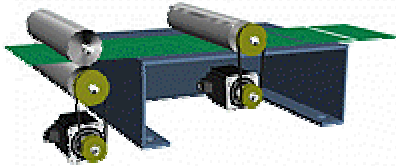




Rotary Knife Application Function Block

Software tools to implement rotary knife applications



This function block makes it easy to implement a full-featured Rotary Knife application with a minimum of programming.

Rotary Knives are used to cut, emboss, print or apply other processes to a moving web.

The knife axis, which has one or more blades or dies equally spaced around its circumference, matches the web speed while making a cut or impression. Since the product length is seldom equal to the circumference, the knife must speed up or slow down when the die is not in contact with the web in order to achieve the correct product length.

ORMEC's Rotary Knife function block provides the following features:

- On-the-fly speed and product length changes.
- Motion cycle verification.
- Cuts/impressions can be registered to marks on the web using the separate OrmAppReg family of function blocks.

Machine Setup Data

Your application provides the following information about the knife:

- Maximum speed.
- Maximum acceleration rate.
- Maximum deceleration rate.
- Blade/Die pitch circle diameter.
- Number of blades/dies per rev.

Cycle Setup Data

The cycle is defined by the following data provided by your program.

- The maximum line speed.
- The product length.
- Registered or free running.
- The angle for which the knife must be synchronized with the web.
- The overspeed/underspeed ratio when the knife is synchronized with the web.

Output Data

The function block provides outputs to tell you:

- When the knife is armed.
- If the line speed is too high.
- If the cycle setup does not have a valid solution.
- A pulse output each time the knife makes a cut/impression.

It also provides the data that defines the motion profile and the results of internal calculations. This can help in investigating cycle setups that don't have valid solutions.

Operation

Setting the Enable input true activates the function block.

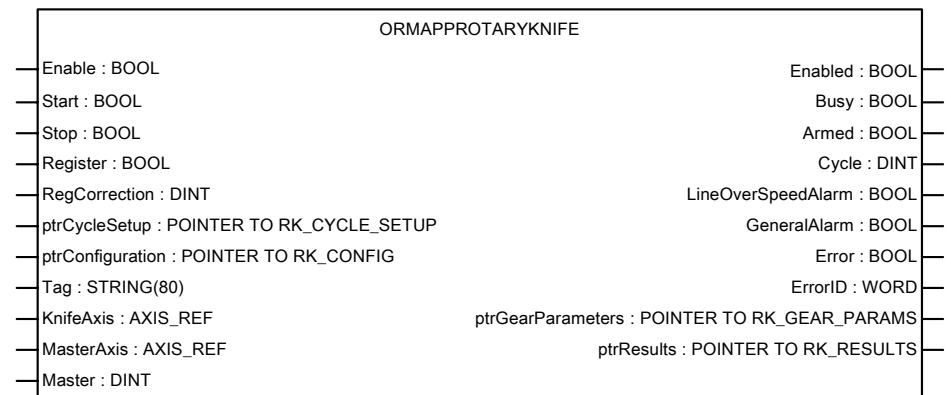
A rising edge on the Start input will then solve the cycle and arm the knife.

A rising edge on the Stop input will stop the knife at its ready position.

Removing the Enable input will stop the knife immediately.

A rising edge on the Start input while the knife is already armed will solve the cycle using any new cycle data values and implement the new cycle seamlessly. Invalid setups are ignored.

The knife adjusts for changing line speed automatically.



The OrmAppRotaryKnife function block showing its inputs and outputs