

12:00, and a third period T53 of 22:00 to 24:00, and the third period T53 (T5s3 to T5e3) is the processing period immediately before shipment with respect to the batch 5.

The product processing plan created by the product-processing planning device 11 is a schedule in which the period for processing the products of each batch is divided into a plurality of periods and subjected to allocation as illustrated in FIG. 7. When a period T_i , in which the products of a batch i are processed, is divided into n pieces of processing periods, the n -th processing period (the processing period immediately before shipment) T_{in} (T_{isn} to T_{ien}) of the batch i is set immediately before the shipment time T_{iout} of the batch i . In other words, the product-processing planning device 11 creates the product processing plan so that the time at which the process ends with respect to the batch i (process end time T_{ien}) matches the shipment time T_{iout} .

Also, the processing period T_{in} immediately before shipment with respect to the batch i is allocated depending on, for example, the shipment time of the other batches while a margin for processing the products of the batch i is ensured.

In the example of the product processing plan illustrated in FIG. 7, the difference ($T_{5out} - T_{4out}$) in the shipment time between the batch 5, which is shipped out at the end of one day, and the batch 4, which is shipped immediately therebefore, is two hours. Therefore, a period

CLAIMS

1. A product-processing planning device comprising:

a first interface configured to acquire past processed data including a number of a product of each batch processed in past by a product processing apparatus, which processes the product categorized into a plurality of batches;

a processor configured to estimate the number of the product of each batch, which is to be processed by the product processing apparatus, based on the past processed data acquired by the first interface and create a product processing plan in which processing periods obtained by dividing a period of processing the product of each batch into a plurality of dispersedly allocated periods which are allocated depending on the estimated number of the product of each batch; and

a second interface configured to output the product processing plan created by the processor to a control device of the product processing apparatus.

2. The product-processing planning device according to claim 1, wherein the processor creates the product processing plan in which a processing period among the plurality of processing periods divided with respect to each batch is preferentially allocated immediately before shipment time of the batch.

3. The product-processing planning device according to claim 2, wherein the processor creates the product processing plan allocating the processing period so that

the number of the product to be processed in the processing period allocated immediately before the shipment time is equal to or lower than a maximum number of the product processable by the product processing apparatus in the processing period.

4. The product-processing planning device according to any one of claims 1 to 3, wherein

the processor creates the product processing plan allocating the processing period so that the number of the product to be processed in the processing period is equal to or lower than the maximum number of the product processable by the product processing apparatus in the processing period.

5. The product-processing planning device according to any one of claims 1 to 4, wherein

the first interface further acquires processed data in operation including the number of the product of each batch serving as a processing target of the product processing apparatus in operation in accordance with the product processing plan, and

the processor corrects the product processing plan based on the processed data in operation acquired by the first interface.

6. A product processing system comprising a control device and a product-processing planning device; wherein

the product-processing planning device comprises

a first interface configured to acquire past processed

data including a number of a product of each batch processed in past by a product processing apparatus, which processes the product categorized into a plurality of batches,

5 a first processor configured to estimate the number of the product of each batch to be processed by the product processing apparatus based on the past processed data acquired by the first interface and create a product processing plan in which processing periods obtained by dividing a period of processing the product of each batch
10 into a plurality of dispersedly allocated periods which are allocated depending on the estimated number of the product of each batch, and

a second interface configured to output the product processing plan generated by the first processor to the
15 control device which controls operation of the product processing apparatus; and

the control device comprises

a third interface configured to acquire the product processing plan created by the product-processing planning
20 device,

a second processor configured to set a processing period and the batch serving as a processing target in accordance with the product processing plan acquired by the third interface and generate a control signal which causes
25 the product processing apparatus to process the product of the batch serving as the processing target in the set processing period, and

a fourth interface configured to output the control signal generated by the second processor to the product processing apparatus.

7. The product processing system according to claim 6,
5 wherein the first processor of the product-processing planning device creates the product processing plan in which a processing period among the plurality of processing periods divided with respect to each batch is preferentially allocated immediately before shipment time of the batch.

10 8. The product processing system according to claim 7, wherein the first processor of the product-processing planning device creates the product processing plan allocating the processing period so that the number of the product to be processed in the processing period allocated
15 immediately before the shipment time is equal to or lower than a maximum number of the product processable by the product processing apparatus in the processing period.

9. The product processing system according to any one of claims 6 to 8, wherein

20 the first processor of the product-processing planning device creates the product processing plan allocating the processing period so that the number of the product to be processed in the processing period is equal to or lower than the maximum number of the product processable by the
25 product processing apparatus in the processing period.

10. The product processing system according to any one of claims 6 to 9, wherein

the first interface of the product-processing planning device further acquires processed data in operation including the number of the product of each batch serving as the processing target of the product processing apparatus in operation in accordance with the product processing plan,

the first processor of the product-processing planning device corrects the product processing plan based on the processed data in operation acquired by the first interface,

the second interface of the product-processing planning device outputs correction data of the product processing plan based on the correction of the product processing plan by the first processor to the control device,

the third interface of the control device acquires the correction data of the product processing plan from the product-processing planning device, and,

when the correction data of the product processing plan is acquired by the third interface, the second processor of the control device sets the processing period and the batch serving as the processing target again in accordance with the product processing plan corrected by the correction data.

11. A product-processing planning program for causing a computer to execute:

a procedure of acquiring, by a first interface, past processed data including a number of a product of each batch processed in past by a product processing apparatus, which

processes the product categorized into a plurality of batches;

5 a procedure of estimating the number of the product of each batch, which is to be processed by the product processing apparatus, based on the past processed data;

10 a procedure of creating a product processing plan in which processing periods obtained by dividing a period of processing the product of each batch into a plurality of dispersedly allocated periods which are allocated depending on the estimated number of the product of each batch; and

a procedure of outputting, by a second interface, the created product processing plan to a control device of the product processing apparatus.