

**Subject:** Report of MELFA-3D Vision Ver.1.2.0 release

**Applicable to:** F series  
(CR750/CR751 series robot controller)

Thank you for your continued support of Mitsubishi industrial robot “MELFA”.

This Technical news describes the new version 1.2.0 of the MELFA-3D Vision.  
4F-3DVS2-PKG1 / 4F-3DVS2-PKG2 (Only for model less. There is no sale in Japan.)

In order to use the functions described in this technical news, you need to upgrade to the latest version software in the control unit. And you need to upgrade to the version 2.14Q later RT ToolBox2.

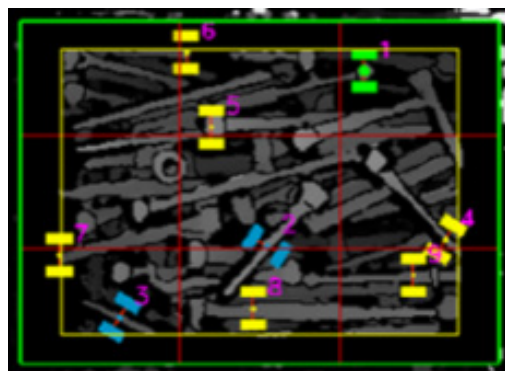
Please contact the nearest sales office for the latest version of the software in the control unit. And you can download the latest version of the RT ToolBox2 from MITSUBISHI ELECTRIC FA site.

## <Shortening the cycle time>

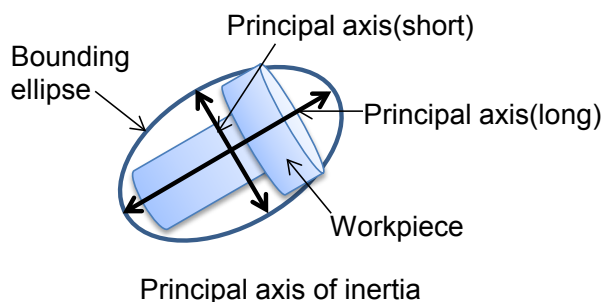
- For the improvement of the gripping success rate and cycle time, some new recognition methods were added.

### 1. Features of the principal axes of inertia were added. (model-less recognition)

- The gripping success rate can be improved using new estimation method of the rotational angle in the sensor image plane.
- Feature values can be used for narrowing targets.



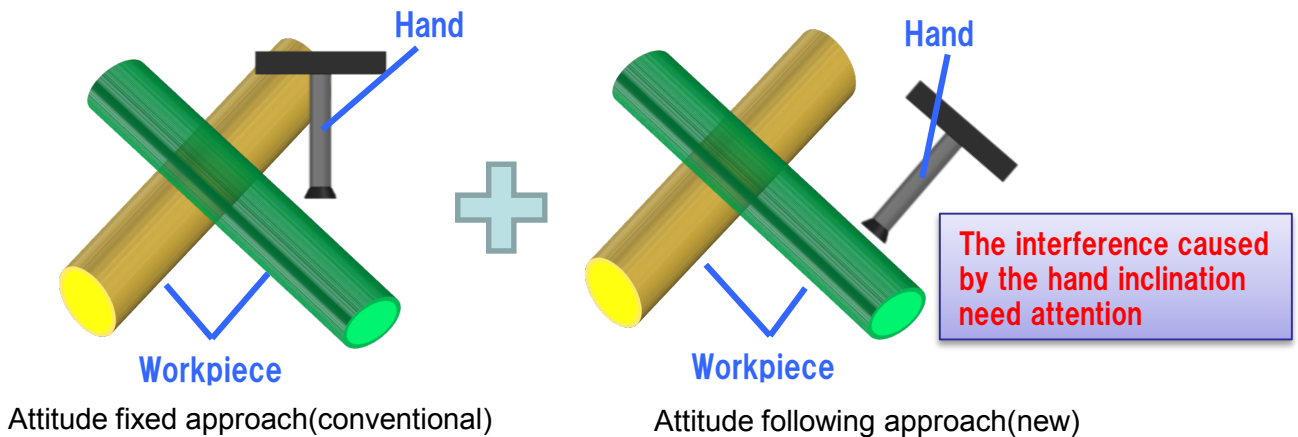
Example of recognition



If the aspect ratio is not stable close detection posture to 1, the conventional process (hand rotation detection) is valid.

## 2. Attitude output mode is added. (Model-less recognition)

- The way of grasping along the workpiece attitude is available.
- The way of outputting in the robot coordinate system is added.



## 3. Performance refinement (Model matching recognition) Only 4F-3DVS2-PKG1

- Improvement of workpiece detection time of a large size workpiece.
- It came to be able to perform recognition of the work (ex. Cylinder) in which an angle becomes unfixed.

## 4. Expansion of the number of recognition items.

- Expand the recognition number to be output to the robot (the upper limit 10 → 50 pieces). (\*1)  
It will lead to the cycle time improvement.

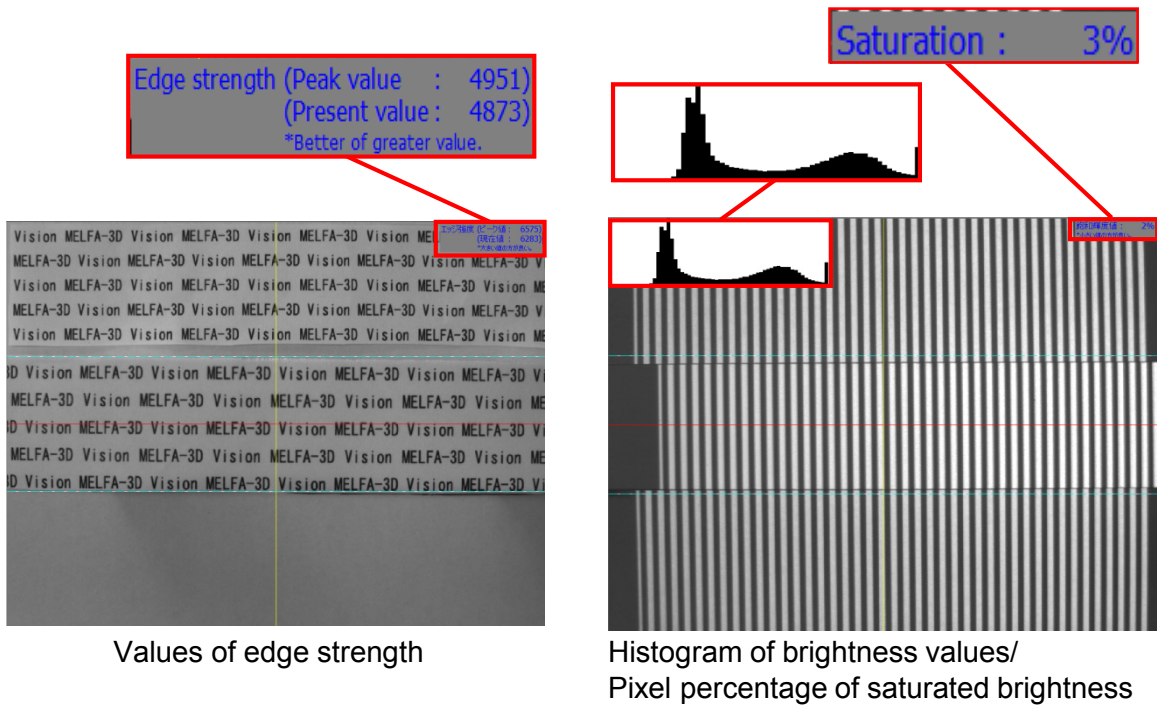
\*1)The maximum number of output is limited by the firmware version of the robot controller.  
(Before Ver.R6e : limited 10 or less)

## <Add the function of tuning up >

### ●Assisting functions for tuning up parameters addition

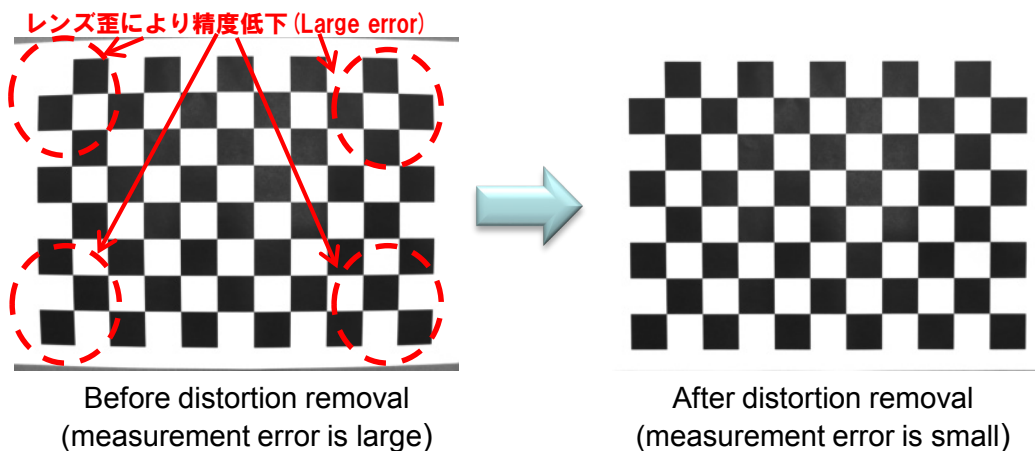
#### 1. Assisting functions for the camera and the projector

- Displaying function is added which indicate numerical values of the camera's and the projector's edge strength. Also displaying the histogram of brightness values. These are brought to much easier parameter adjustment.



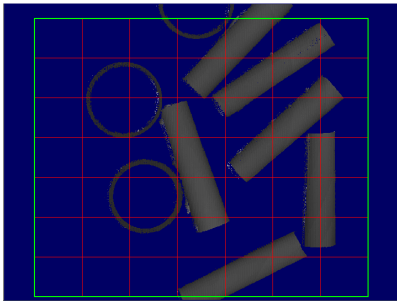
#### 2. Lens distortion correction

- More powerful lens distortion correction method are equipped. Because of measurement error reducing by this method, the success rate of gripping parts are refined.

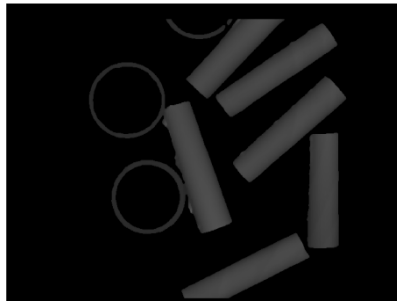


### 3.Assisting function of parameter tuning (model-less recognition)

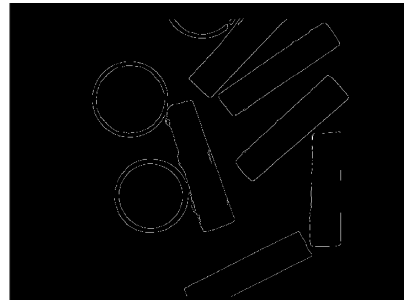
- By checking the process image of each step, easy parameter tuning is available.



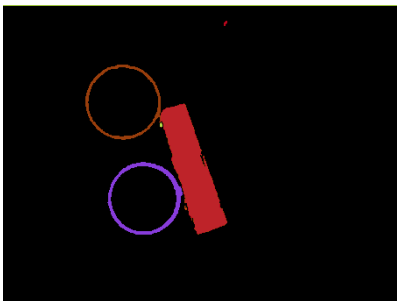
Depth image



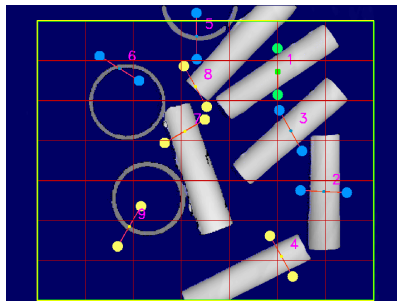
Depth image(Floor removed)



Edge detection image



Labeling image



Recognition result image

## <Others>

### **1.Region of interesting (ROI) settings refinement**

- Region of interesting settings were refined. XYZ setting available(Model-less recognition)
- Region of interesting settings were refined. XY setting available(Model-matching recognition)

### **2.Parameters item change (Model-less , Model matching recognition)**

- Due to the above changes, adding some parameters, integration, and the initial values change.

### **3.Status monitoring**

- To inform that the control unit is up to the robot controller, the ready signal output function was added. As a result, the state of the control unit (start-up is complete, normal operation, termination) can be monitored from the external devices.

(End)