CLAIMS

1. A thermal load prediction system configured to predict a thermal load of an air-conditioning zone in a building, the thermal load prediction system comprising:

an environmental data acquisition unit configured to acquire external environmental data related to an environment outside the building and/or internal environmental data related to an environment inside the building, both of which affect the thermal load of the air-conditioning zone;

an operation data acquisition unit configured to acquire operation data of an air conditioner configured to perform air conditioning for the air-conditioning zone;

a storage unit configured to store the data acquired by the environmental data acquisition unit and the operation data acquisition unit;

a learning unit configured to train a model with which the thermal load of the air-conditioning zone is predicted by using learning data obtained from the storage unit; and

a prediction unit configured to predict the thermal load of the air-conditioning zone by using the model, wherein

an indoor unit forming the air conditioner is installed in the air-conditioning zone,

the thermal load of the air-conditioning zone in the learning data is calculated based on a heat exchange amount in the indoor unit installed in the air-conditioning zone, and

the heat exchange amount in the indoor unit is calculated based on the operation data.

2. The thermal load prediction system according to claim 1, wherein the external environmental data includes at least an outside air temperature of the building, and

the internal environmental data includes at least an indoor temperature of the air-conditioning zone.

3. The thermal load prediction system according to claim 1 or 2, wherein the learning unit excludes a record including a missing value or an abnormal value from the learning data before training the model.

4. The thermal load prediction system according to claim 1 or 2, wherein the learning unit complements for a missing value or an abnormal value included in the learning data before training the model.

5. The thermal load prediction system according to any one of claims 1 to 4, wherein the learning unit processes the learning data based on an operating state of the air conditioner or a schedule of the air conditioner before training the model.

6. The thermal load prediction system according to any one of claims 1 to 5, wherein the learning unit uses second learning data for a second air-conditioning zone similar to a first air-conditioning zone instead of first learning data for the first air-conditioning zone.

7. The thermal load prediction system according to any one of claims 1 to 6, wherein the model is a machine learning model, a statistical model, a physical model, or a combination of these.

8. The thermal load prediction system according to any one of claims 1 to 7, wherein the learning unit trains the model by using the learning data of a predetermined unit.

9. The thermal load prediction system according to any one of claims 1 to 8, wherein the learning unit updates the model at a predetermined timing.

10. The thermal load prediction system according to any one of claims 1 to 9, wherein the heat exchange amount in the indoor unit is calculated based on a suction temperature, an air volume, and a refrigerant temperature in the indoor unit.

11. The thermal load prediction system according to any one of claims 1 to 9, wherein the heat exchange amount in the indoor unit is calculated based on a suction temperature, a blow-out temperature, and an air volume in the indoor unit.