

TAMA Twine

Automation in packaging

July 2020





Problems and Goals – Packaging process



200-
370

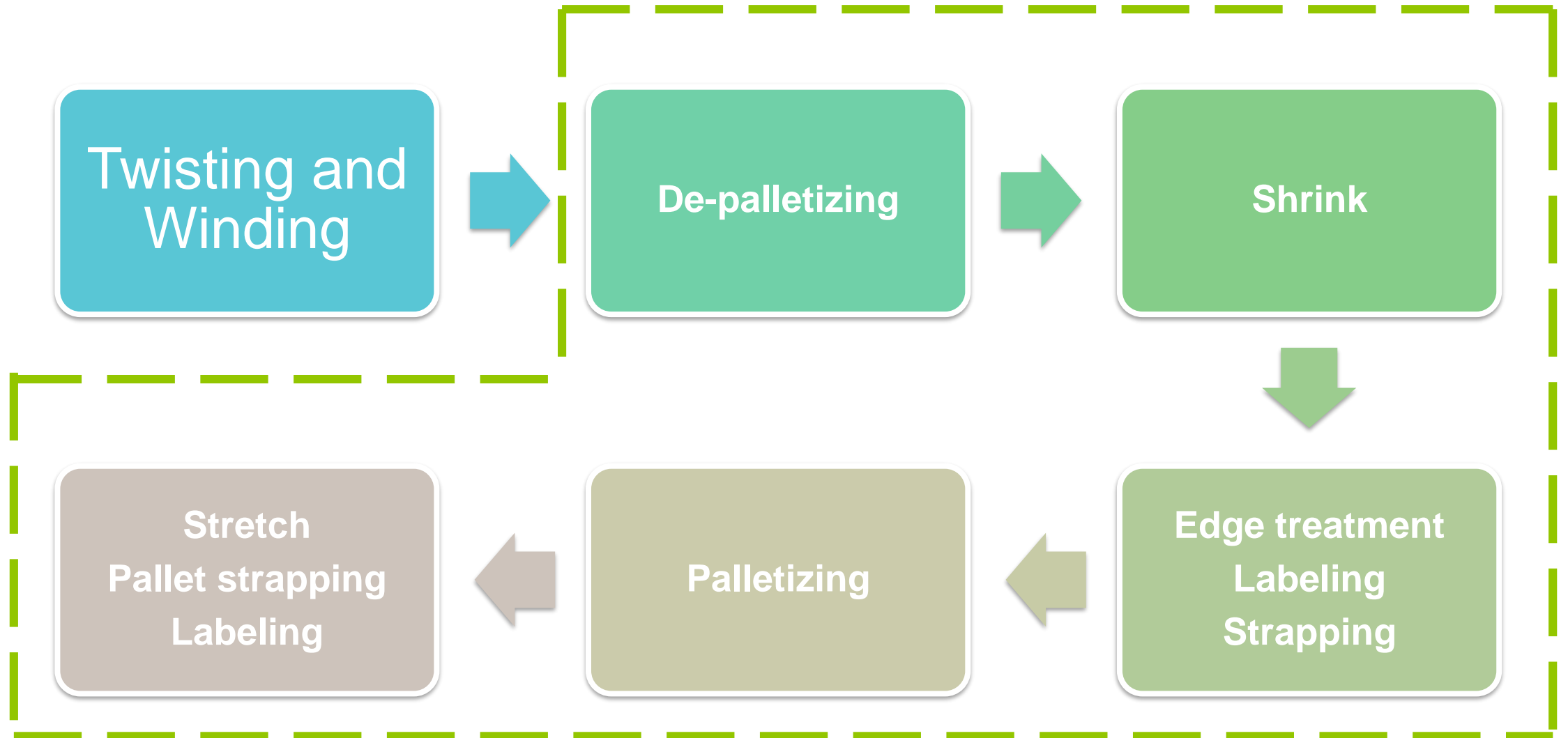


210-
300

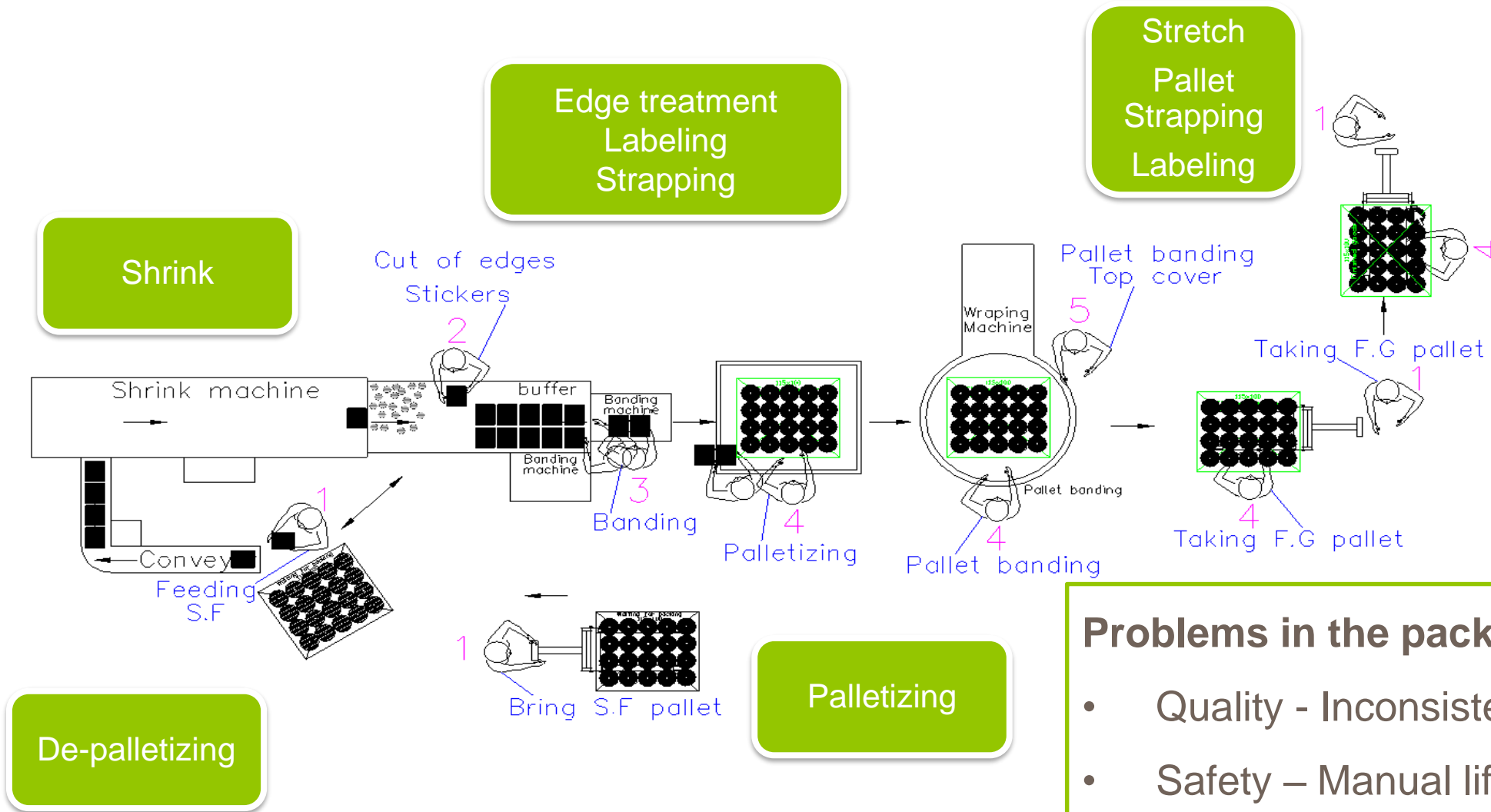


- Shrink sleeve
- Labels
- Twine ends
- Tracking label
- Strapping

Problems and Goals – Packaging process



Problems and Goals – Packaging process



Problems in the packaging process:

- Quality - Inconsistency
- Safety – Manual lifting
- Cost – lots of MANUAL tasks

Solution

From Manual to Automation

How to solve a **problem** in **effective** process and system?

We decided to do it – Step by Step



Solution – Step by Step

- Implement technology - step by step
- Implement the change - step by step

[illegible]

Solution - Move to Automation in 3 Phases:



Why starting with De-Palletizing:

- “Simple” manual jobs
- Don’t affect product design = from customer point of view

Main challenges for De-Palletizing process

- Big variety of products – colors, sizes.
- Un-uniform palletizing

Solution

Project scope and targets:

- Safety - Minimize manual lifting by operators
- Cost - Reduce labor costs in packaging process by replacing human tasks in packaging department

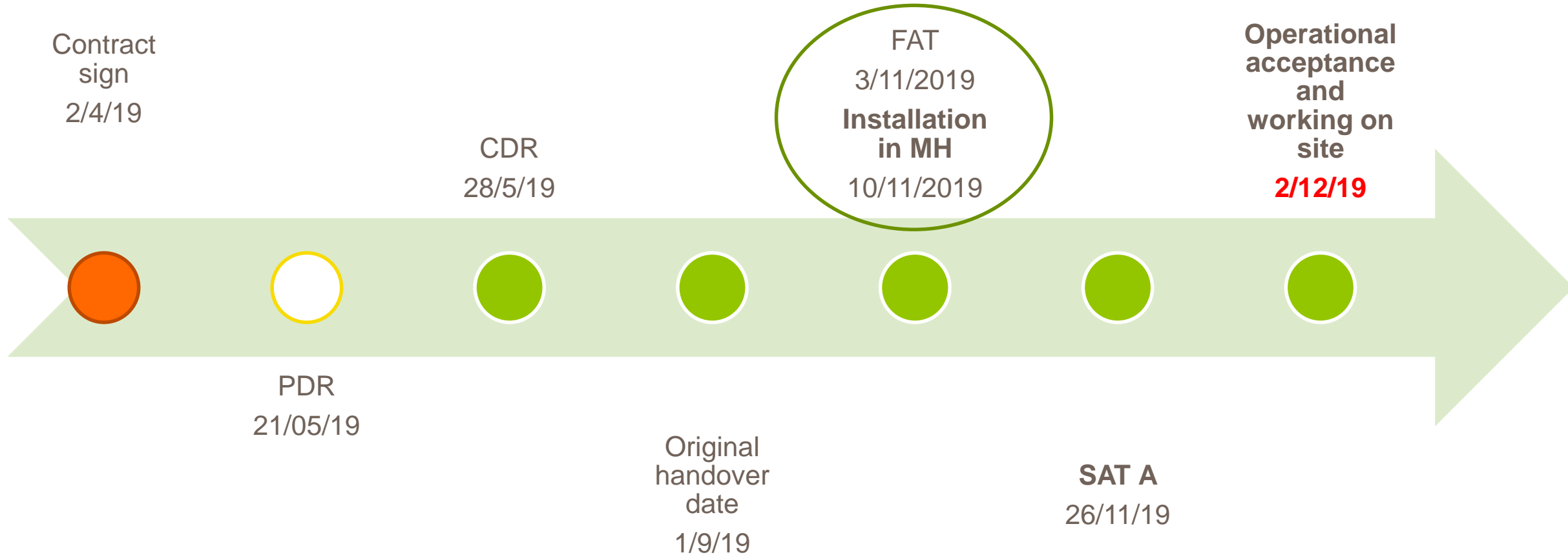
System Requirements:

- **Solution for multiple production sites**
- Easy operating and fast set-ups
- Ability to work with any kind of twine product
- Quantity - Cycle time – 8-10 rolls a minute = **7.5 to 6** seconds a spool
- Quality – No defects to spools

Solution

- **6 axis robotic arm**
- **Unique gripper**
- **Vision system**

Execution – De-Palletizer in MH



Validation

External

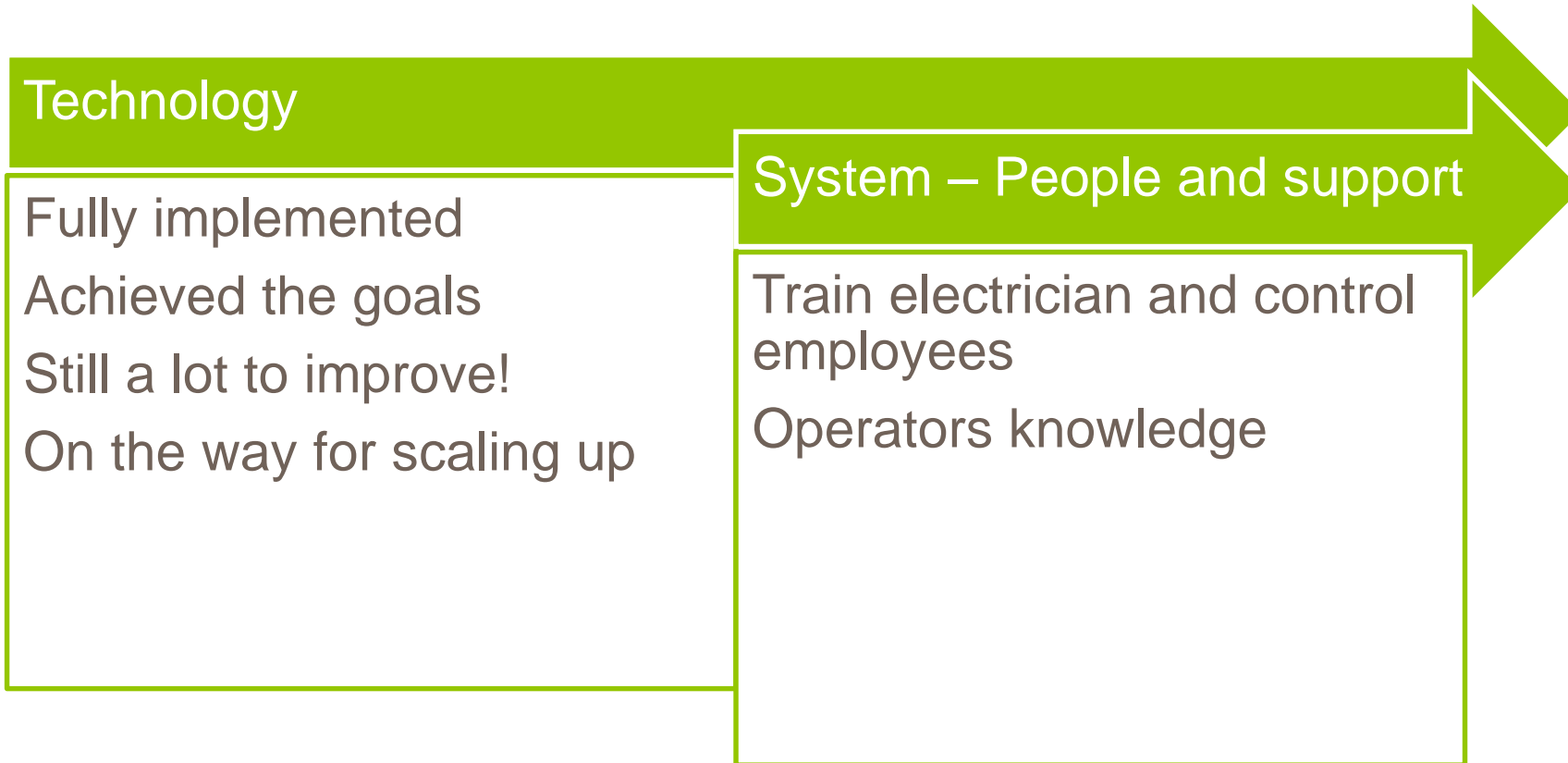
Internal



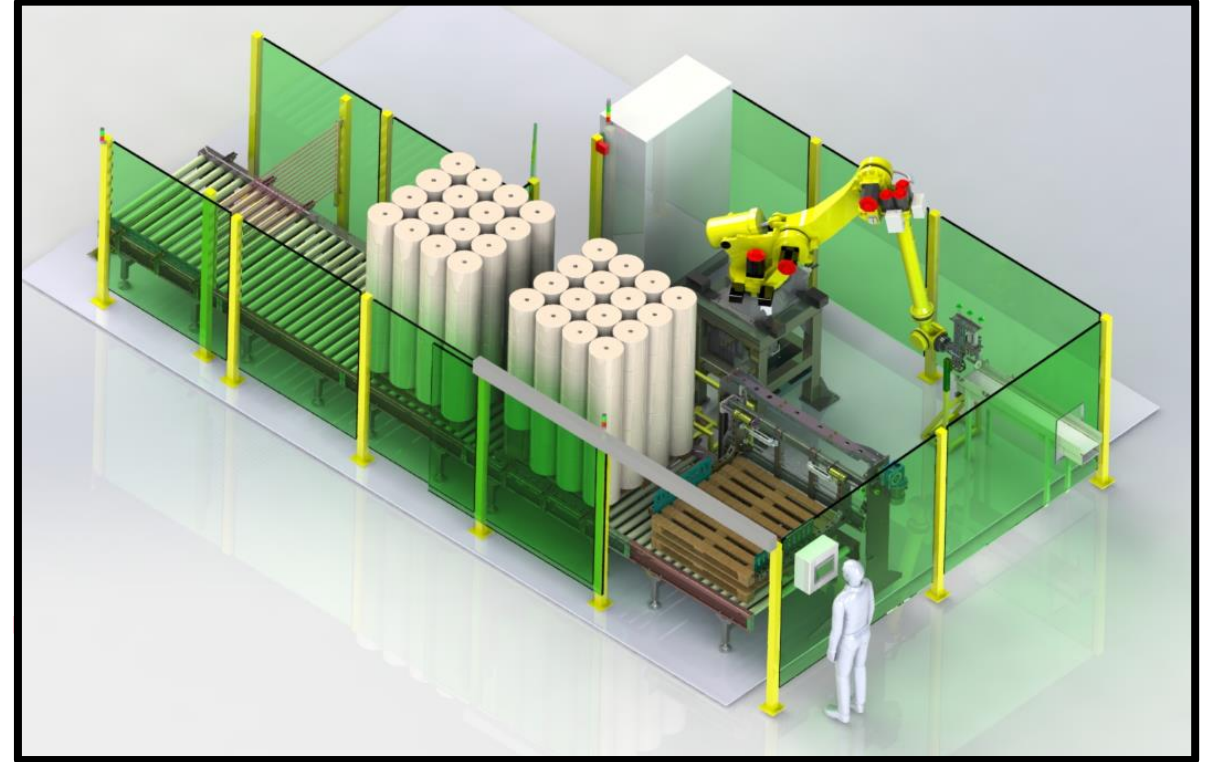
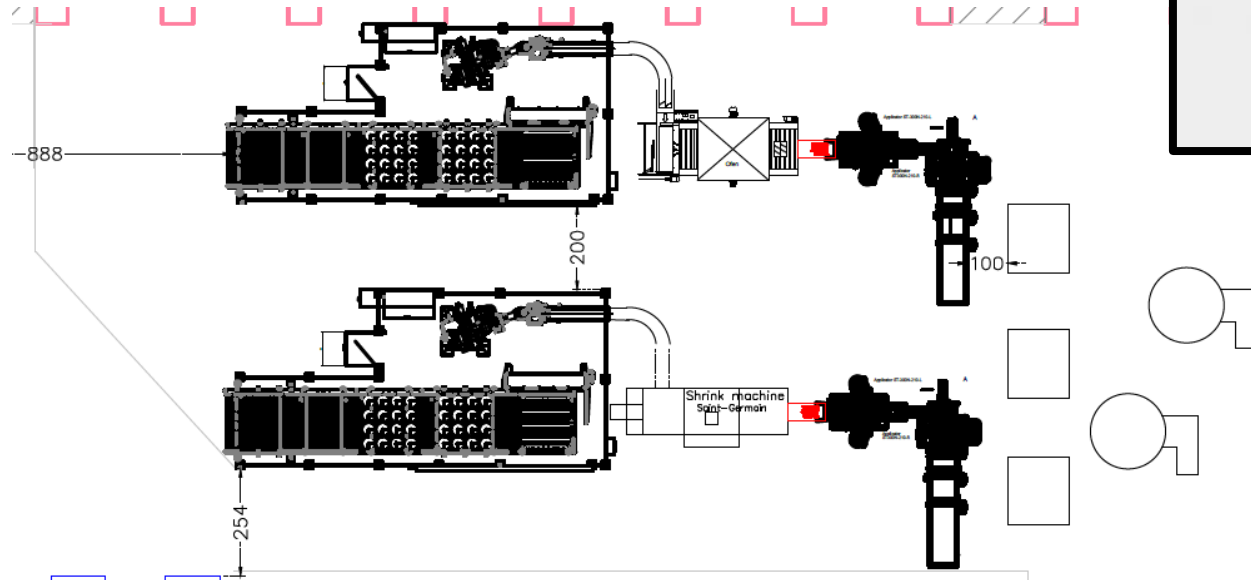
Test	Scope	Expected Result	Actual Result	# Defects	Comments
Test 2 - de-palletize 2 full 9.5 kg pallets					
992328005 9.5 kg Blue 140 XUV spool	Feeding two pallets properly	No issues	V/X		Not good enough. A funnel is needed
	Cycle time	8-10 spools / min	15 spools in 130 sec = 7 spools a minute		
	Reliability	99%	95%		
	Stablization of pallet during the process	No falling spools	V		
	check 10 spools for 24 hours for elongation [5 refference (without robot) and 5 regular (with robot)]		Will be checked		
	Removal of two pallets properly	Complete 2 pallets without stops	V/X		* Last floor scan didn't stop. * one stop due to a spool brought back to the conveyor sensors.

Implementation

- From day “0” – **ALL** related in TAMA were involved in the process – from production to management
- Full collaboration between – Supplier, Tama Operations HQ, and Production (user)



Implementation – Scaling up



5 Keys to success

- **Define** the problem
- Set a **clear goals** – achievable but challenging
- Set a process that **fits** your company
- Systematic Thinking – Technology, People, Changes and Suppliers.
- Communication – Internally and Externally



Thank you!

