This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at partnersupport@motoman.com for updates or clarification.

Data Needed for Machine Tending Reach & Cycle-Time Studies

Introduction

For a simulation to produce accurate results, specific kinds of data are needed from the customer, or the simulation results will fail.

Below are lists of common and unique data types required for a successful simulation.

List of Data Needed for Generic Handling Simulations:

Below are 8 data types needed for a Machine Tending simulation.

1. **3D Model of the Cell Layout**
    a. If a 3D model is not available, then a 2D drawing can be used, but there is less accuracy, and it may take longer to construct a 3D sim.
    b. 2D drawings need to include a plan view and elevation view
    c. If there is no layout, then the results will be simply conceptual.
2. **3D Model of the Tool**
    a. If cycle-time results are needed, then the tool mass and Cg will be required.
3. **3D model of the Part to be picked**
    a. If cycle-time results are needed, then the parts mass and Cg will be required.
    b. This needs to be the largest/heaviest part the robot will pick.
4. **Process flow of the Cell layout**
    a. A visual order of operations. Where is the robot picking and placing?
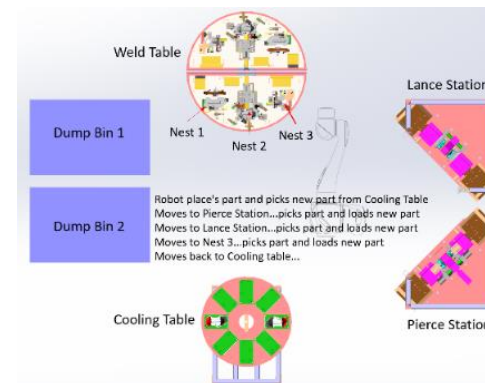   b. Can be an image, PowerPoint, video, or 3D model
5. **Tool Actuation Time**
    a. The time it takes the tool to activate
6. **Machine Actuation Time**
7. **If Injection Molding…provide the press open time and open distance**
8. **Customer requested Cycle-Time***…if needed*

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About CAD Model Formats

When importing 3D models into MotoSim, the best CAD formats are in this order:

1. Original CAD format (Solidworks, Inventor, CATIA, CREO, etc.)
2. Parasolid (x_t)
3. STEP file
4. IGES

Bonus Information:

1. If the robot will be on a track, then the customer will need to provide all the necessary track data

   a. Track direction (X, Y, or Z, or combination of the three)
   b. Rack & Pinion or Ball Screw drive
   c. Motion Range (+/-)
   d. Reduction Ratio (numerator and denominator)
   e. Pinion diameter
   f. Yaskawa Motor model number
   g. Yaskawa Servo amp model number
   h. Converter model number
   i. Rotation direction
   j. Max RPM
   k. Accel Time
   l. Inertia Ratio