

Automated Vision Inspection System for COVID-19 Kit/Cortton Box

Project Overview

Automated Vision Inspection System development for COVID-19 Carton box Kit Inspection before packing

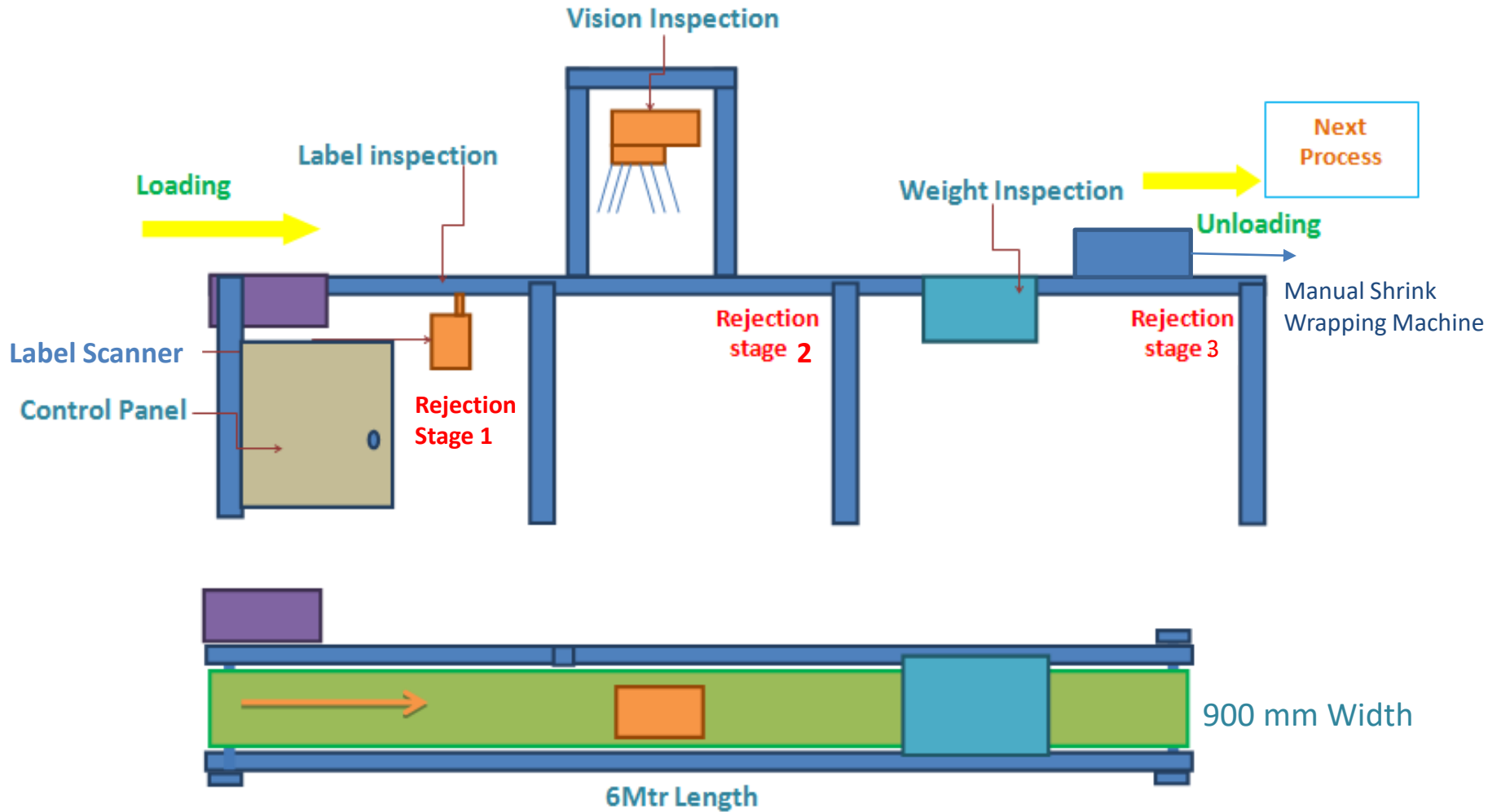


Project Overview

Features:

- ❖ Box movement on stop and go Belt conveyor of 6 meter length
- ❖ Manual loading & unloading
- ❖ Carton box label inspection by fixed label scanner
- ❖ Vision system for inspection (Test Parameters described below)
- ❖ Camera with wide angle lens for image capturing
- ❖ Camera Field of View considered is 300x300mm
- ❖ Carton box weight check by weighing scale
- ❖ Auto rejection mechanism by pneumatics at 3 stages
- ❖ Rejection arrangement can accommodate 4 to 5 boxes
- ❖ Inspection data, weighed data & images storage in the system
(Video recording is not considered)
- ❖ Configurable settings in software
- ❖ Advanced Vision tools for high precision verification
- ❖ Data logging & report generation
- ❖ TAKT: 6.3 seconds/Box (This will be confirmed during detailed designing)

Concept Overview



At every rejection stage, Rejection conveyor is not consider instead we have given 4 to 5 rejected boxes storing arrangement. Which requires to be carried manually back to processing area.

Vision Inspection Parameters:

- ❖ Quantity of bottles
- ❖ Cap presence
- ❖ Cap colours in respective positions (7 to 10 colours)
- ❖ Existing of extra bottles
- ❖ Missing of bottles

Carton Box Label Inspection:

- ❖ LOT Number & expiry date print inspection by label Scanner
- ❖ Label Position should be same for all carton boxes

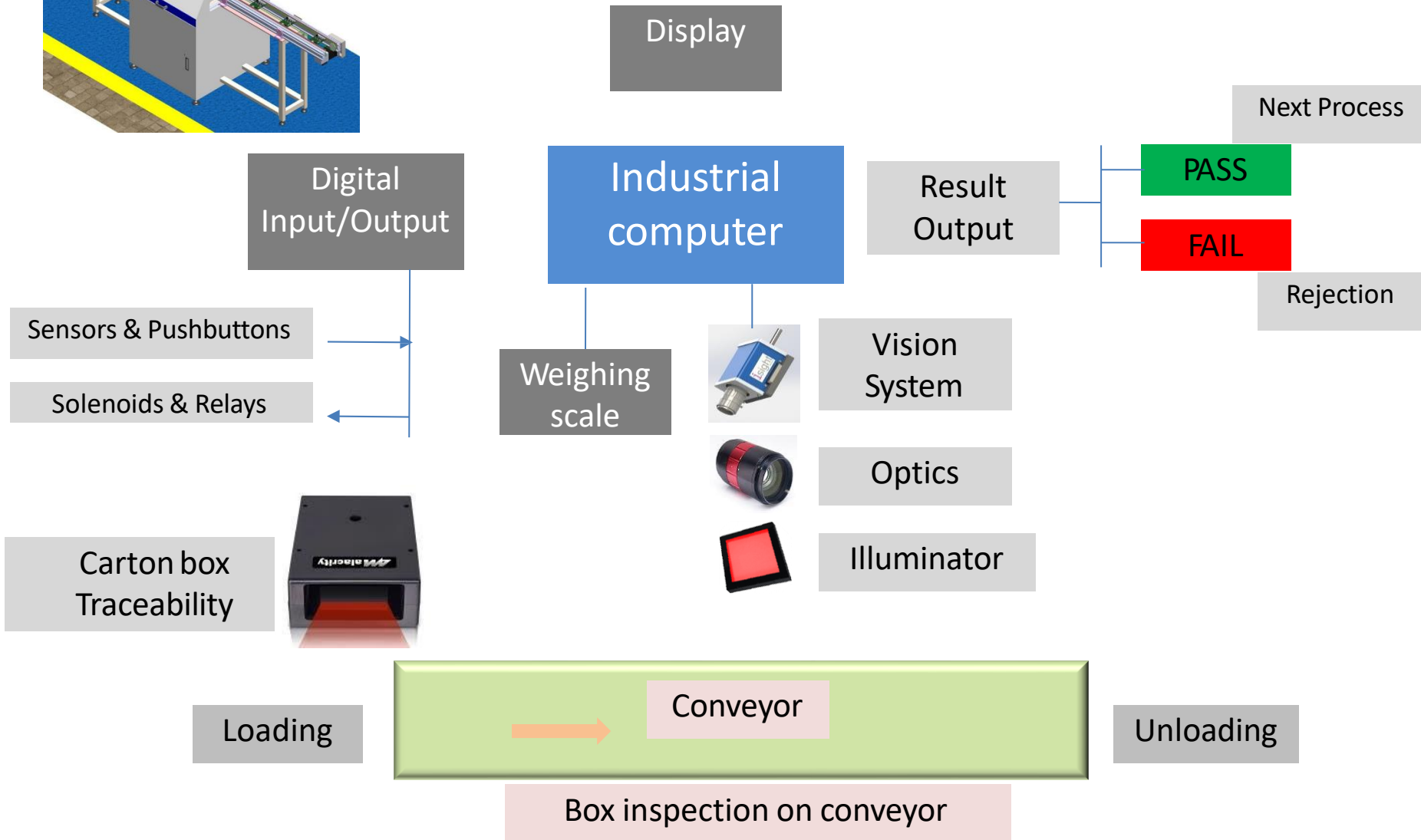
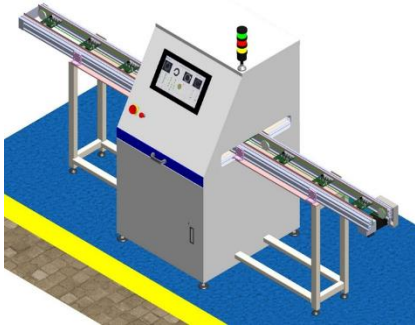
Carton Box Weight Check:

- ❖ Weight check by weighing scale which will be fixed to conveyor
- ❖ Weighing range from 50 to 500gm

Shrink Tunnel Packaging:

Wrapping machine for box 4 sides wrapping

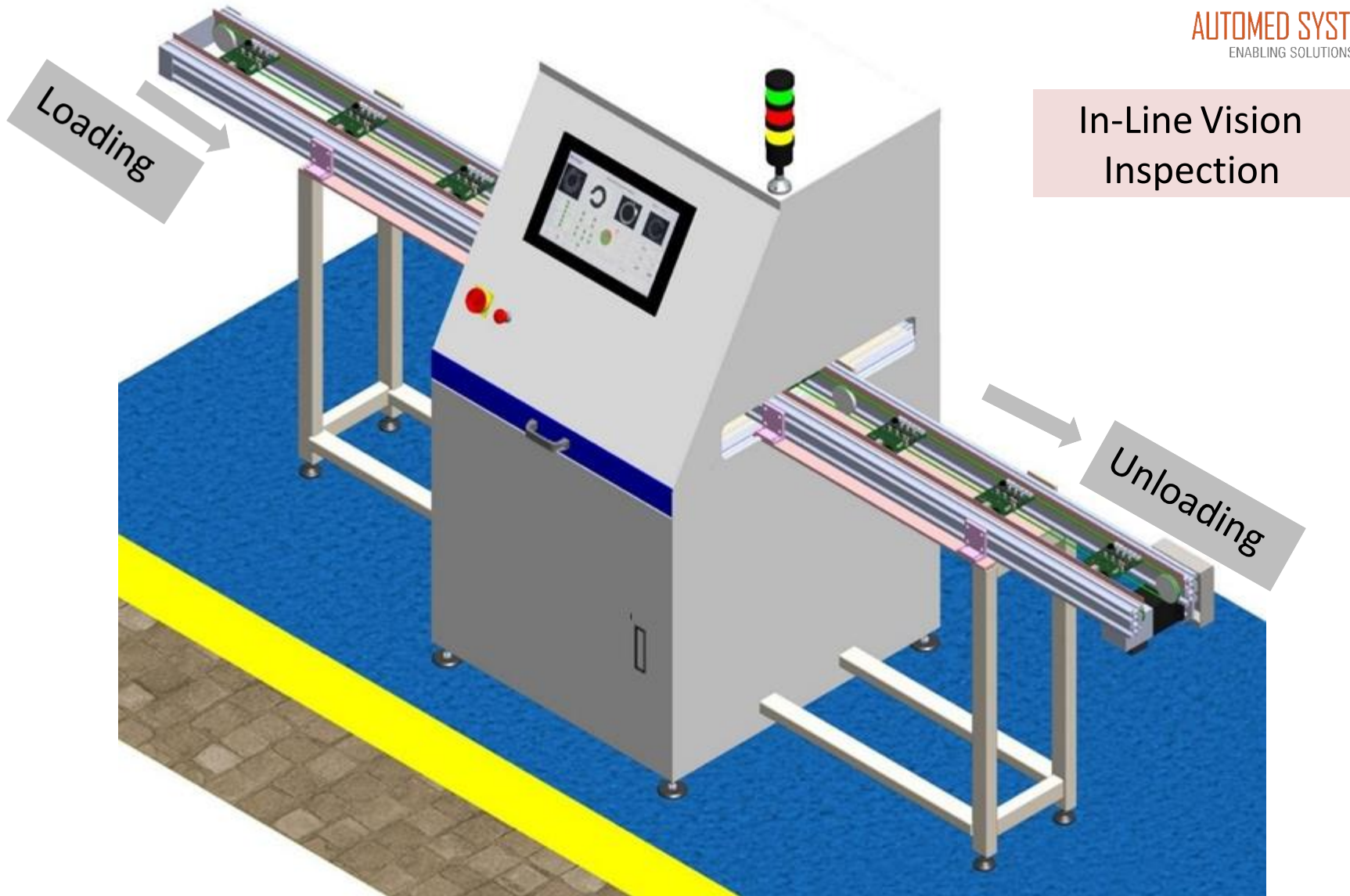
Architectural Block Diagram



Reference Layout



AUTOMED SYSTEMS
ENABLING SOLUTIONS



**In-Line Vision
Inspection**

**Image shown only for indicative & reference, actual will be shared during DAP Stage*

Major Key Components

SL#	Major Key Components
1	Fixed label Scanner
2	Weighing Scale
3	Automated Vision Inspection System; Camera Wide angle optics Illuminator with controller Vision license Camera enclosure Cables & accessories
4	Industrial Computer with Display, Keyboard, UPS & Mouse
5	Digital Input / Output Modules
6	Pneumatics for auto rejection mechanism 3set
7	Stop and go conveyor with motorized mechanism
8	Sensors for automation
9	Mechanical base structures, rollers, mountings & other accessories
10	Control cabinet arrangement with necessary electrical switchgear hardware
11	Shrink Wrapping Machine

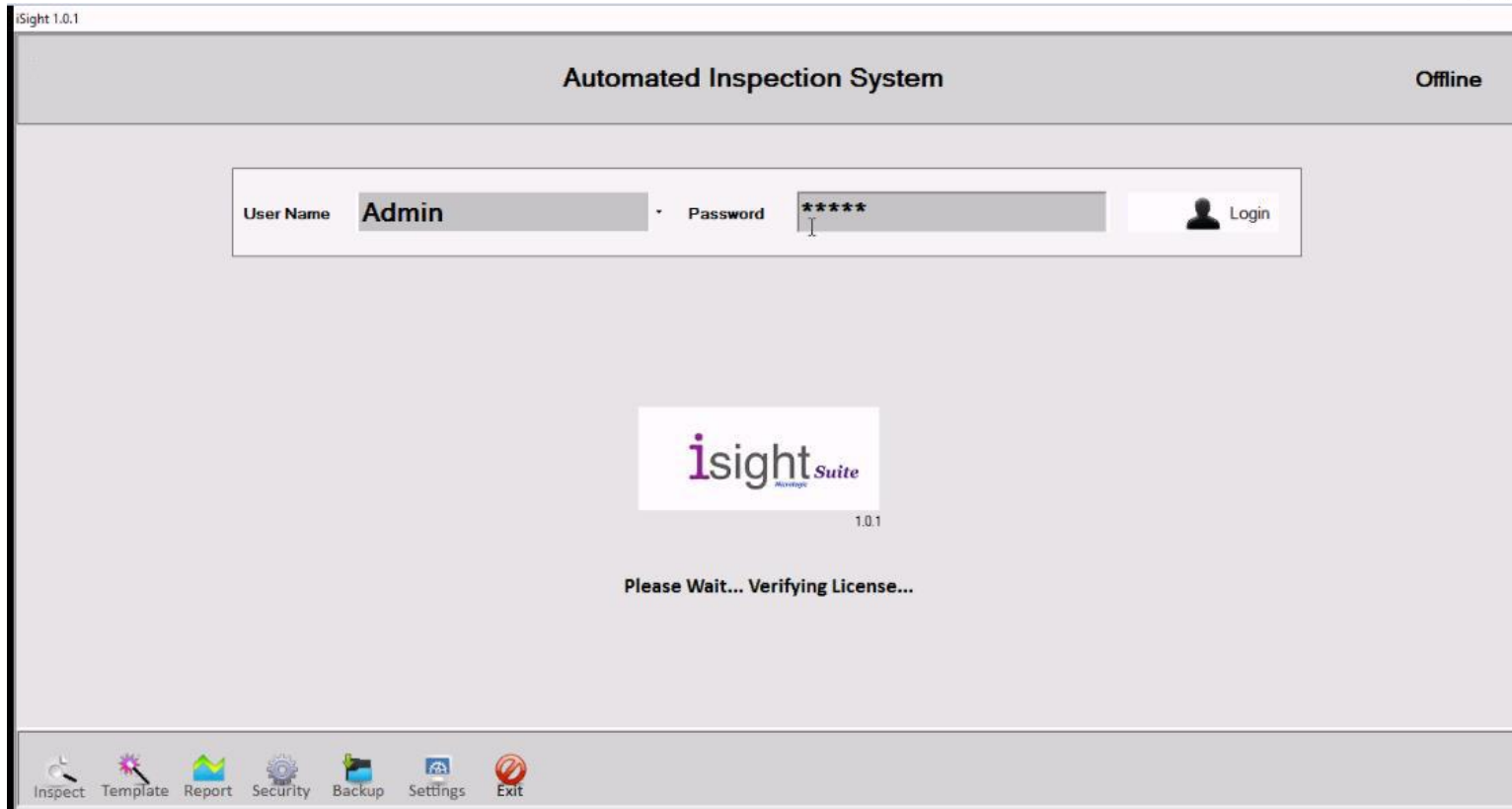
Vision System & Computer Specification



Label Inspection by isight Vision System 1		
isight Camera	Basler	5MP Monochrome
Optics- 16mm	EO	Megapixel -20, Fixed FL-C mount
Illuminator with Controller	Microma	White LED Square Light
Communication interface connectors	Basler	USB3.0
isight Vision License	isight	Code Read
Camera Enclosure	isight	
Bottles caps Inspection by isight Vision System 2		
isight Camera	Basler	5MP Color
Optics- 16mm	EO	Megapixel -20, Fixed FL-C mount
Illuminator with Controller	Microma	White LED Square Light
Communication interface connectors	Basler	USB3.0
isight Vision License	isight	Color match
Camera Enclosure	isight	
Industrial Computer	Advantech	Core i5, 8GB RAM, Windows 10

isight Vision Application Software Suite (Only for Reference)

Login Screen



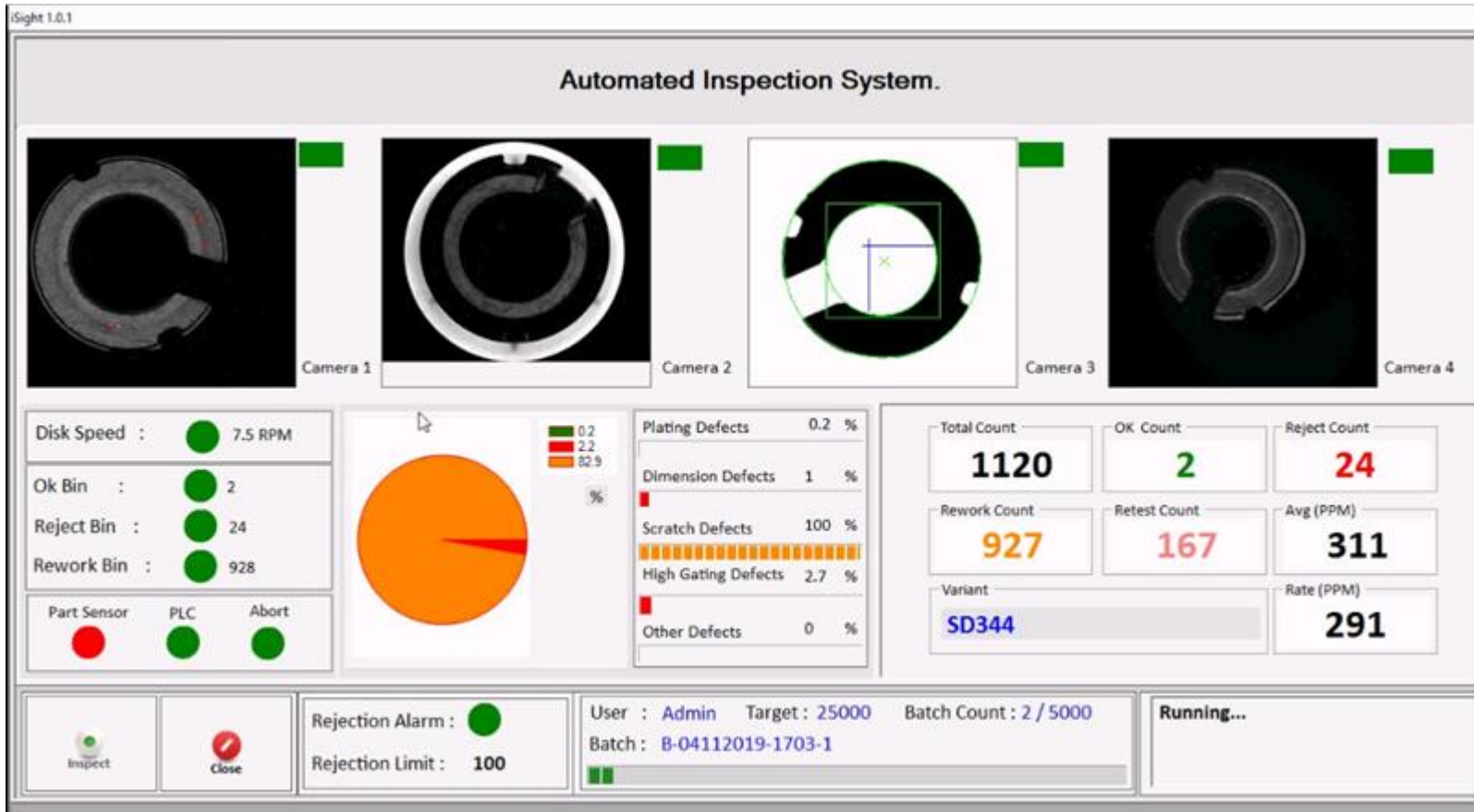
- ✓ User has to select the respective user name & enter the password on the screen to start the system
- ✓ 3 Level login as Operator, Administrator & Supervisor

Variant Selection



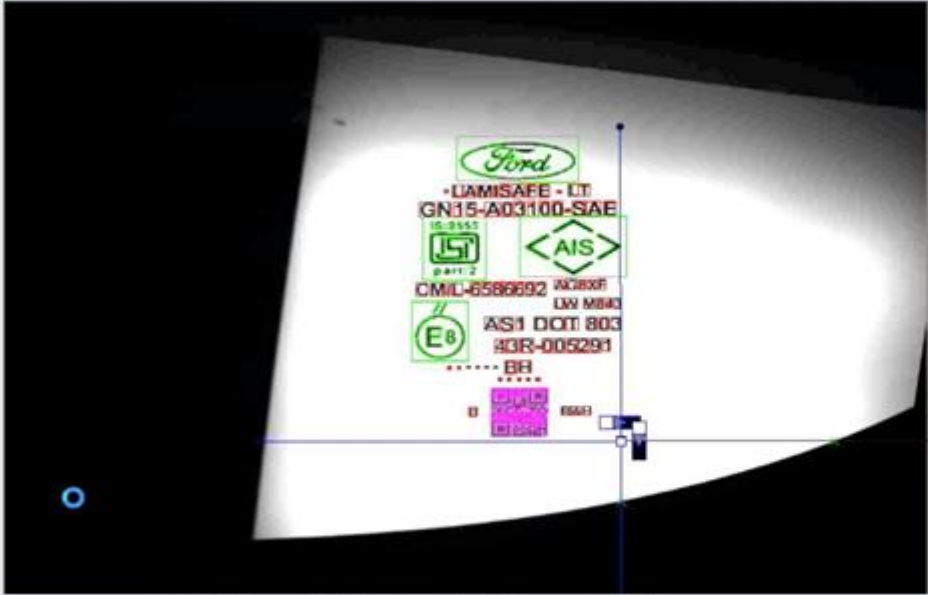
- ✓ Variant selection Screen to proceed inspection with batch code details
- ✓ For variant addition we should use template icon which is in the login screen

Vision Inspection Screen



- ✓ Inspection screen showing below data;
- Inspected images
- Total Count- OK & NOK Counts
- Rejection limit
- Rejection alarm indication etc.....

Characters Inspection



Automated Inspection System

Testpoint Name	Read Value	Master Value	Status
LOGO	0.9998305	0.85	Pass
LAMISAFE	LAMISAFE-LT	LAMISAFE-LT	Pass
GN15	GN15-A03100-SAE	GN15-A03100-SAE	Pass
ISI	1	0.85	Pass
AS	0.997382	0.85	Pass
CML	CM/L-4586692	CM/L-4586692	Pass
AGI	AGDXF	AGDXF	Pass
LW	LWMB43	LWMB43	Pass
ES	0.9994476	0.85	Pass
AS1	AS100T803	AS100T803	Pass
43R	43R-005291	43R-005291	Pass
B	B	B	Pass
RAH	RAH	RAH	Pass
QR Code	GN15-A03100-SAE	GN15-A03100-SAE	Pass
Distance X	36.2157	36.916	Pass
Distance y	11.0338	11.234	Pass

Running : Week 1, Month Jan, Year 2017

Cycle Time(Sec) 0

Pass

Total Count: 0, Pass Count: 0, Fail Count: 0, Variant: VARIANT - SAE

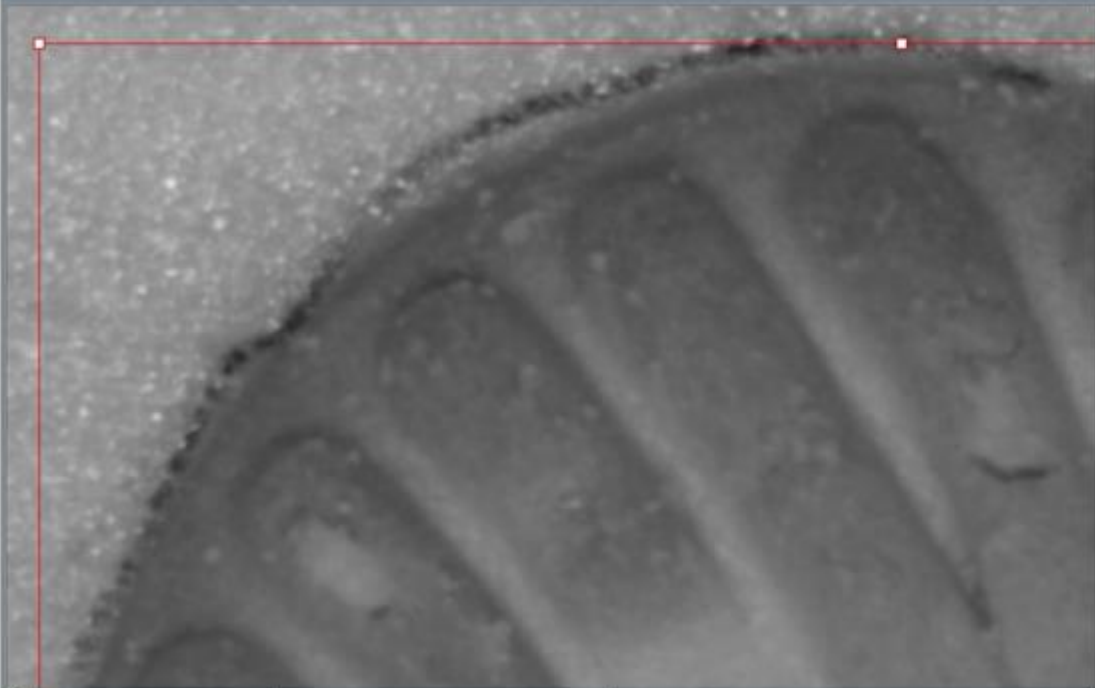
Admin (Administrator) 4/27/2017 12:19:07 AM

✓ Alphanumeric Characters inspection by reading character

Color Inspection

iSight 1.0.1

Automated Inspection System



Inspection Point	Inspection Type	Threshold	Inspect
gd	Pattern Matching	0.6	<input checked="" type="checkbox"/>
**			<input type="checkbox"/>

Activate Windows
Go to Settings to activate Windows. 0.0 hours

Admin (Administrator)

Buttons: Add, Update, Delete, Close

Color Inspection





Thank you!