

CLAIMS

1. A fluid utilization facility management method comprising:
monitoring an operating state of a fluid utilization device and an operating state of a drain trap in a fluid utilization facility based on detection information from detectors installed in various places in the fluid utilization facility;
calculating an energy balance in the fluid utilization facility; and
optimizing a running state of the fluid utilization facility based on this energy balance calculation result and the monitoring result,
wherein the fluid utilization facility is a steam utilization facility that uses steam as a fluid,
a steam utilization device that is the fluid utilization device in the steam utilization facility includes a fuel device that refines fuel that is also used for steam generation, and
the energy balance includes a fuel balance calculated based on an amount of fuel refined by the fuel device and an amount of fuel used for steam generation.
2. The fluid utilization facility management method according to claim 1 further comprising:
making a trial calculation of an economic effect or an environmental effect achieved in a case of optimizing the running state of the fluid utilization facility from a current state.
3. The fluid utilization facility management method according to claim 1,
wherein the fluid utilization facility is a steam utilization facility that uses steam as a fluid, and
the energy balance includes a steam balance calculated based on a steam use status of the steam utilization facility.
4. The fluid utilization facility management method according to claim 1 or claim 3,
wherein the fluid utilization facility is a steam utilization facility that uses steam as a fluid,
a steam utilization device that is the fluid utilization device in the steam utilization facility includes a generator that generates electric power using steam, and
the energy balance includes a balance between heat and electric power calculated based on a total amount of generated steam and an amount of electric power generated by the generator in the steam utilization facility.
5. The fluid utilization facility management method according to claim 1 and claims 3 to 4,
wherein an energy balance calculation result includes comparison information regarding a comparison between the calculated energy balance and a past energy balance or a reference energy balance.

6. The fluid utilization facility management method according to any one of claims 1 to 5,
wherein an operating state of a valve is monitored in addition to the operating state of the fluid utilization device and the operating state of the drain trap, and
the monitoring result includes the operating state of the valve.
7. The fluid utilization facility management method according to claim 6, further comprising:
creating a drain water discharge database including a piping layout of pipes on which the drain trap and the valve are arranged, and models and the operating states of the drain trap and the valve,
wherein the monitoring result includes information in the drain water discharge database.
8. The fluid utilization facility management method according to claim 7, further comprising:
updating the drain water discharge database based on the monitoring result,
wherein the monitoring result includes information in the updated drain water discharge database.
9. A fluid utilization facility management system for implementing the fluid utilization facility management method according to any one of claims 1 to 5, comprising:
detectors arranged in various places in the fluid utilization facility; and
a management means that includes a monitoring unit for monitoring the operating state of the fluid utilization device and the operating state of the drain trap in the fluid utilization facility based on the detection information, and a simulation unit for simulating the energy balance in the fluid utilization facility.
10. The fluid utilization facility management system according to claim 9,
wherein the monitoring unit monitors an operating state of a valve in addition to the operating state of the fluid utilization device and the operating state of the drain trap.
11. The fluid utilization facility management system according to claim 10,
wherein the management means includes a storage unit that stores a drain water discharge database including a piping layout of fluid pipes on which the drain trap and the valve are arranged, a model of the drain trap, and the operating states of the drain trap and the valve.
12. The fluid utilization facility management system according to claim 11,
wherein the monitoring unit updates the drain water discharge database based on the monitoring result.