SEIKA SANGYO

Systems

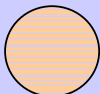powered by

ROBOTYS s.r.l.
Robotics & Systems

Conveyor tracking
Synchronization between robot and moving objects

Vision System
Search – Measuring - Inspection

Integrated Robot systems
The eyes of the robot

Seika Conveyor Tracking *powered by Robotys s.r.l.*

It's an option to pick up or place parts moving on conveyor. Conveyor tracking is used to synchronize the motion of the robot with the motion of the conveyor. The job is executed regardless of conveyor speed.
This option enables an easy robot integration into any production lines utilizing existing conveyor not controlled by the robot

Synchronization between robot and moving objects

- **CONVEYOR POSITION**

The robot can be easily calibrated to follow an object on the conveyor regardless any position and orientation relative to the robot.

- **CONVEYOR SPEED**

The speed of the conveyor can be changed by Inverter unit. The robot will adjust its path according the object speed.

- **SYNCRONIZATION SWITCH**

A synchronization switch indicates the presence of the objects on the conveyor enabling the start of the monitoring by PLC.

- **WORKING AREA**

A maximum distance can be set by teach pendant to limit the robot linear movement out a safety area.
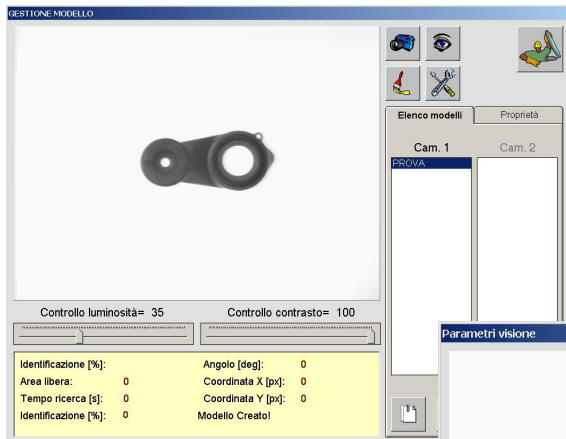
- **ENCODER**

The position and the speed of the conveyor is registered by an encoder installed on the conveyor unit.
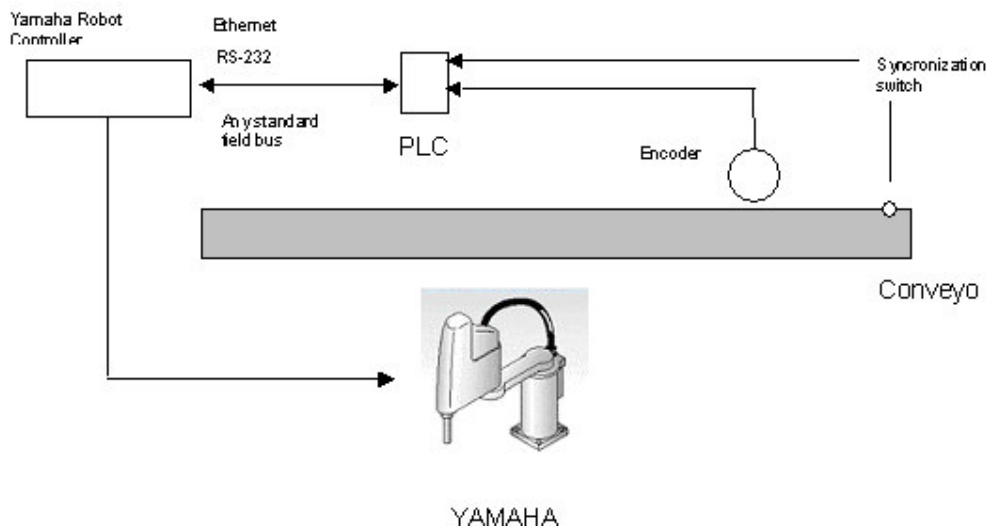
Seika Vision powered by Robotys s.r.l.

- Search - Measuring
- Inspection

Every time you have to recognize, to sort, to measure, or to evaluate objects, this package is what you need. It's a Windows-based tool designed to let you develop integration of the power of machine vision into automated equipment. It is possible to define search and measure model with a multitude of criteria to either accept or reject items.

IMAGE PREPROCESSING
Seika Vision includes several operations to improve the feature of object You wish to inspect:
- brightness and contrast adjustment,
- Spatial filtering operations
- Morphological operations

IMAGE ANALYSIS
In order to have the most complete tool for imaging analysis, Seika Vision supplies the measurement expanding possibility:
Measurement operations. These operations allow you to locate edges or pairs of edges (known as stripes) and measure their features.

PICKING UP CONSTRAINS
You can set an area surround the target item defining either overall tool dimension or whatever constrains. If this area, during the investigation, wouldn't be free, the target part might not be picked up.

SEQUENCE OF INVESTIGATION STATEMENTS
In many applications, it is useful to know where, in the image, something is located.
A sequence of investigation actions allows:
- a progressive screening of items.
- a sequential improvement of coordinates generation

MODEL MODIFICATION
If necessary, you can "clean" it manually by external disturbances eliminating any reflections or imperfections in the model.

PERSPECTIVE AND OTHER SPATIAL DISTORTIONS COMPENSATION
To correct perspective and other spatial distortions, you can use an image of a user-defined grid.
Our calibration tool compensates the following type of distortions:
- Non-unity aspect ratio distortion:
- Rotation distortion
- Perspective distortion

CALIBRATION
Using Seika Vision, you can calibrate your imaging set-up so that pixel coordinates map to world coordinates needed for the robot movement generation.

HARDWARE INTERFACE
This vision tool package is designed by Software classes providing a large flexibility to support the integration of several vision tool into a wide range of automated equipment.
The basic package allows the connection to any device which is equipped with:
- i/o synchronization signals
- serial interface RS232 C / RS422 / RS485
- industrial Ethernet/profibus

Seika Integrated Robot System powered by Robotys s.r.l.

Integrating conveyor tracking module and vision, You can evaluate and sorting objects coming random by a robotic unit.
The software translates the data coming from the system into robot coordinates.
Basically, the hardware provides the use of **progressive scan camera**. The trigger shutter function enables the camera to capture images at any given timing allowing the image acquisition of moving object without stopping it. The vision system measures the position and orientation of the objects on the conveyor and it transfers this information to the robot via ethernet or serial connection. Simultaneously the robot traces the parts using an encoder connected to the conveyor.

The eyes of the robot
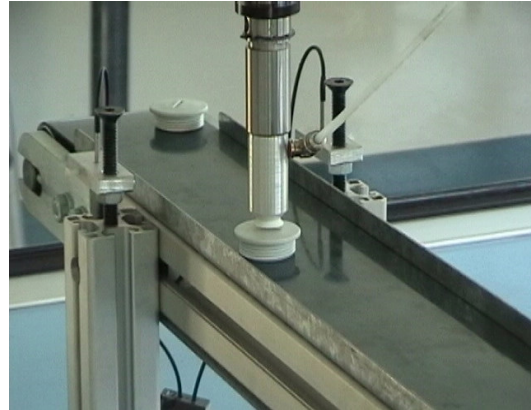
FEATURES
Vision
- Defect detection
- Product type sorting
- constant images immune to external disturbances such as variation in brightness
- Vision accuracy: 0.01 mm depending on imaging resolution
- Camera acquisition time: 50-200 ms
- Easy Calibration (coordinate transformation between camera and robot systems) to accommodate the various position mounting cameras: fixed or robot on board
- Up to four cameras

Conveyors
Easy integration of any existing hardware
Free conveyor positioning relative to the robot

PERFORMANCE

Conveyor Speed [mm/sec]	Repeatibility [mm]
200	0.8
400	1.5
800	3.5
1000	10
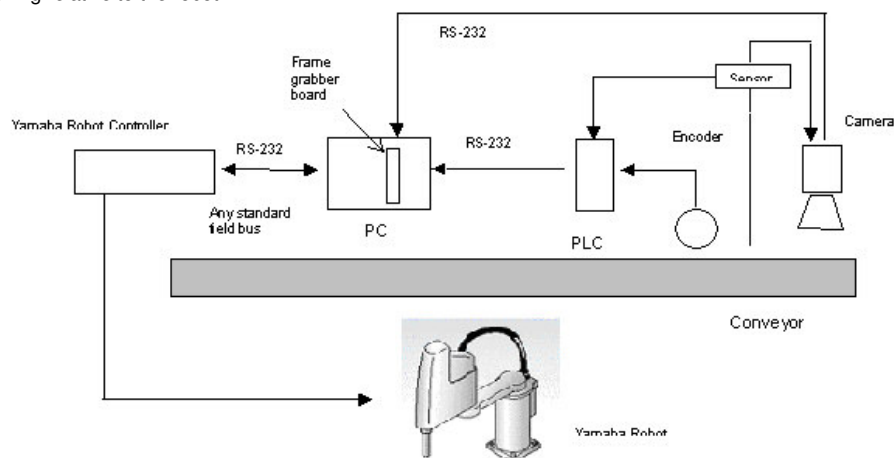
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