message in a case where an operator presses a graph display on a display screen.

Citation List

Patent Literature

[0003]

[PTL 1] Japanese Unexamined Patent Publication No. 1992-308895

[PTL 2] Japanese Unexamined Patent Publication No. 2016-115195

Summary of Invention

Technical Problem

[0004]

In the configuration of the related art, alarms generated in the plant can be displayed in time series. However, in the configuration of the related art, for example, in a case where a large number of alarms of a type are generated in a certain period, it is difficult to identify a generation frequency such as the number of times the alarm is generated.

[0005]

~~An exemplary object of an aspect~~Embodiments of the present invention ~~is to~~ provide a display device, a control device, a control method, and a computer program that can visualize a generation frequency of an alarm.

Solution to Problem

[0006]

~~In order to solve the above problem, a display device of~~According to an aspect of the present invention ~~is~~, there is provided a display device that displays an operation state of a plant, in which for a plurality of alarms generated in the plant, a generation frequency of each alarm type indicating a type of the alarm in a first period is displayed in an aspect of being arranged for each alarm type.

[0007]

In an embodiment of the display device, the displaying of the generation frequency of each alarm type in the first period in the aspect of being arranged for each alarm type may be displaying the generation frequency of each alarm type in the first period in a graph form.

[0008]

In an embodiment of the display device, the displaying of the generation frequency of each alarm type in the first period in the aspect of being arranged for each alarm type may be arranging and displaying bar graphs corresponding to the generation frequency of each alarm type in the first period in a descending order or an ascending order of the generation frequency for each alarm type.

[0009]

In an embodiment of the display device, for the alarm type of which the generation frequency in the first period is displayed, a generation history of the alarm type in a second period included in the first period may be further displayed.

[0010]

In an embodiment of the display device, a generation history of a related event related to the alarm type in the second period may be further displayed together with the generation history of the alarm type in the second period.

[0011]

In an embodiment of the display device, the related event may be a process of the plant or may be the alarm of a different type from the alarm type of which the generation frequency in the first period is displayed.

[0012]

In an embodiment of the display device, the first period may be a period of a part of an operation period of the plant.

[0013]

In an embodiment of the display device, the generation frequency may be the number of generations.

[0014]

~~A control device of~~According to another aspect of the present invention ~~is~~there is provided a control device that

controls a display device that displays an operation state of a plant, the control device including an acquisition unit that acquires alarm information indicating an alarm generated in the plant, a calculation unit that calculates a generation frequency of each alarm type indicating a type of the alarm in a first period based on the alarm information, and a display control unit that causes the display device to display the calculated generation frequency of each alarm type in the first period in an aspect of being arranged for each alarm type.

[0015]

~~The~~In an embodiment, the control device may further include a generation unit that, for the alarm type of which the generation frequency in the first period is displayed, generates generation history information indicating a generation history of the alarm type in a second period included in the first period based on the alarm information, in which the display control unit causes the display device to further display the generated generation history information in the second period.

[0016]

In an embodiment of the control device, the display control may cause the display device to further display a graph form in which generation of the alarm type is arranged in time series based on the generated generation history information in the second period.

[0017]

~~The~~In an embodiment, the control device may further include a reception unit that receives a selection of a related event related to the alarm type of which the generation frequency in the first period is displayed, in which the generation unit generates generation history information indicating a generation history of the selected related event in the second period based on process information of the plant or on the alarm information, and the display control unit causes the display device to display the generated generation history information of the related event in the second period together with the generated generation history information of the alarm type.

[0018]

In an embodiment of the control device, the display control unit may cause the display device to further display a graph form in which generation of the alarm type is arranged in time series based on the generated generation history information of the alarm type in the second period and in which generation of the related event is arranged in time series based on the generated generation history information of the related event in the second period.

[0019]

~~The~~In an embodiment, the control device may further include a correctness input unit configured to input

correctness of generation of the alarm type of which the generation frequency in the first period is displayed.

[0020]

~~A control method of~~According to another aspect of the present invention ~~is~~, there is provided a control method of controlling a display device that displays an operation state of a plant, the control method including a step of acquiring alarm information indicating an alarm generated in the plant, a step of calculating a generation frequency of each alarm type indicating a type of the alarm in a first period based on the alarm information, and a step of causing the display device to display the calculated generation frequency of each alarm type in the first period in an aspect of being arranged for each alarm type.

[0021]

~~A program of~~According to another aspect of the present invention ~~is~~, there is provided a program for controlling a display device that displays an operation state of a plant, the program causing a computer to execute a step of acquiring alarm information indicating an alarm generated in the plant, a step of calculating a generation frequency of each alarm type indicating a type of the alarm in a first period based on the alarm information, and a step of causing the display device to display the calculated generation frequency of each alarm type in the first period in an aspect of being arranged for each alarm type.

[0022]

Arbitrary combinations of the above components, and substitution of the components and expressions of the present invention with each other among a method, a device, a system, a computer program, a data structure, a recording medium, and the like are also valid as an aspect of the present invention.

Advantageous Effects of Invention

[0023]

According to embodiments of the present invention, it is possible to visualize a generation frequency of an alarm.

Brief Description of Drawings

[0024]

Fig. 1 is a schematic diagram illustrating an overall configuration of a plant according to the present embodiment.

Fig. 2 is a diagram illustrating functional blocks of a system according to the present embodiment.