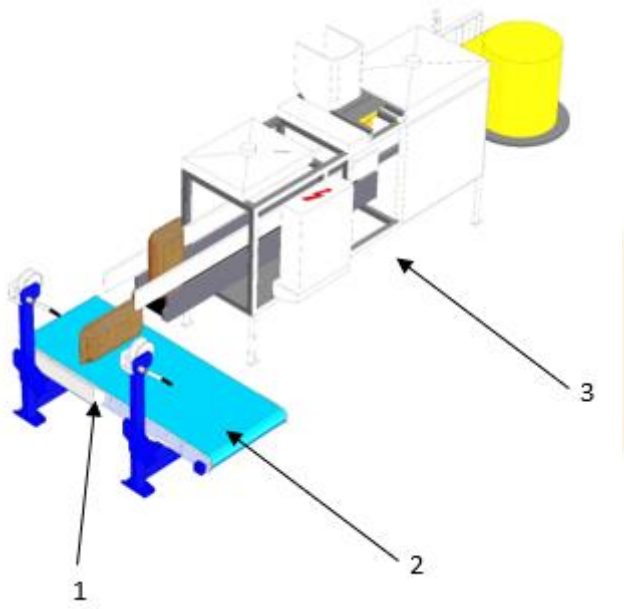
Connection palletizer to packing machine

This is a guide to explain the communication between our palletizers and the baggers that are usually placed before our infeed conveyors.

Impression:



1. Broken bag detection
    - This is a bucket to detect loose product which is falling out of the bag when it is dropped at the receiving conveyor. When spilled product is detected in this bucket, the enabling of the packing machine will be stopped.
2. Receiving conveyor
    - This conveyor is transporting the bags towards the next conveyor
3. Packing machine (not within Verbruggen delivery).

Within our standardized controls we created a specific way to ensure maximum capacity in a controlled environment. We have these signals available to communicate with the packing machine:

1. QEX “Enable packing machine” (dry contact, can be NO/NC) (output from palletizer to packing machine)
2. IEX “Transport of packing machine” (input which can be NO/NC) (output from packing machine to palletizer)

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Basic setup
In the most basic setup there is no usage of the IEX “Transport of packing machine”. If our receiving conveyor has space to allow another bag to be dropped on there, the palletizer will raise the enable signal (QEX “Enable packing machine”). In the basic setup this means that the enable signal is ON as long as the conveyor is moving and is dropped as soon the conveyor pauses.

Advanced setup
Advantage is that we can enable the packing machine longer and more often during pausing of the palletizer. Also we are sure that no bags will be dropped on top of other bags when they come from the packing machine.

In the advanced setup usage of both these signals is required:

1. QEX “Enable packing machine” (dry contact, can be NO/NC)
2. IEX “Transport of packing machine” (input which can be NO/NC)

The QEX “Enable packing machine” will be ON when the receiving conveyor has space to allow another bag to be dropped on that. We will increase the efficiency then by using the IEX “Transport of packing machine”. We need to this signal to be ON, as soon as the packing machine started the final transport of a bag to our receiving conveyor. It can be just a 1Hz pulse, but can also be ON for the complete time of transport. The latest moment it needs to drop is when the bag is delivered on our receiving conveyor.

We then use specific timers to ensure maximum efficiency:

1. Δt_1: Time between IEX “Transport of packing machine” and start drop of bag. This time is to know exactly when a bag is dropped on our conveyor.
2. Δt_2: Time of transporting before next bag can be received. After this time of running of the receiving conveyor, we are sure the next bag can be received and the packing machine will be enabled again.
3. Δt_3: Time to stop conveyor during drop of bag. This time is used to adjust the stopping time of the receiving conveyor at the moment the bag is dropped. We need the conveyor to stop during the drop of the bag when the dropping height of the bag is not big enough. When the bag is dropped on a running belt when the height is not sufficient, the bag will be warped. Since that will decrease stacking result, the receiving conveyor will be stopped a while to ensure straight reception of the bags.