RR Floody Company Inc
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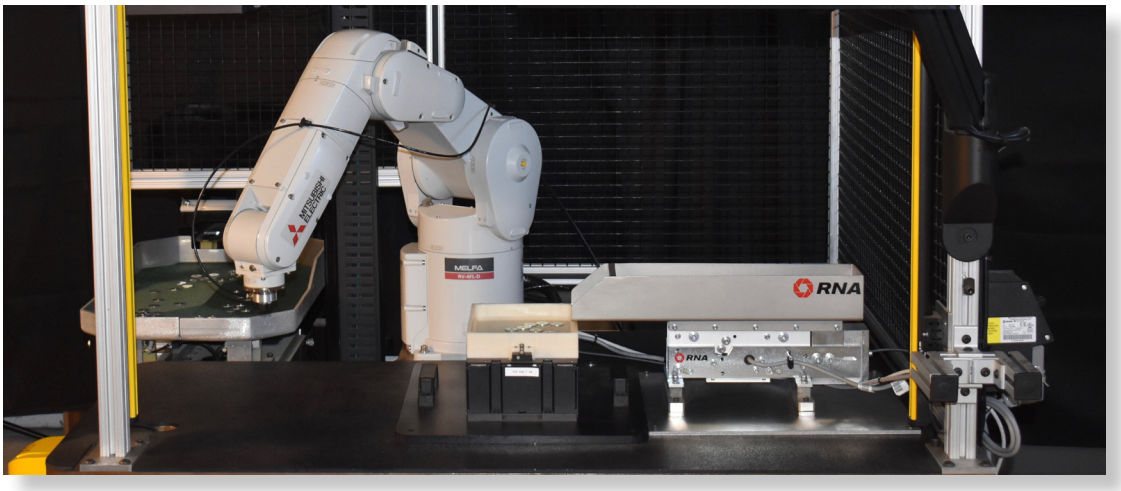
Tech Brief

Does a Flex Feeding System Make Sense for You?



Flexible Part Feeding or flex feeding refers to a process used to feed or load parts into a manufacturing process. A flex feeding system is comprised of a flexible feeder (to feed the part), a vision system (to help the robot locate part) and a robot (to pick and place the part). The main advantage of a flex feeding system is that it allows for different parts to be fed into the same system with little to no effort on the operator's part. With the availability of low cost robots and the variety of high performance flex feeders, flex feeding systems are hot right now but they might not be right for everyone.

Advantages of Flex Feeding

Flex feeding systems offer some great advantages over traditional part feeding system.

- Unlike traditional systems, part changeover can be as simple as a click of a button - saving time and money on change part orders.
- Specific part orientation is not required. A vision system is used to determine part orientation, eliminating expensive fixed tooling for part feeding
- The entire system can be re-purposed to another production line with minimal changes.

Engineered Solution

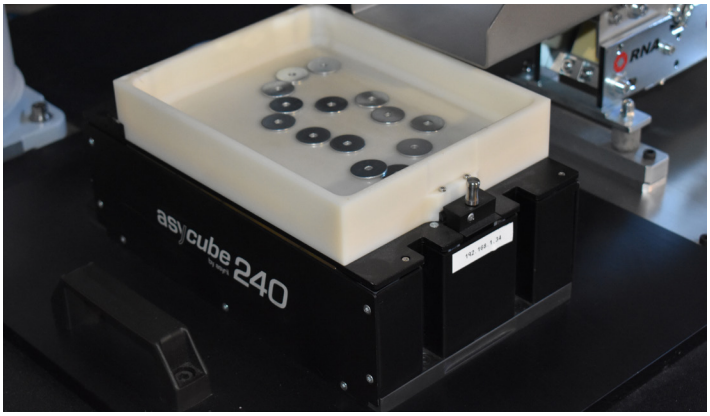
A flex feeding solution is an engineered system. If an application is not evaluated and/or engineered correctly, the chances of having a successful feed system will be uncertain. Let's look at how we evaluate an application to see if it's a candidate for flex feeding.

Three Step Evaluation Process

Typically, a three-step evaluation process is used to determine whether a flex feeding solution makes sense for our customers. Our goal with this process is to eliminate your risk in implementing a new system and make sure that your project is a complete success.

Step 1 - Evaluating which feeder is best for your application.

This step involves studying the size, shape, and condition of the parts as well as the application requirements and then matching them up with the best feeder solution.



Flex Feeder Box

- Part size is another determining factor of the feeder used. Flex feeders are available in many different sizes to accommodate tiny to medium size parts.
- Stable State – how the part lands on the feed surface – is determined. Some parts have one stable state and others have multiple stable states. Simply put, we need to know how many parts land with desired side up and we need to know if we will have to flip the parts in the feeder.
- The condition of the part is evaluated. Parts presented with particulates or oil could require a different feeder than "clean" parts.
- Environment - Will the system operate is a cleanroom or oil mist environment?
- Application Requirements – How many parts are you looking to place in a minute? Typical flex feeder systems can operate up to 60ppm. Additional feeders can be added to increase rate. How much unattended operating time is required?

Step 2 – Machine Vision Evaluation

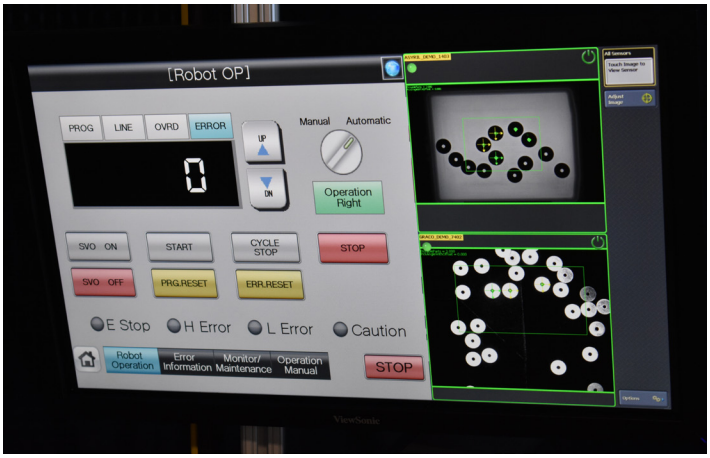
The next step is to complete a vision evaluation to determine how well the system would find your part in the feeder.

- Can the vision system reliably and repeatedly locate the part?
- Can the vision system determine whether the part is right side?
- Can the vision system correctly detect the part's orientation?
- How many parts can be on the feeder before system efficiency is reduced? We don't want to underfill or overfill the feeder.

Step 3 – Provide a Complete Integrated Solution

The final step of the evaluation process is integrating all of selected components together to provide a complete and reliable solution for your process.

Rest easy, our application engineers have already fully integrated the robots, vision systems, and feeders that we offer. The programs for each of the components will be provided to the customer at no charge. This will save weeks of integration time and will create a complete flex feeder solution that we know will work for you.



Interface used to program the robot

When Wouldn't Flex Feeding Work for You?

There are a couple of instances where flex feeding wouldn't make sense.

1) If your process is faster than 60 parts per minute, flex feeding is probably not a good fit. To reach the faster speeds, you'd need to add a second feeder - canceling out any economic advantage flex feeding has to offer.

2) If your line is dedicated to only one part, flex feeding wouldn't be your first choice. One of flex feeding biggest advantages over standard centrifugal or vibratory bowls is that they're tailored for lines with a high part mix.