MITSUBISHI ELECTRIC
Changes for the Better

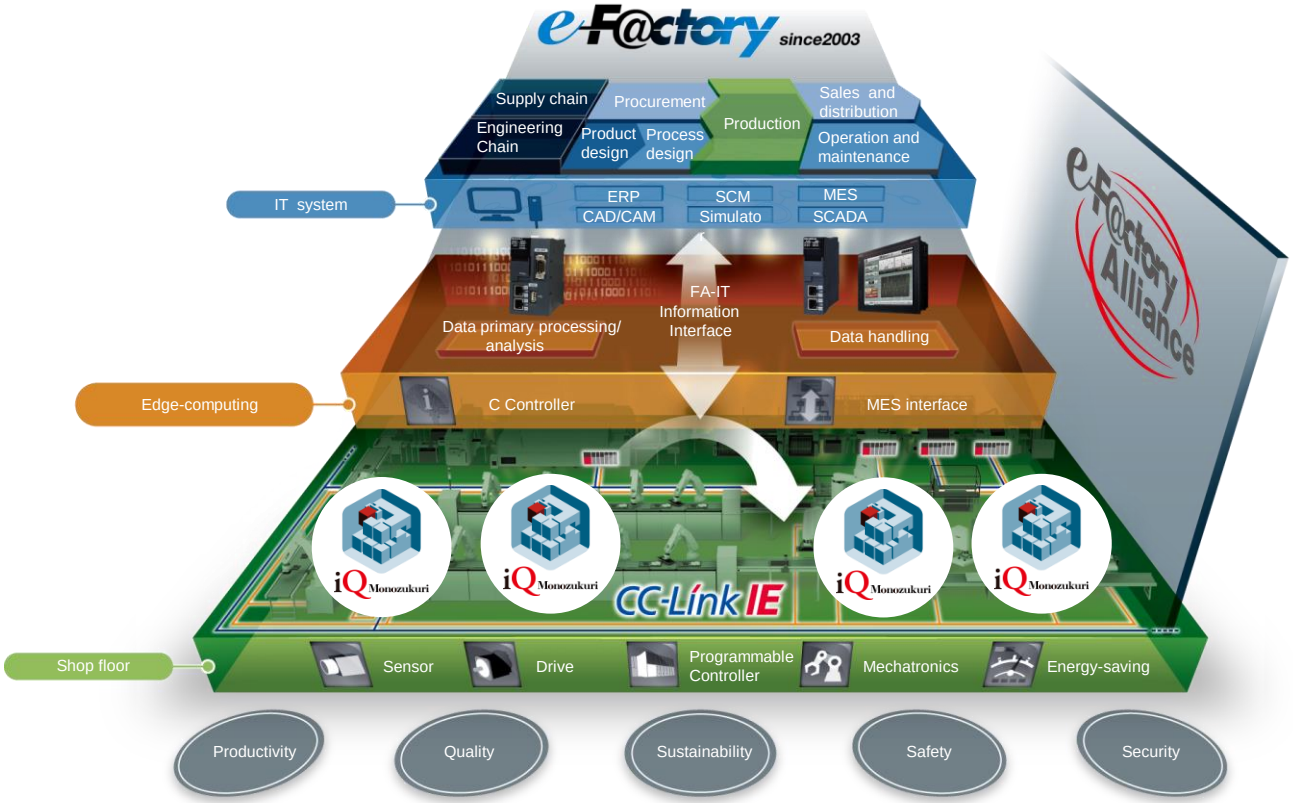
for a greener tomorrow

Application Package for Facemask Making Machines

iQ Monozukuri FACEMASK

MITSUBISHI ELECTRIC ASIA PTE LTD

What is iQ Monozukuri?



A package providing **optimal solutions** for each process, application, and machine to achieve **higher productivity and quality**. It also gives ideas for **easier system configuration**. iQ Monozukuri lays the foundation for "**e-F@ctory**" implementation.

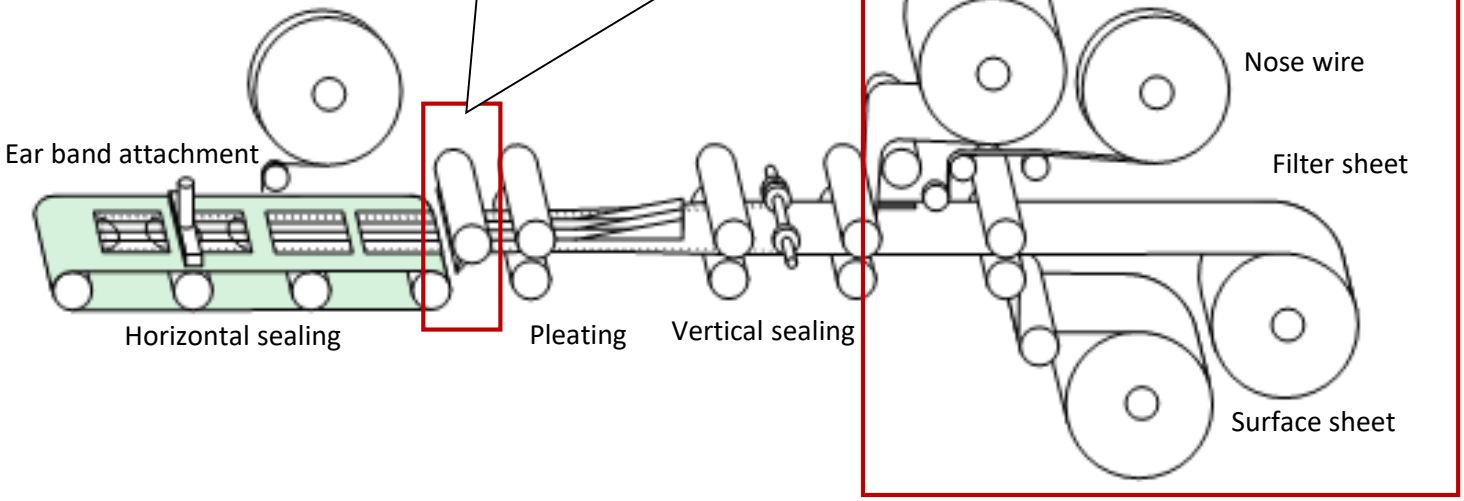
Mask Making Machine & Supported FBs

- Constant control of the unwinding tension of sheets is performed easily.
- Cam operation is automatically generated as electronic cams.

Reduction of design man-hours

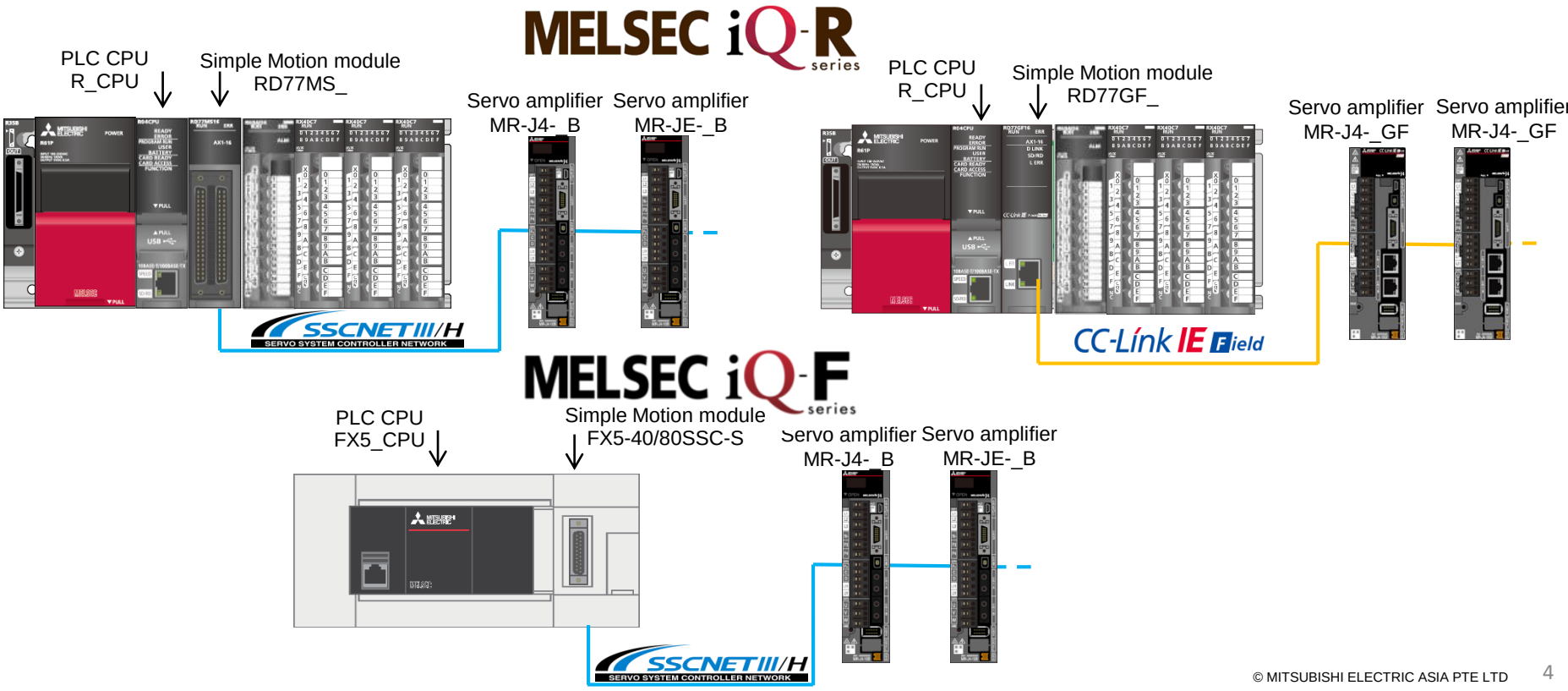
● Sheet unwinder control
1. Unwinding tension constant control
2. Unwinding diameter calculation
3. Unwinding material edge position control

● Cutter cam control
1. Cam generation for rotary cutter
2. Cam generation for flying shear



System Configuration

Series	Function		Supported network	Simple Motion module	Servo amplifier
	Unwinder control	Cutter cam			
iQ-R	○	○	CC-LinkIE Field	RD77GF_	MR-J4-_GF
			SSCNET III/H	RD77MS_	MR-J4-_B MR-JE-_B
iQ-F	–	○		FX5-40SSC-S FX5-80SSC-S	



FACEMASK Library

List of FBs for MELSEC iQ-R

Item	Name	Description
Cam auto-generation	STD_MakeRotaryCutterCam	Cam auto-generation for rotary cutter
	STD_MakeFlyingShearCam	Cam auto-generation for flying shear
synchronization control	CtrlOutputAxisSync	Output axis synchronization control
Tension control	CNV_WinderTensionSensorlessCtrl	Tension sensorless torque control
Roll diameter calculation	CNV_DiaCalcThickness	Roll diameter calculation (web thickness integration method)
Filters	CNV_EdgePositionCtrl	Edge position control
Tuning function	PIDControl	PID control
Filters	STD_Limiter	Limiter

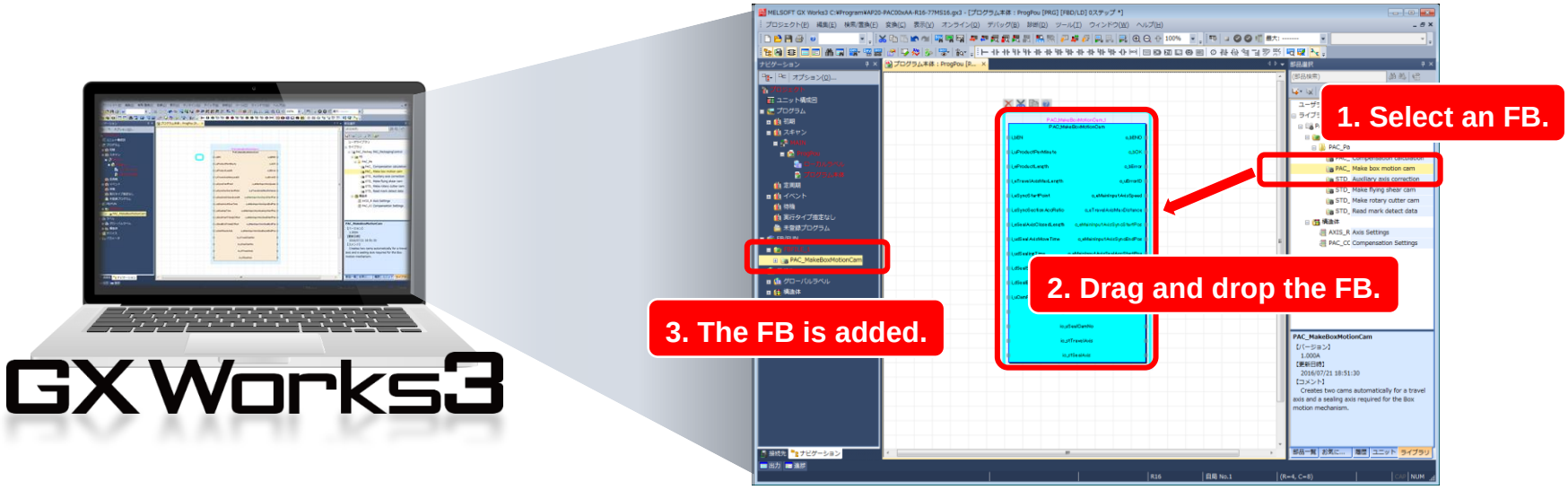
FACEMASK Library

List of FBs for MELSEC iQ-F

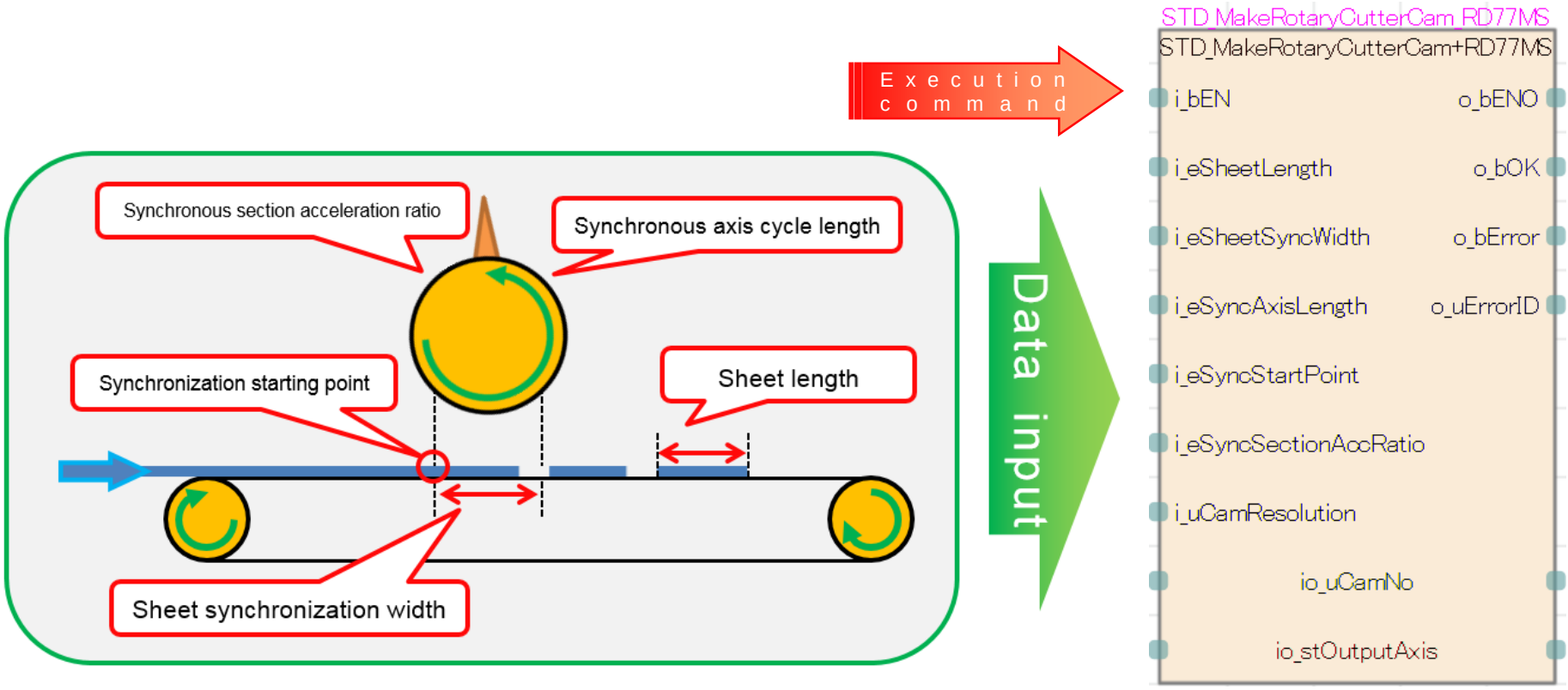
Item	Name	Description
Cam auto-generation	STD_MakeRotaryCutterCam	Cam auto-generation for rotary cutter
	STD_MakeFlyingShearCam	Cam auto-generation for flying shear
Synchronization control	CtrlOutputAxisSync	Output axis synchronization control

Introduction to Program

Simply drag & drop the FBs into a work sheet of GX Woks3, making programming easy and intuitive.



Cam Auto-Generation for Rotary Cutter



Only parameter settings of sheet length and sheet synchronization width are required.
A cam for driving a rotary cutter is automatically generated.

Cam Auto-Generation for Rotary Cutter

STD_MakeRotaryCutterCam_RD77MS

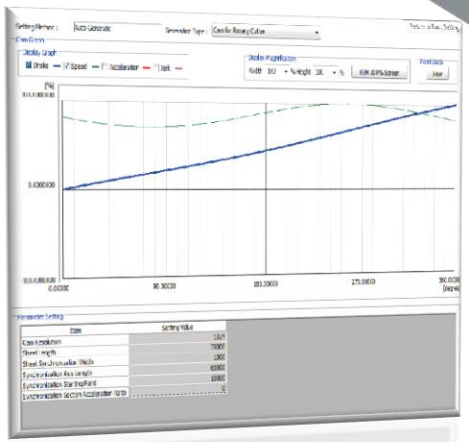
STD_MakeRotaryCutterCam+RD77MS

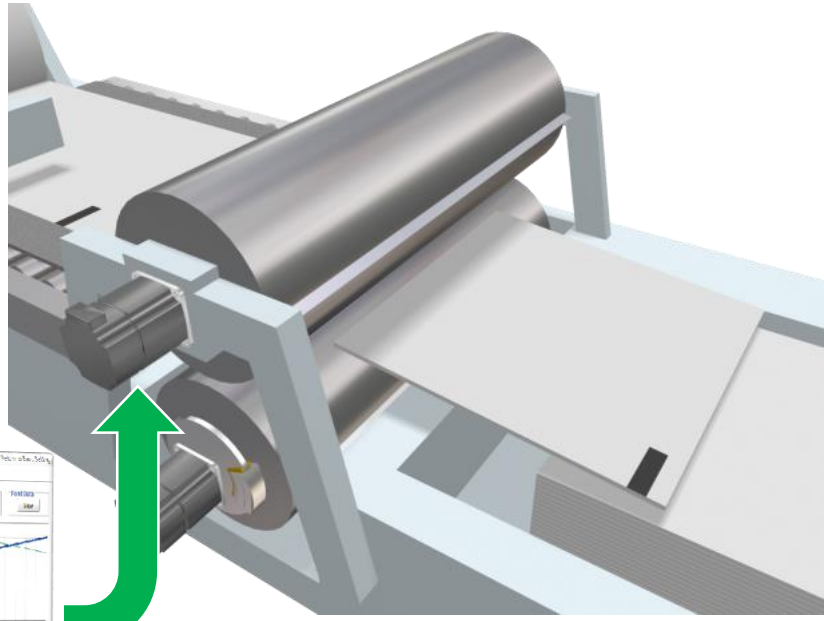
i_bEN	o_bENO
i_eSheetLength	o_bOK
i_eSheetSyncWidth	o_bError
i_eSyncAxisLength	o_uErrorID
i_eSyncStartPoint	
i_eSyncSectionAccRatio	
i_uCamResolution	
io_uCamNo	
io_stOutputAxis	

Execution result

- Execution status
- Normal/ error completion
- Error code

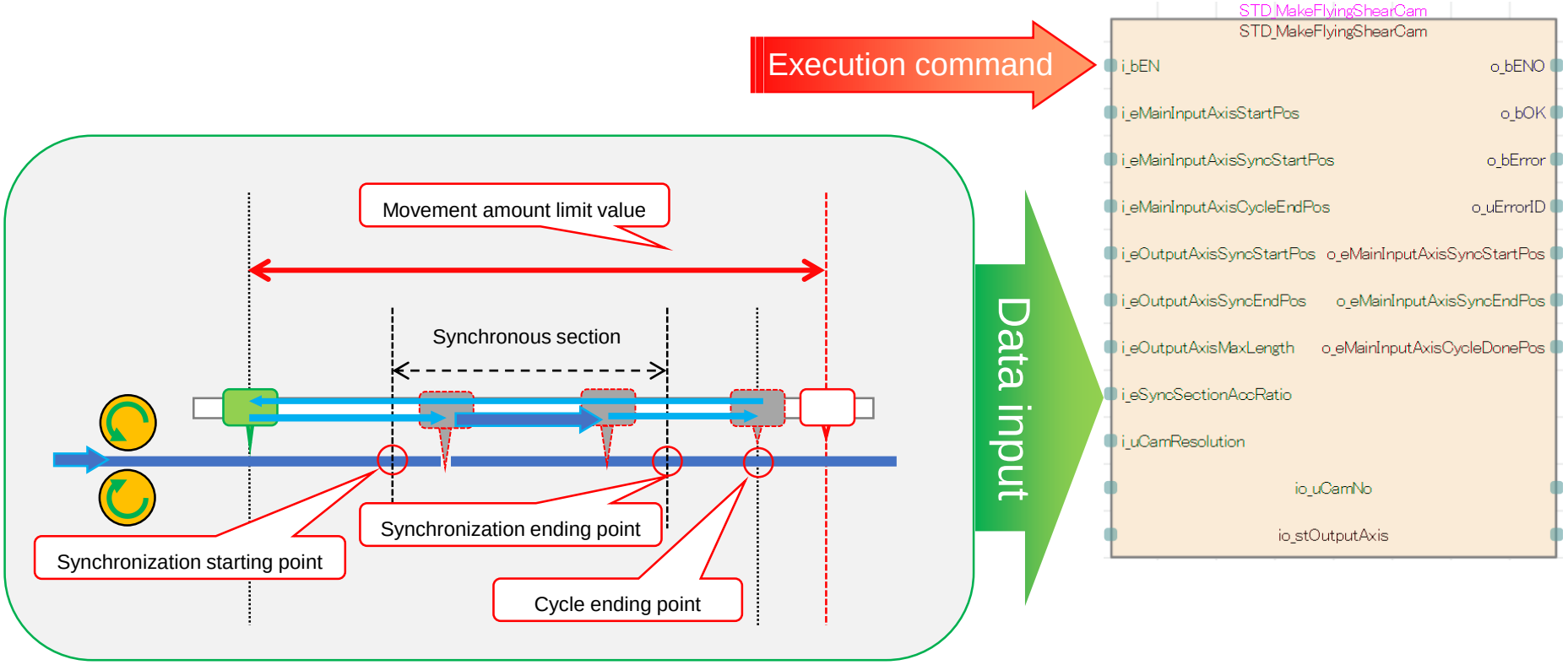
Cam generation





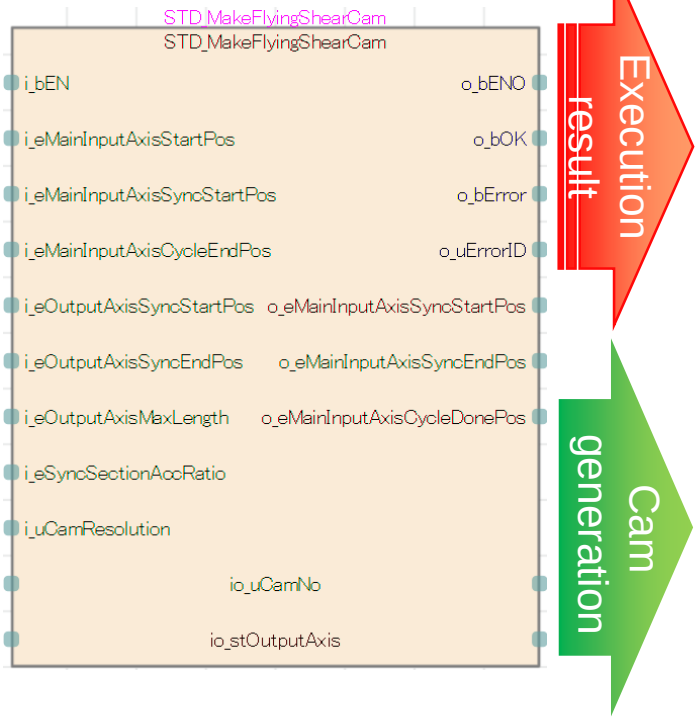
Cam control to the output axis with the advanced synchronous control

Cam Auto-Generation for Flying Shear



Only parameter settings of synchronization starting/ending point is required.
A cam for a flying shear is automatically generated.

Cam Auto-Generation for Flying Shear



Execution result

Cam generation

- Execution status
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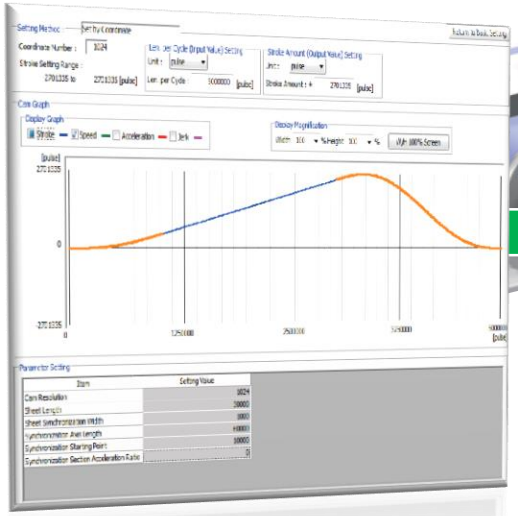
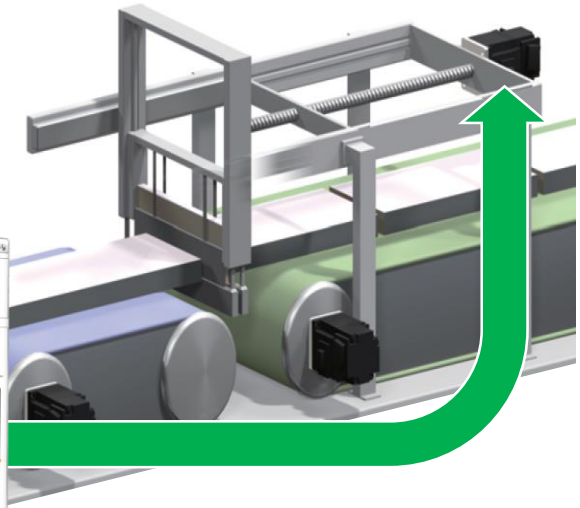
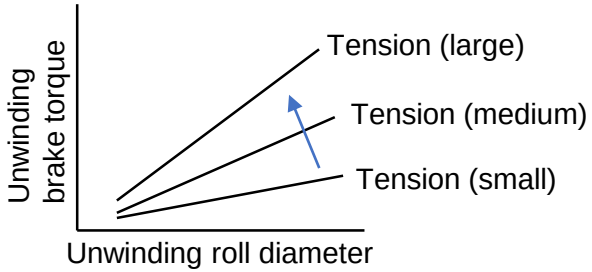


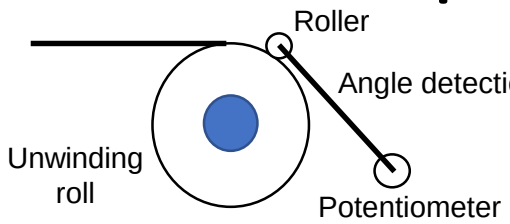
Cam control to the output axis with the advanced synchronous control



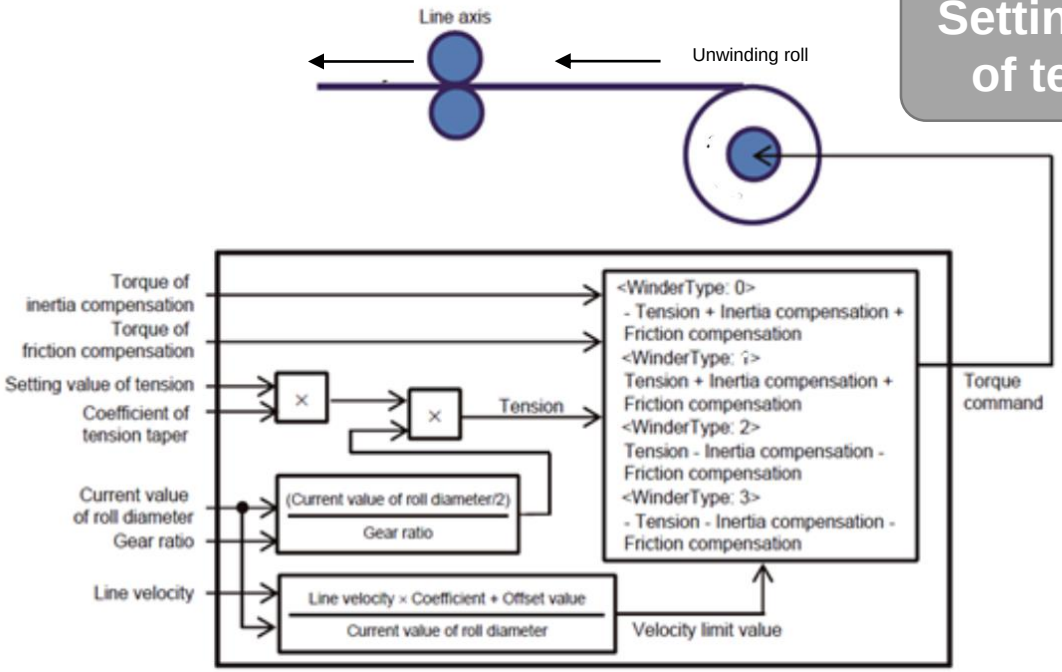
- Cam waveforms making smooth start and stop
- The FB does all the complex calculations.

Tension Sensorless Torque Control

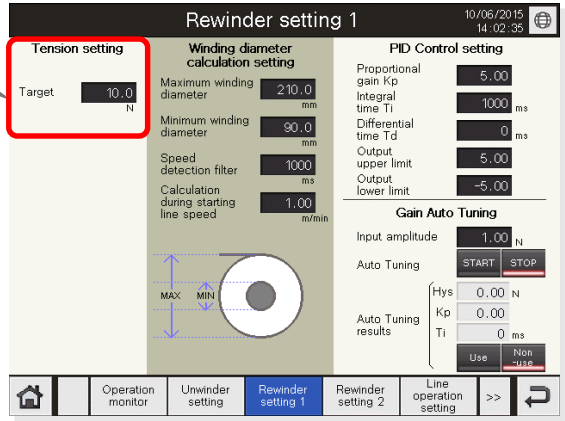




An unwinding roll diameter calculated by detecting the angle of the arm with the potentiometer can also be used.



Setting value of tension

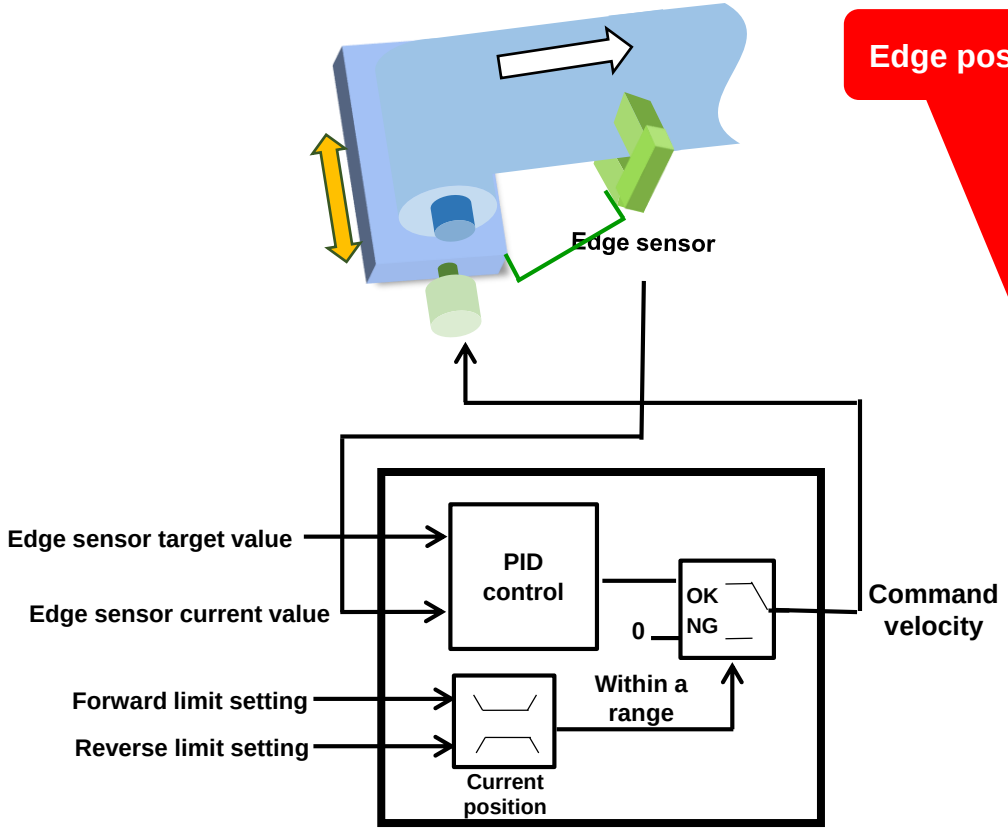


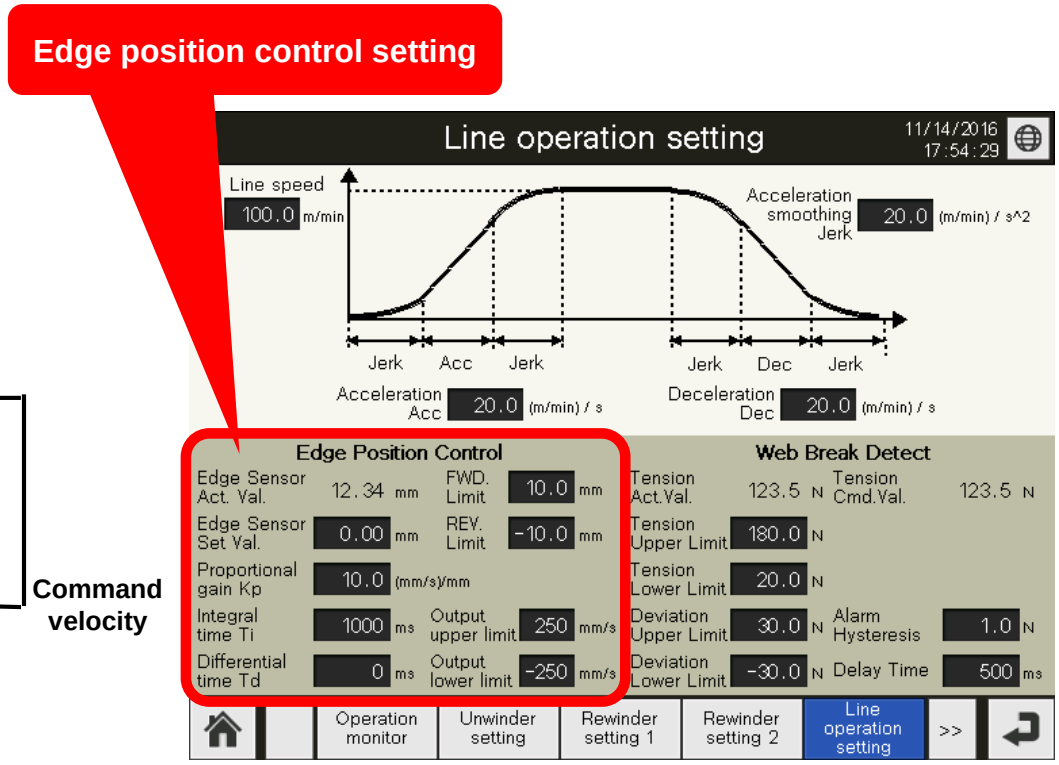
In unwinder control, coefficient of taper is kept at 1.

The command torque is calculated from the unwinding roll diameter, and outputted to the ıplifier.

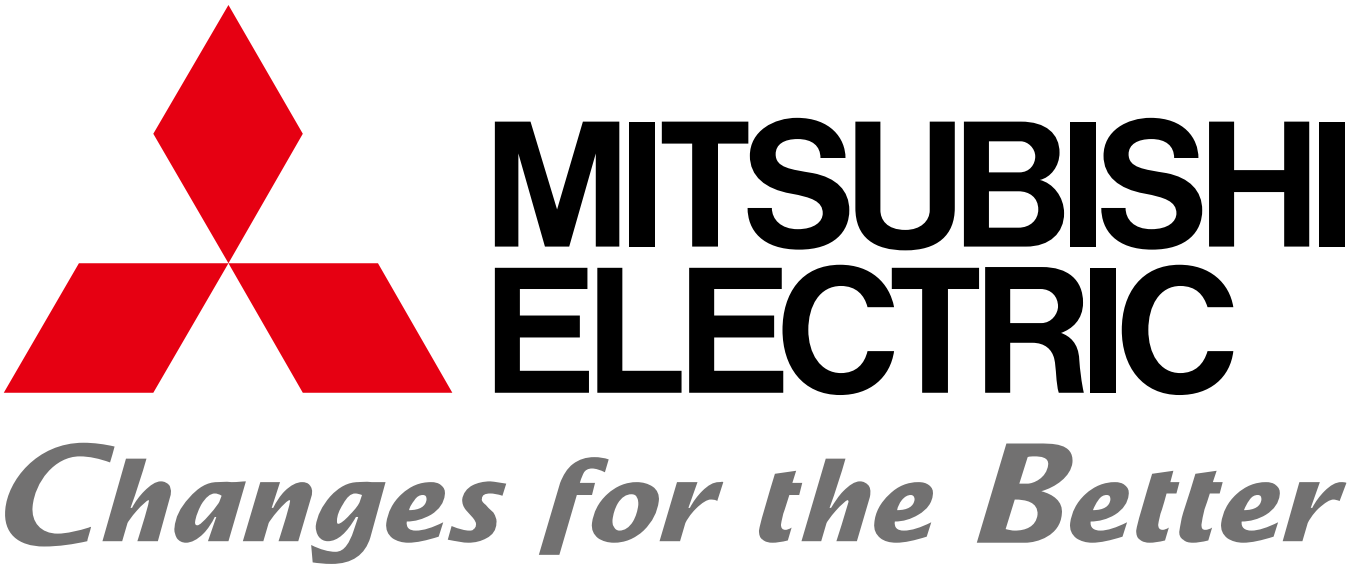
Edge-Position Control

To achieve the edge sensor target value, the position correction value determined by the PID control is output as command velocity.





Position correction of the unwinding sheet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