



Part Handling

Infeed

Infeed is a key part of your cell. In fact, you need to consider how the parts will be transported to the cell and how the robot will pick them for a reliable insertion in the machine. Parts are usually placed in a bin during the manual process. However, in the automated process, a variety of options are available.

What we usually see is a matrix of parts. This type of positioning is easy to perform for an operator, and is fairly easy to program for the robot. If you need to change the type of part that needs to be machined, you can simply change a couple of things and you are good to go.



Example of structured infeed

If you are limited by the space, the single pick position solution can be used. The operator can stack parts in a distributor for them to be dispensed to the robot when it needs it.

Another solution is the use of belt conveyors. It is a more complex solution since it is less flexible and needs more programming, but sometimes, that is the only way to bring the parts to the robot cell.

We also see unstructured part positionings. This method is used for instance when an operator drops bulk parts on a table. A camera (e.g., the Robotiq Wrist Camera.) can detect all parts and grasp them, one after the other. This method is less used in the industry because most of the people would rather use trays. However, we have seen several applications that use the camera where the presentation of the parts varies. This type of positioning can also be favored when you don't have time to design fixtures or if you are running a small batch.



Example of unstructured infeed

Those options will have an impact on your cell layout but also on your budget: the more complex, the more expensive.

Outfeed

There are a lot of ways to dispense your parts. In fact, depending on your application, you will want to use the method that suits your process. In fact, parts are either placed back in their initial matrix, in a bin or on another conveyor. It comes down to how you want to track your production and how you want to verify your parts. You should also consider that parts placed randomly can be damaged. By separating them you can protect them better. For instance, the outfeed of a machining cell for the aerospace industry has to be more structured and controlled than that of a machine shop.



Examples of Ordered and Structured Outfeed for Part Tracking



Example of Unstructured Outfeed

Testing the New Process

If you have new infeed and outfeed processes, you will want to test them via an off-the-line setup.

In most applications, the action of picking or dropping the part from the ordering device is critical. Make sure to have a consistent process that will increase your robot repeatability and keep track of your parts. You will rather spend a couple more hours testing and bring your infeed/outfeed process to a higher level than losing time while the robot is running.