CLAIMS

1. A monitoring system comprising:

a self-powered sensor mounted on a monitoring target device to generate and transmit a sensing signal corresponding to physical energy generated by the monitoring target device; and

a monitoring device configured to collect the sensing signal transmitted by the self-powered sensor and monitoring a status of the monitoring target device,

wherein the monitoring device comprises

a first generator configured to generate monitoring sensing data as time series data combining the sensing signal and a signal receiving period indicating how frequently the sensing signal is received at the monitoring device;

a classification unit configured to classify status information of the monitoring target device corresponding to the monitoring sensing data by using an unsupervised learning-based deep learning model trained in advance to classify the status information of the monitoring target device when monitoring sensing data is input, and

a determination unit configured to determine the abnormal state of the monitoring target device using a deep neural network model trained in advance to determine the abnormal state of the monitoring target device using the status information of the monitoring target device,

wherein the deep neural network model is a neural network model trained in advance using training data comprising whether the monitoring target device is in an idle state, whether the monitoring target device is in operation, a type of product produced by the monitoring target device, and a daily output of the product.

2. The monitoring system of claim 1, wherein the status information of the monitoring target device comprises

at least one of whether the monitoring target device is in an idle state, whether the monitoring target device is in operation, a type of product produced by the monitoring target device, and a daily output of the product.

3. The monitoring system of claim 1, further comprising

a second generator configure to generate monitoring result information controlling the operation of the monitoring target device in response to the determination of the abnormal state of the monitoring target device.