

# Actions for production improvement by DX (Digital transformation)

Rengo Co., Ltd.



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The General Packaging Industry

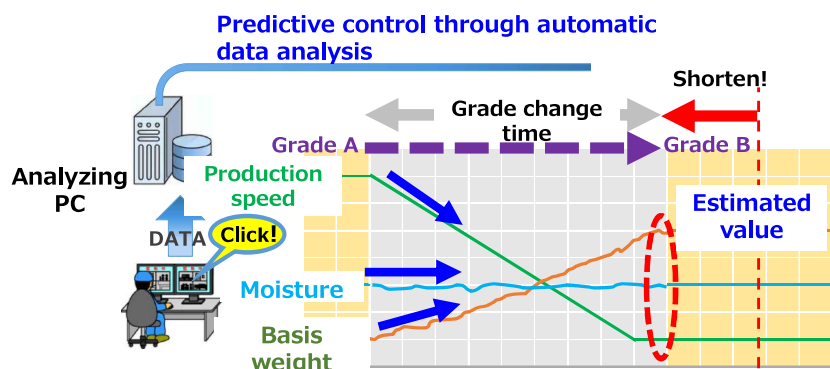
## Optimization for the grade change control work

- Issue :
- Grade change work requires multiple tasks by one worker
  - Task time depends on the worker's ability

Solution :

- Automation for grade change work

- ① Analyze the operation data and factors of variation to improve parameters
- ② Set optimized target value and time through the improved operation data
- ③ Feedforward control system operating multiple tasks at once for the target



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## Optimization for the grade change control work

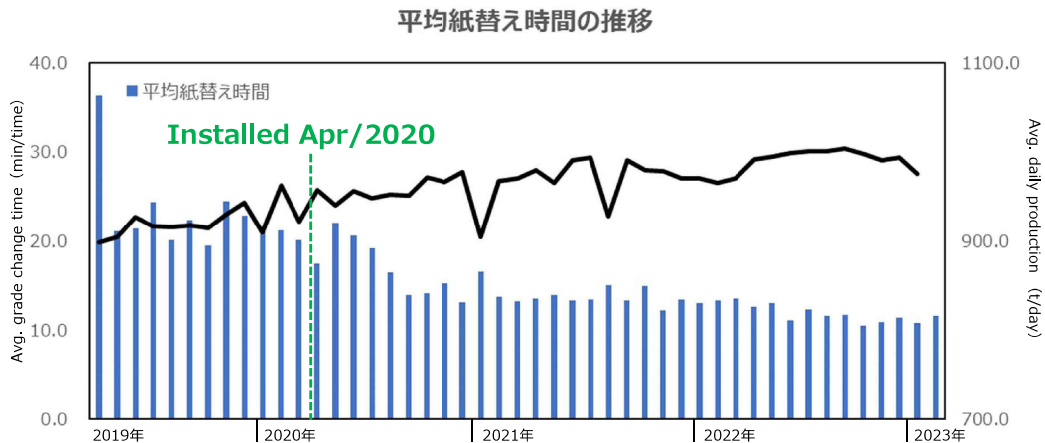
Result : Time for grade change work

Before(2019) 189times 4437min (23.5min/time)

After(2022) 172times 2197min (12.8min/time)

**Saved**  
**10.7min/time**

→Shared the solutions with our other paper mills



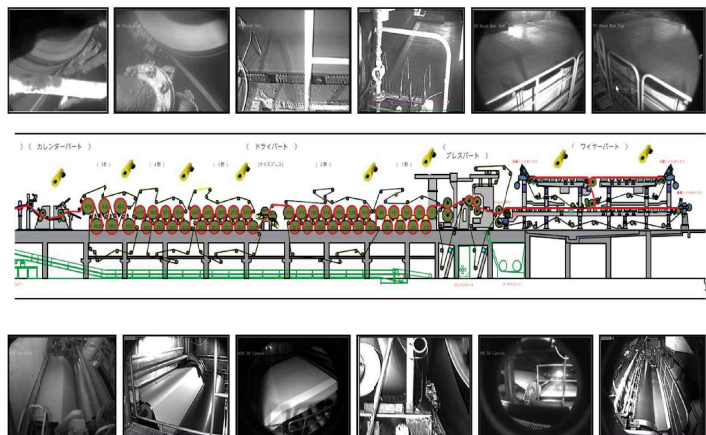
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## Monitoring camera

- Issue :
- Time and manpower required to recover from sheet breaking
  - Difficulty in identifying the cause

- Solution :
- Installed recordable monitoring cameras at 24 points where the trouble frequently happens
  - Tracing the video to find out the cause of the sheet breaking.



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## Monitoring camera

- Result :
- Reduced cases with causes unidentified
  - By identifying the causes,
    - Took accurate measures
    - Reduced sheet breaking
    - Brought this virtuous cycle

Result	Number of sheet breaking		
	Identified	Unidentified	Total
H1/2020	12	20	32
H2/2020	16	6	22
H1/2021	7	6	13
H2/2022	7	0	7

Installed  
Aug 2020

Achieved **0** case  
with causes unidentified!!

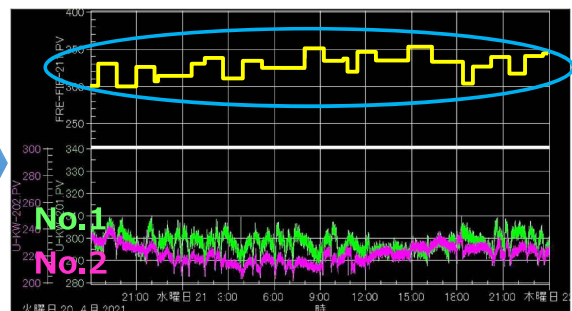
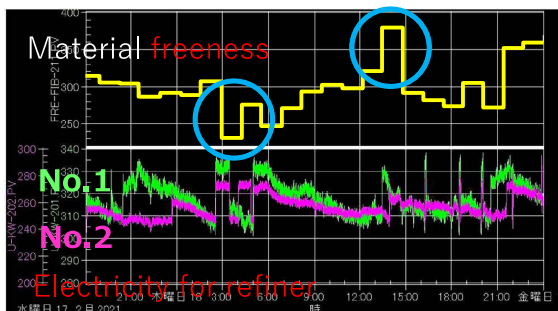
- Took measures for other defects as well by linking cameras with defect detector

## Online freeness measuring device

- Issue :
- Time-consuming due to manual measuring work for freeness, results vary depending on workers
  - Wasting electricity due to difficulty in fine-tuning of the refiner

- Solution :
- Installed online fine-tune measuring device
  - Automatic electricity control system for the refiner following the measured freeness value

- Result :
- Stable quality, cost reduction through energy saving
  - More stable quality by controlling and calculating electricity intensity



**Saved 20%** of electricity intensity  
by automatic freeness control

## Yashio Logistics Center automatic sorting of load arrangement

### 【Precondition】

- Assigned section number for storage management
- Set 3 sections for loading preparation in front of truck berths
- Prepare for loading before the trucks arrive



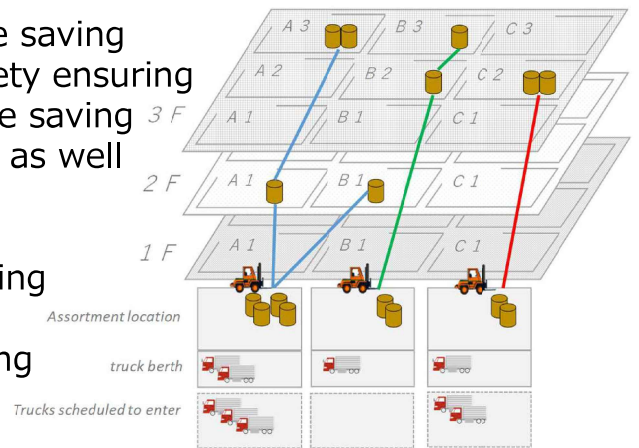
Yashio Logistics Center

### 【Consideration】

- Shorten travel distance of lifts → Time saving
- Reduce intersection of lift lines → Safety ensuring
- Reduce waiting time for trucks → Time saving
- ※ Considering trucks scheduled to enter as well

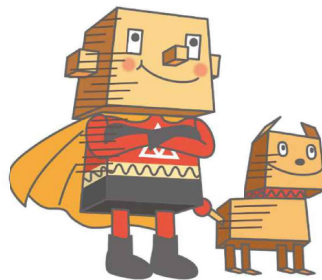
### 【Result】

- Save manpower by automatically setting the areas for loading preparation, Reduce waiting time by efficient loading
- Optimize loading at all time referring to the skilled worker's operation



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Thank you for listening