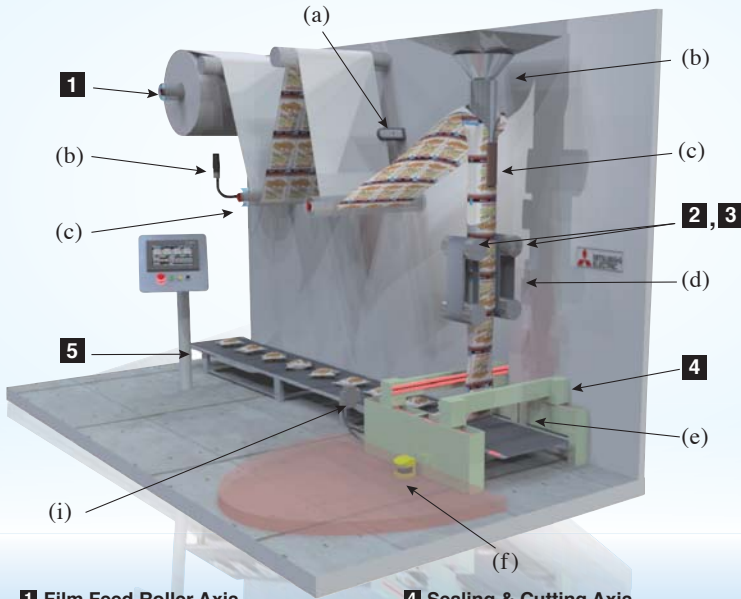


For your all production needs

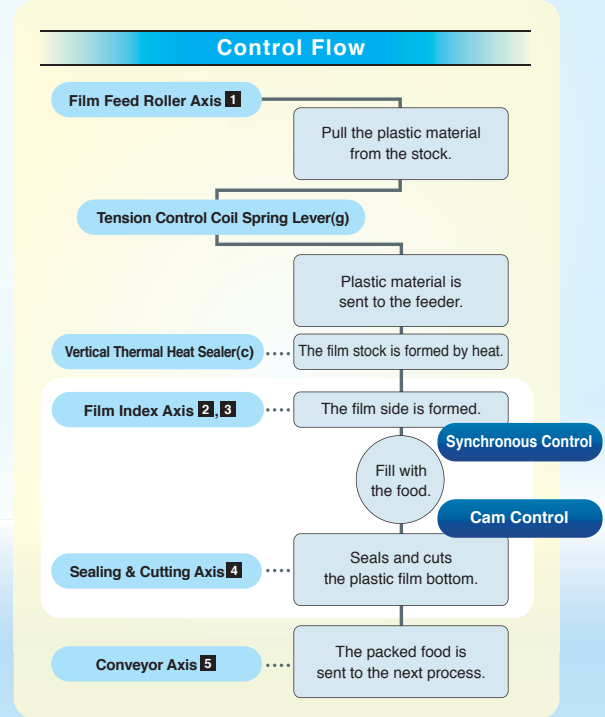
MELSERVO-J4 Solutions

MELSERVO-**J4**

vol.01 Vertical Form, Fill & Seal



- 1** Film Feed Roller Axis
- 2** Film Index Axis
- 3** Film Index Axis
- 4** Sealing & Cutting Axis
- 5** Conveyor Axis
- (a) Registration Mark Detection Sensor
- (b) Feeder
- (c) Vertical Thermal Heat Sealer
- (d) Film Index Drives
- (e) Sealing & Cutting Arms
- (f) Proximity Safety Sensor
- (g) Tension Control Coil Spring Lever
- (h) Low Roll Detection Sensor
- (i) Product Present Sensor



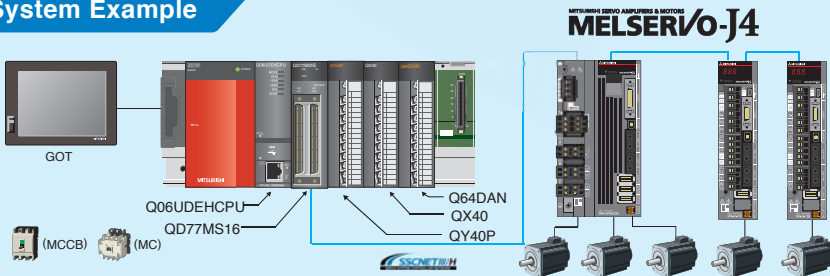
Issues at production sites

Issue 1 Stabilizing the packing quality
➔ **Synchronous Control**

Issue 2 Shorter tact time without increasing shock to the machine.
➔ **Cam Control**

Issue 3 A reliable Safety system
➔ **Safety Functions**

System Example



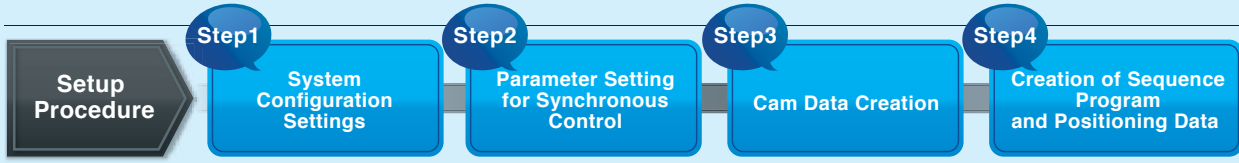
《Mitsubishi solution》

| | | |
|-------------------------------|-----------------------------|----------------------------|
| Simple Motion : QD77MS16 | Servo amplifier : MR-J4W3-B | Servo motor : HG-KR, HG-SR |
| PLC CPU : Q06UDEHCPU | GOT : GOT1000 series | I/O module : QX40, QY40P |
| Analog output module : Q64DAN | Main base unit : Q35DB | |

《Application》

Applications suitable for this machine operation :

- Food/Beverage bag filling
- Pouch packing
- Powder filling

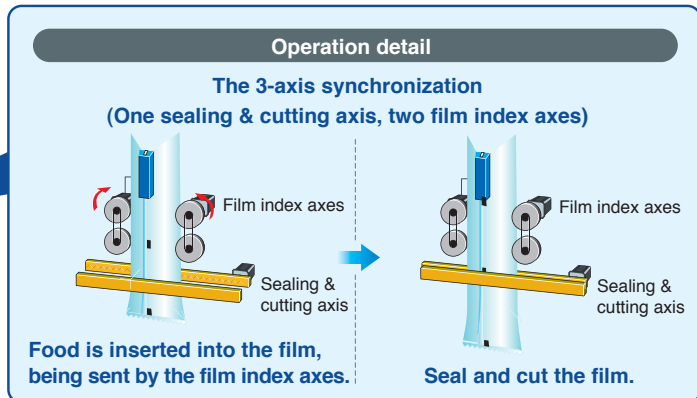
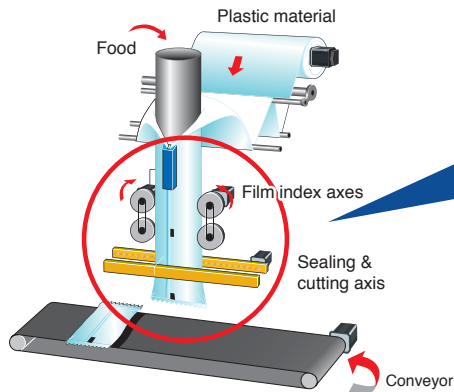


Solution
1

Synchronous Control

High Quality Production & Shorter Tact Time

High-quality production is achieved by improving the process accuracy with the 3-axis synchronous control (One sealing & cutting axis, two film index axes). Eliminating an interlock also enables shorter tact time.

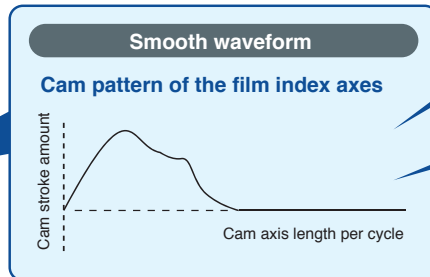
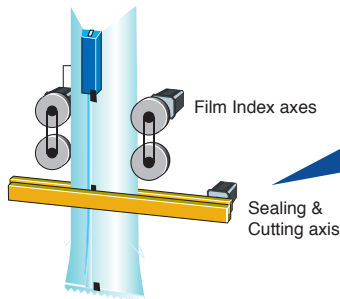


Solution
2

Cam Control

Smooth Sending & Stopping of the Film Material

Cam control enables the smooth sending and stopping of the film material. Thus high-speed operation and the shorter tact time are achieved.



Possible to create the smooth pattern with the cam control.

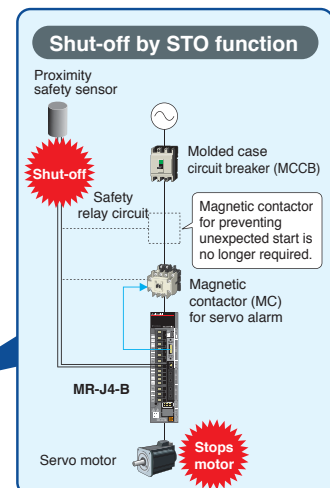
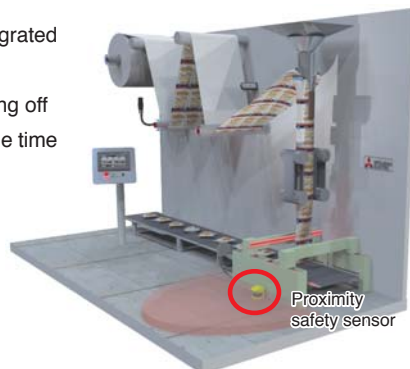
Easily executes the cam control with the Simple Motion modules.

Solution
3

Safety Functions

Compatible with Safety Functions IEC/EN 61800-5-2 as Standard

MR-J4-B series servo amplifiers have integrated STO (Safe Torque Off) function. The machine can stop safely without turning off the main circuit power supply, cutting out the time for restart.



Setup procedure

Step1 System Configuration Settings

Set the servo amplifiers and virtual servo amplifiers.

Step2 Parameter Settings for Synchronous Control

Set the axis-2 synchronous parameter for the axis-9 virtual servo amplifier.

Step3 Cam Data Creation

Create the cam data for the film index axes and the sealing & cutting axis.

Step4 Creation of Sequence Program and Positioning Data

Create a program that starts the synchronous control of the three axes (1 to 3) and the positioning operation of the axis 9.

| No. | Operation pattern | Control system | Axis to be interpolated | Acceleration | Deceleration | Positioning address | Arc address | Command speed |
|-----|-----------------------|----------------|-------------------------|--------------|--------------|---------------------|----------------|-------------------|
| 1 | 0:END | 0:PLC FWD V1 | - | 0:1000 | 0:1000 | 0:00000 degree | 0:00000 degree | 360000.000 deg... |
| 2 | <Positioning Comment> | | | | | | | |

Easy program start

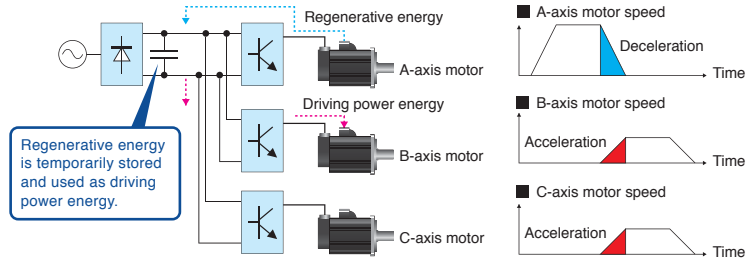
**MELSERVO-J4
Features**

**Reducing Power Consumption, Materials, and Wiring for Machines.
The User Friendliness Strongly Supports Manufacturing Innovation.**

Energy Saving Realizing Energy-conservative Machine Using Regenerative Energy

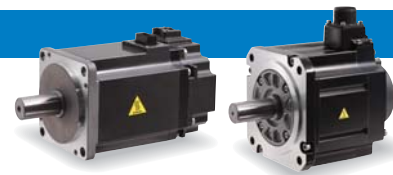
In the multi-axis servo amplifier, the regenerative energy of an axis is used as driving power energy for the other axes, contributing to energy-conservation of whole machine.

"Power Monitor function", which is available with the standard amplifier, enables the visualization of the power flow on screen.



Resource Saving Reducing the Use of Valuable Resources

The new environment-friendly HG rotary servo motor series uses 30% less permanent magnet than the prior HF series due to the optimized design of magnetic circuit.



Reduced Wiring Sharing the Connections Drastically Reduces the Wiring

In 3-axis servo amplifier, the three axes use the same connections for main and control circuit power, peripheral equipment, control signal wire, etc. Thus, the number of wirings is greatly reduced.

| MR-J4-Bx3units | MR-J4W3-B(3-axis type)x1unit |
|---|---|
| <p>(Number of wirings)</p> <ul style="list-style-type: none"> SSCNETIII cable x3 Main circuit power supply x3 Control circuit power supply x3 Magnetic contactor connection x3 Magnetic contactor control x3 Encoder x3 Motor power input x3 <p>Total 21</p> | <p>(Number of wirings)</p> <ul style="list-style-type: none"> SSCNETIII cable x1 Main circuit power supply x1 Control circuit power supply x1 Magnetic contactor connection x1 Magnetic contactor control x1 Encoder x3 Motor power input x3 <p>Total 11</p> |

Reduced wiring by 50%

Advanced One-touch Tuning Quick setting by Just One Click

Servo gains including machine resonance suppression filter, advanced vibration suppression control II, and robust filter are adjusted just by turning on the one-touch tuning function.

— :Command — :Actual operation

Before

- Operation is unstable.
- Operation is not following the command.

After

- Exactly matched. High-speed positioning.

Simple vibration suppression control and adjustable robust filter

One-touch tuning window

One-touch tuning

Man, machine and environment in perfect harmony

Solution



HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS: 1-14, YADA-MINAMI 5, HIGASHI-KU, NAGOYA, JAPAN