance indicators (KPIs) based on a set of semantic human-readable variable names received from a user;
- receiving a set of equipment data streams from a set of equipment of an industrial process, wherein the set of equipment comprises a cooling tower;
- determining a mapping between the set of variable names and the set of equipment data streams;
- using a trained artificial intelligence agent, determining a plan for optimizing the set of KPIs based on the objective function, the set of equipment data streams, and the mapping, wherein the plan comprises a set of cooling tower actions; and
- controlling the set of equipment based on the plan, comprising controlling the cooling tower based on the set of cooling tower actions.

17 The method of claim 16, wherein the set of elements of the objective function comprise semantic elements of the objective function.

18. The method of claim 16, wherein determining the plan comprises predicting a future state of the industrial process based on the set of equipment data streams, and determining the plan based on the future state of the industrial process.

19. The method of claim 16, further comprising iteratively training the artificial intelligence agent using the objective function.

20. The method of claim 16, wherein the industrial process comprises at least one of a chemical manufacturing process, a heating and cooling process, a pharmaceutical manufacturing process, an oil and gas manufacturing process, a paper and pulp manufacturing process, a metal manufacturing process, a cement manufacturing process, a glass manufacturing process, or a power generation process.