mcT
Tecnologie per l' Alimentare

OMRON

# EtherCAT e Visione per il controllo totale dell'impianto

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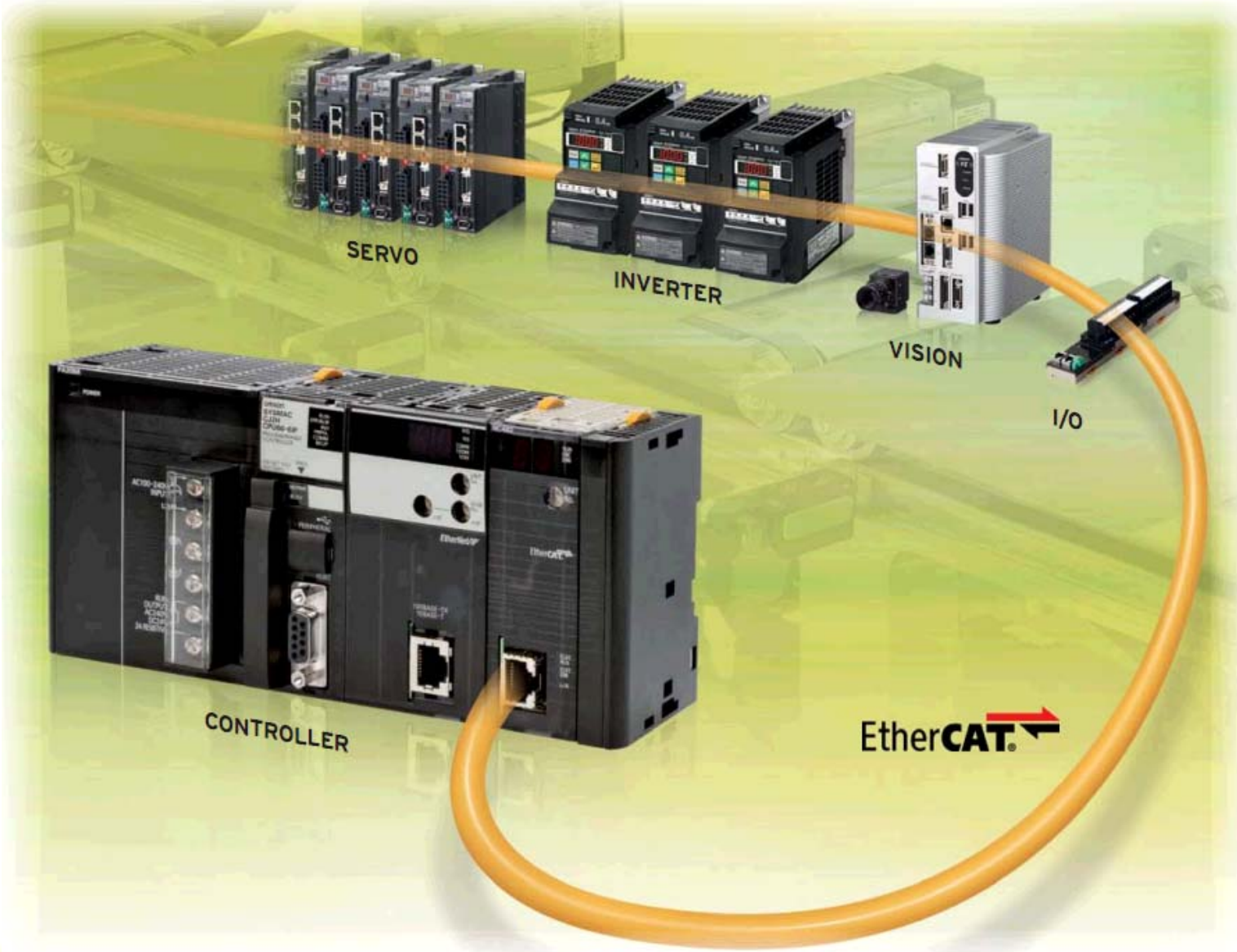
# Soluzioni in Ethercat

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# EtherCAT products

EtherCAT

## Controller

**CJ2 PLC**

- Compatible with CJ1 and CJ2 PLCs
- Control of 16 servo axes
- Support for 64 device nodes
- Circular and linear interpolation
- Linear and infinite axes management
- Position registration capture
- Certified PLC open function blocks

**Trajexia**

- Control of 64 servo axes
- Scalable Motion controller system
- Electronic cams and gears
- Linear, circular, helical and spherical interpolation
- Open communication to PLCs. EtherNet/IP, PROFIBUS, DeviceNet

## Servos

**Accurax G5**

- High-response frequency of 2 kHz
- Safety conforming to ISO13849-1
- High accuracy provided by 20 bit encoder
- Advanced tuning algorithms

- Rotary Motors from 50 W up to 15 kW

- Linear motor solutions

## Inverters

**MX2**

- 200% starting torque
- Torque control in open loop
- Support for permanent magnet motors
- Positioning functionality
- Up to 15 kW

## Vision

**Xpectia FZM1**

- Stable measurements under changing conditions
- Wide variety of positioning measurement methods
- Simple auto calibration
- Flexible camera installation

## I/O

**GX series**

- Simple setup
- Easy wiring
- High-speed input

**SmartSlice for Trajexia**

- Up to 64 I/O units per station
- Screwless wiring
- Hot-swap with auto-restore

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# Controllore: PLC

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## CJ2 PLC with EtherCAT

**Complete and compact machine controller**

In the minimum of space you can have a complete and powerful position control system when combining the Omron CJ2 PLC, the CJ1W-NC(EtherCAT) unit and the G5 servo drives with EtherCAT built-in. This configuration offers up to 16-axis positioning with linear and circular interpolation, as well as support for 64 I/O, inverter and vision device nodes over the network.

**Scalable and modular solution**
- CJ1 and CJ2 family CPUs available
- EtherCAT masters for 2, 4, 8 and 16 axes
- Wide range of CJ PLC modules

**One Machine network**
- Servo
- Inverter
- Vision system
- Distributed I/O

- Position controller supporting up to 16 servo axes
- Support for 64 I/O, inverter and vision device nodes
- Compact unit compatible with CJ1 and CJ2 PLCs
- Circular and linear interpolation
- Linear and infinite axes management
- Position registration capture
- Zone outputs (CAM outputs)
- Certified PLCopen motion control function blocks: Part 1 and 2
- Support for servo, inverter, vision system and I/O in a single EtherCAT network

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# Controllore: Trajexia

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## Trajexia with EtherCAT

### Total freedom in motion control

The stand-alone Trajexia controller TJ2-MC64 together with an EtherCAT master TJ2-ECT provides a significant improvement in machine performance and accuracy allowing you to run your machines faster. Controlling all 64 axes with a minimum system cycle time and with the use of 64 bit integers, Trajexia TJ2 ensures the fastest operation at the highest accuracy. It is ideal for highly-demanding packaging, printing and textile machines. As you would expect, a wide choice of best-in-class actuators are available to meet your needs in terms of size, performance and reliability.

**Powerful motion control**
- Single axis moves and axes interpolation
- Electronic cams and gearboxes
- Control of SCARA and Delta robots

**One Machine network**
- Servo
- Inverter
- Vision system
- Distributed I/O

**Intuitive and powerful programming**

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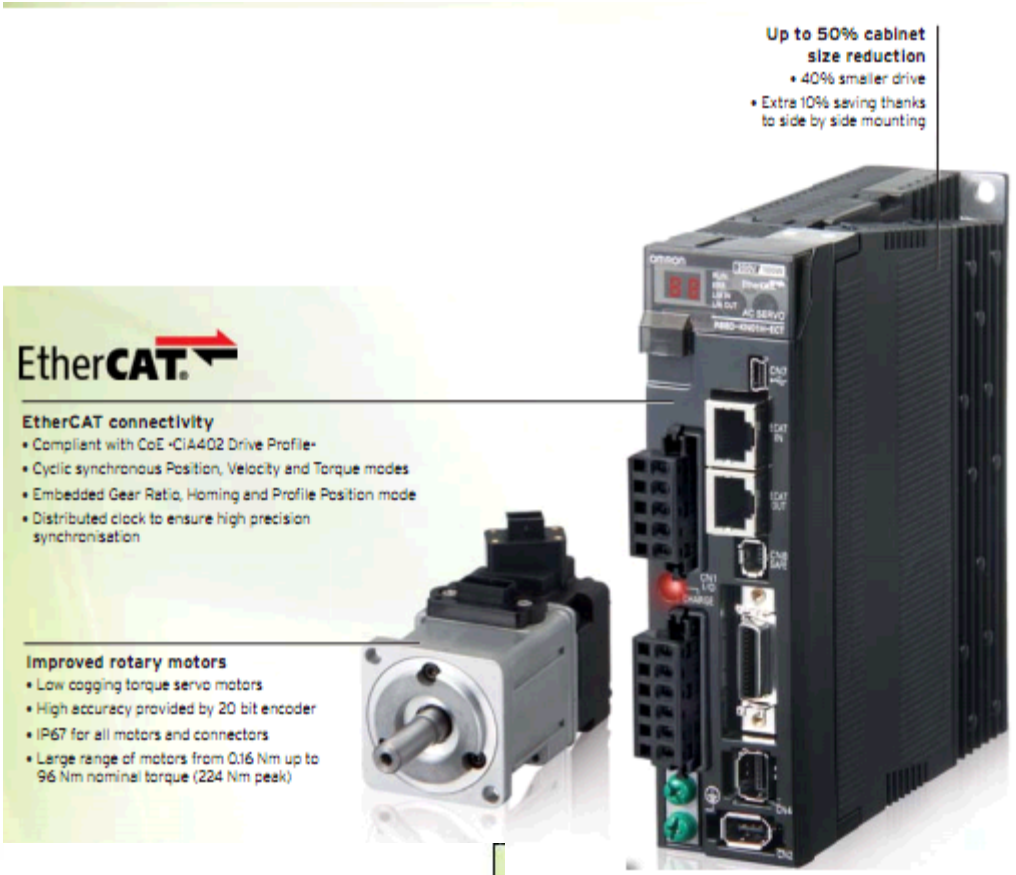
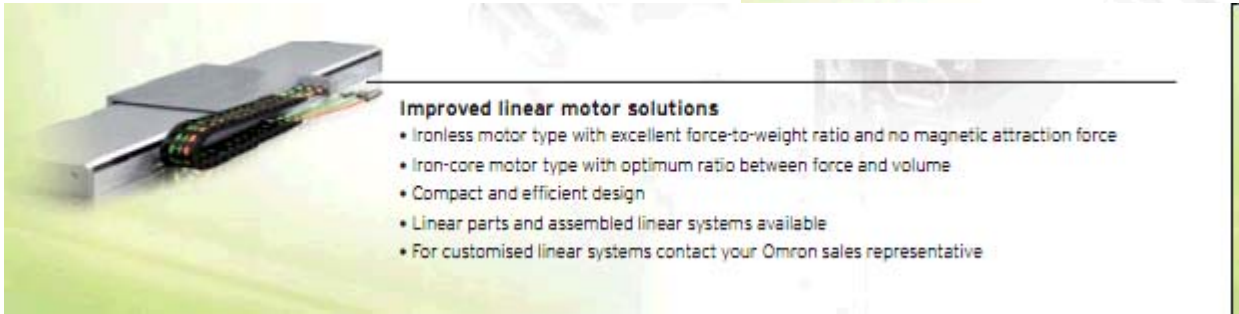
# Servoazionamento in Ethercat

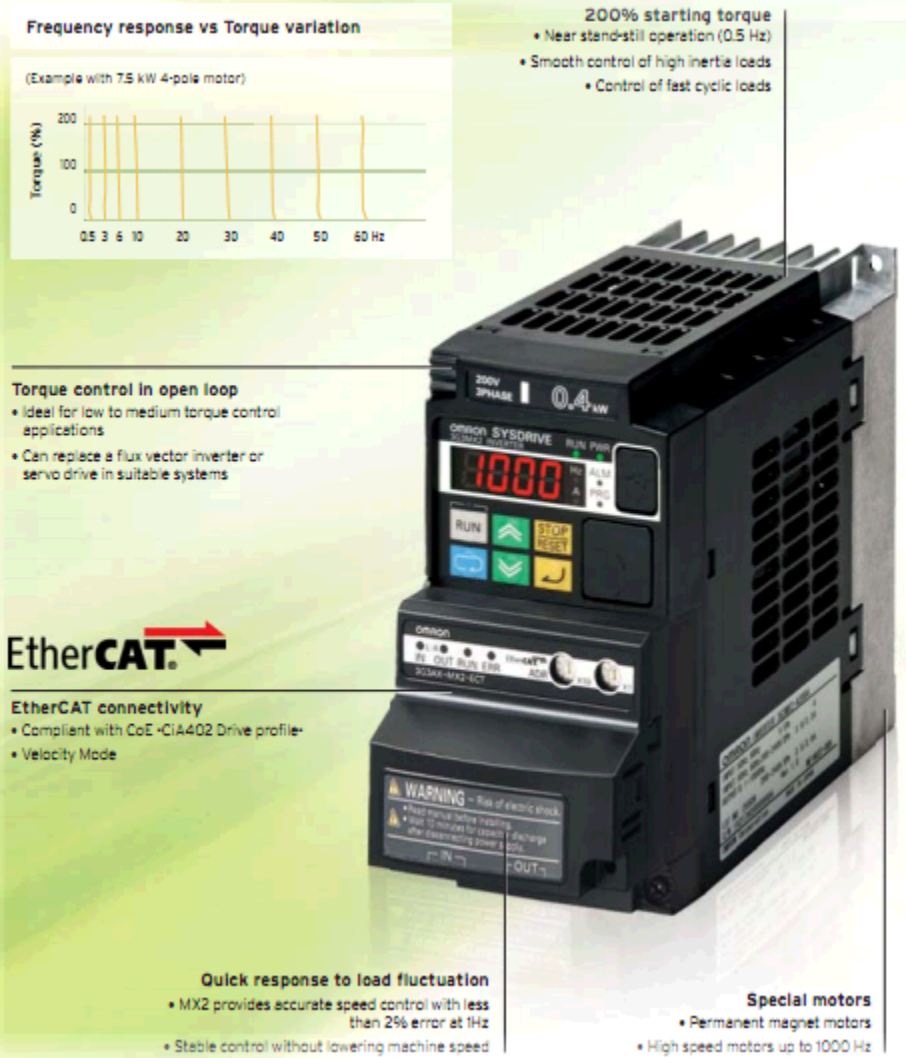
Great machines are born from perfect match between electronics and mechanics. Accurax G5 gives you that extra edge to build more accurate, faster, smaller and safer machines.
You will benefit from an almost 25% reduction in motor weight, and gain 50% cabinet space.



# Inverter in Ethercat

Thanks to the advanced design and algorithms, the MX2 provides smooth control down to zero speed, plus precise operation for cyclic operations and torque control capability in open loop. The MX2 is fully integrated within the Omron automation solutions.

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# I/O remotati in Ethercat

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## GX Series Block I/O

### High-speed remote I/O terminals

An extensive line-up of digital I/O terminals, analogue I/O terminals and encoder input terminal are available for EtherCAT connectivity. The wiring type of the digital I/O terminal can be either screw terminal block or e-CON formats, it's your choice.

EtherCAT

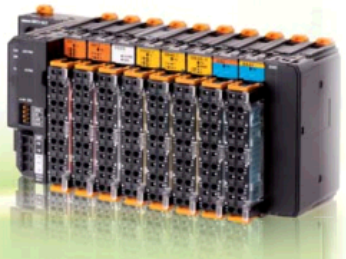
**GX I/O features**

- Easy installation and wiring, all modules have EtherCAT connectivity built-in
- Simple setup, EtherCAT node addresses can be easily set with a simple rotary switch
- The allocation area of the remote I/O terminal is automatically decided by simply setting the node address
- High-speed input
- The digital I/O terminals are equipped with high-speed input functionality, ON/OFF delay of 200 µs max.
- Digital input filter prevents malfunction when status is unstable due to chattering or noise. Available input filter values are 0 ms, 0.5 ms, 1 ms (default), 2 ms, 4 ms, 8 ms, 16 ms and 32 ms

## SmartSlice

### Plug-and-Play I/O for Trajexia

SmartSlice I/O units extend Trajexia's I/O capability with digital and analogue I/O units, ranging from basic relay outputs to configurable temperature inputs. All SmartSlice units feature screwless 'push-in' I/O wiring, detachable I/O connector, and hot-swap capability. The SmartSlice EtherCAT "coupler" automatically scans the connected I/O units at startup. The Trajexia controller with EtherCAT master will automatically map the detected I/O data to its designated I/O allocations.



EtherCAT

**SmartSlice I/O features**

- Up to 64 I/O units per station
- Automatic I/O assignment
- Easy configuration backup
- Hot-swap with auto-restore
- Optional address setting

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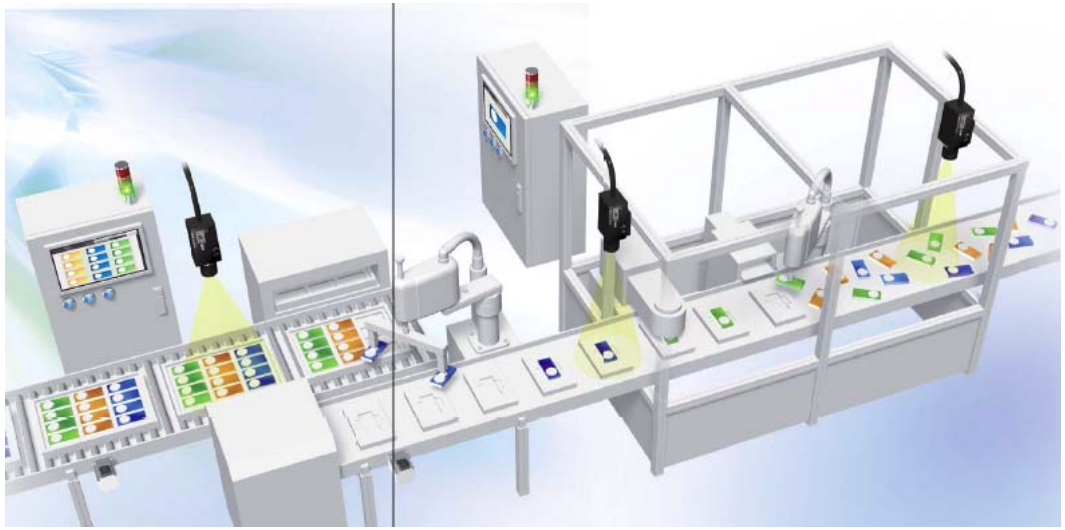
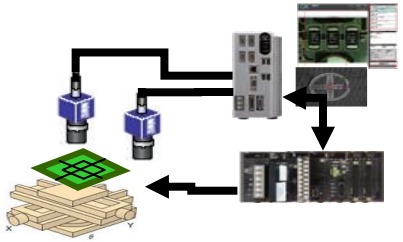
# FZM1: Vision System for Motion



**For DELTA and SCARA ROBOTS**

**For Motion Stage**



Feature

- EtherCAT communication
- Additional Measurement Items for Positioning
  Measurement : ECM search M , EC Corner , EC Cross ,etc
- New Automatic calibration for Robots and XY and UVW stage.

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# User oriented Vision

Xpectia FZ

FlexInspect

**Value added functionality**

FUNCTIONALITY

**ZFX**

**ZFV**

**FQ**

**Ease of use**

**Flexibility**

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# Inspection with Real Colour

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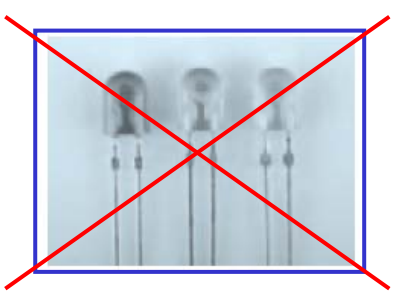
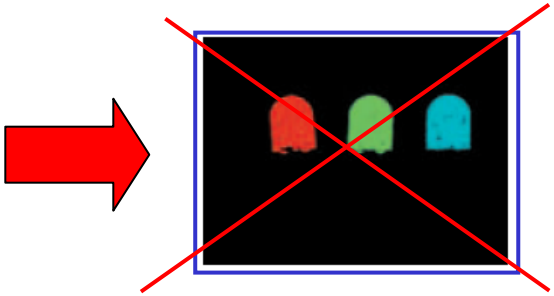
The Vision System sees what I see!

No color filters required

Stable & Reliable Control on different objects!





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# Inspection with Real Colour

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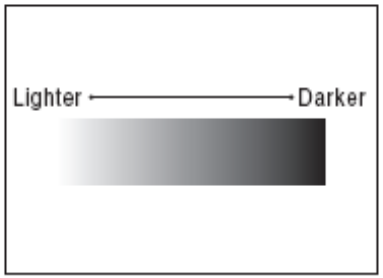
The same control on different objects!

■ 256 colors

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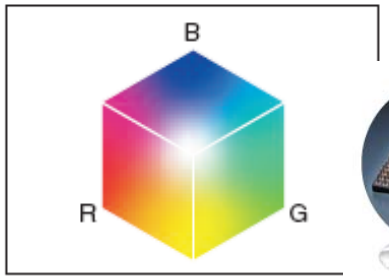
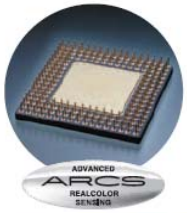
■ 16.77 million colors




**ARCS on FZ3**
**(Advanced Real Colour Sensing)**

# *Easy Setup!*

Just draw your control!

Flow Chart Program

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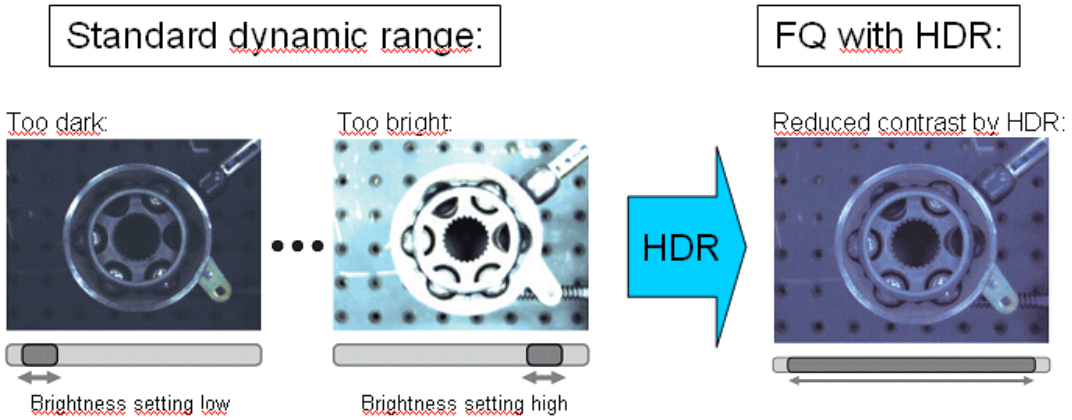
# Perfect Image!

## Polarization Filter

## HDR Function

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# Perfect Image!

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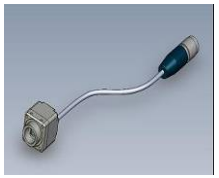
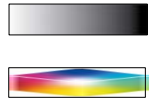
Intelligent cameras:
Auto: focus, zoom, lighting

Micro cameras:
Cube & cylinder





VGA Cameras

**High resolution**

**5 MPixel**

**2 MPixel**

**NEW!!**

**Omron High Speed Camera (4,9 ms)**

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# Perfect Image!

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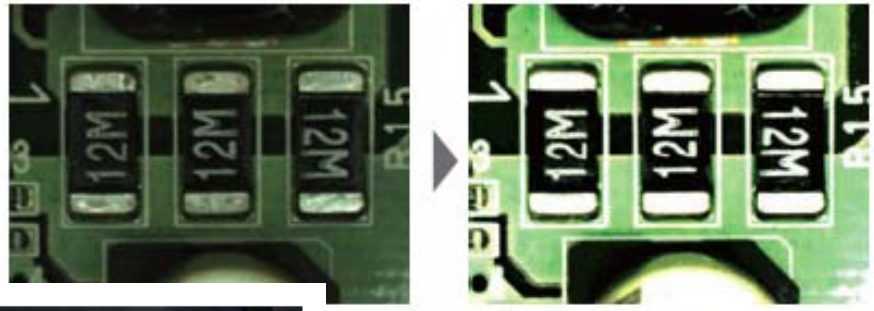
Background Suppression

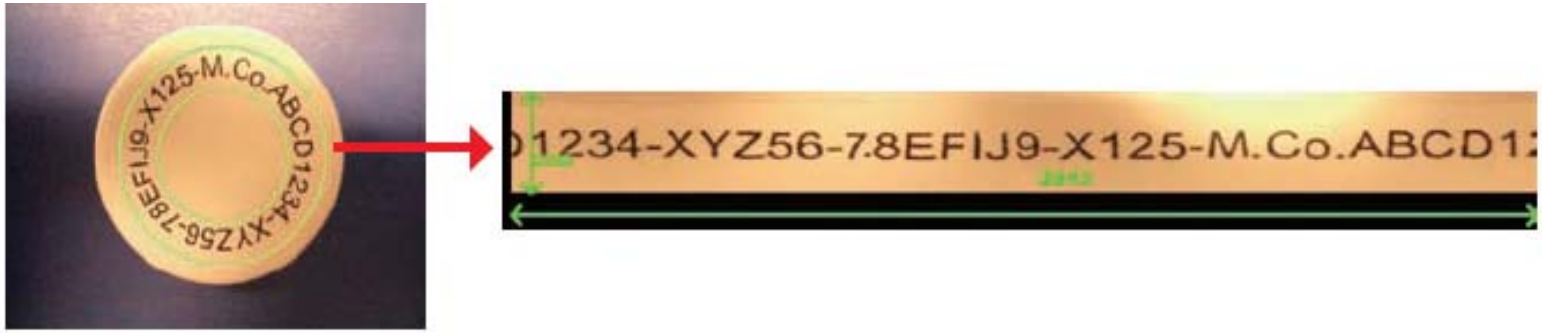



After processing

Trape-zoidai Correction

Before processing

After processing

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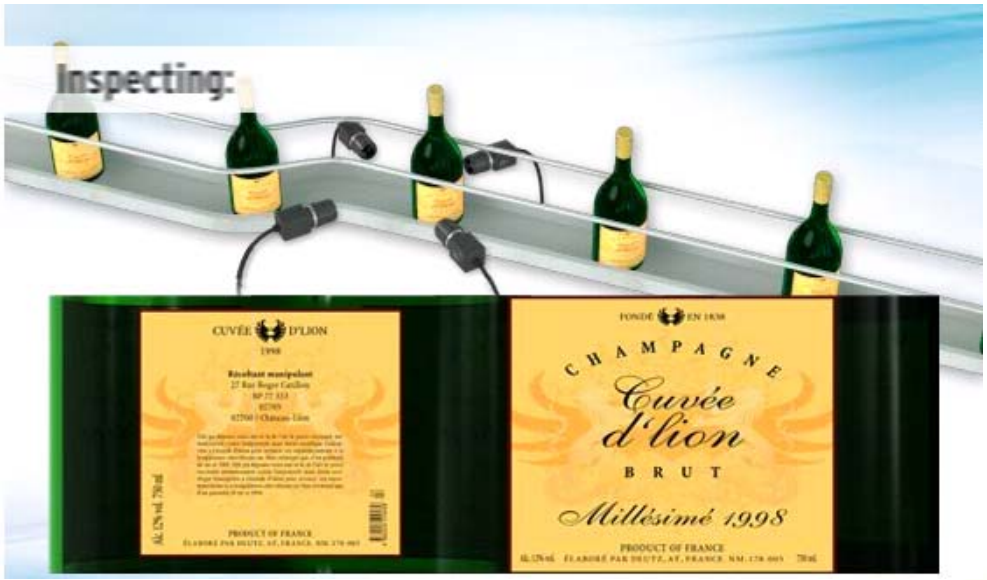
# FZ: FlexXpect

FlexInspect Pharma

**FDA compliance:**
**21 CFR Part 11**




FlexXpect Labelling

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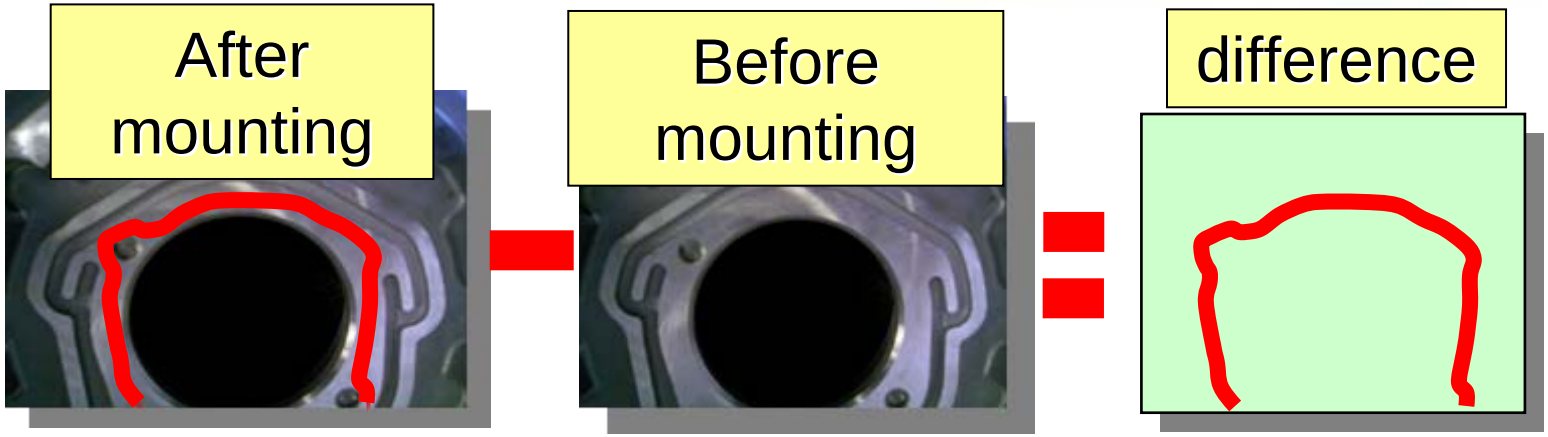
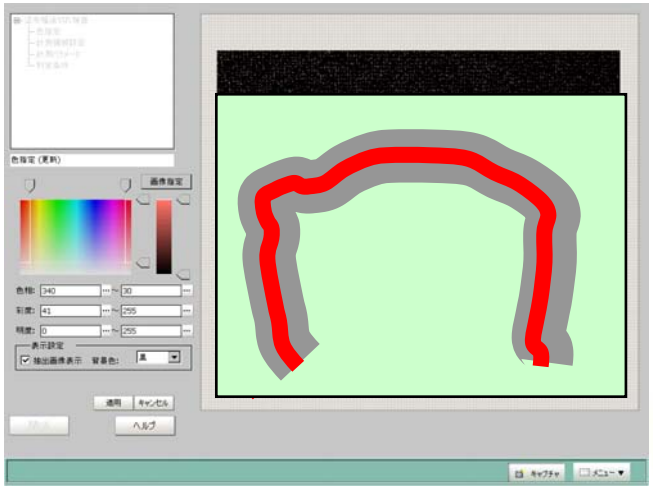
# FZ: FlexXpect




FlexInspect Glue Bead



..and much more!

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# Thank you!

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