



Electrical Wiring-Path Inspection

Inspection Use Case

Application

Assembly verification

Inspection objective and potential defect description

Wires can be connected in different paths and still be considered as OK, yet it is key to ensure that they are not passing past specific limits beyond their acceptable positions.

Special inspection challenges

The inspected part is highly variable.

Production Environment

Line handling method

Manual

Inspection triggering method

Manual



Part Description

Name

Oven back panel

Materials

Metal, Plastic, Rubber

Part Size

35cm x 40cm

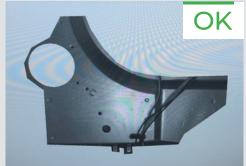
Production process

Assembly

Industry

Home Appliance

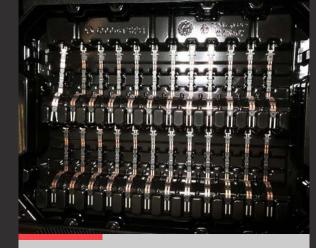








Electrical Connectors - Presence / Absence / Positioning



Part Description

Name

Injector electrical connectors plate

Materials

Metal, Plastic, PCB

Part Size

35cm x 45cm fixture (24 piecs)

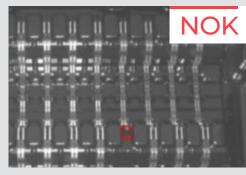
Production process

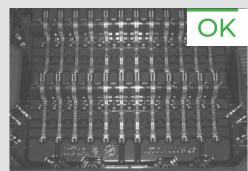
Automatic robot pick-up for Assembly

Industry

Automotive

Using INSPEKTO S70





Inspection Use Case

Application

Presence / Absence / Positioning

Inspection objective and potential defect description

Ensure the existence and correct positioning of sub-components (electrical connectors) before robot pickup for automatic assembly in the injector body.

Possible Defects

- Absence of sub-component / missing part
- · Bent sub-component
- · Broken sub-component
- Wrong positioning orientation, location

Special inspection challenges

24 sub-components in 1 shot, each of them can have a different defect type.

Production Environment

Line handling method

Conveyor belt

Production speed

60 ppm





Plugin Plate -Parts Insertion Verification

Inspection Use Case

Application

Assembly verification

Inspection objective and potential defect description

The larger metal assembly receives multiple smaller components, which are also made of metal. Defects would include missing or improperly inserted components.

Permitted defects

Scratches

Special inspection challenges

Repetitive texture is not always at the same location and may vary along the object.

Production Environment

Inspection triggering method

Automatic



Part Description

Name

Plugin Plate

Materials

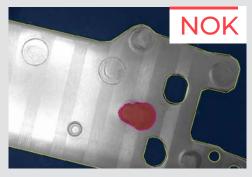
Metal

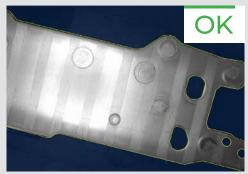
Production process

Assembly

Industry

Automotive







Optimax Imaging Inspection Measurement

Gear Box Housing -Structure / Casting Check

Inspection Use Case

Application

Structure/casting defect inspection

Inspection Objective

Following casting and machining processes, the gear box housing should be visually inspected in order to ensure no defects occurred during the process- the part is moved by robot for visual inspection (End of line inspection).

Possible Defects

Structural defects including dents, scratches, and casting issues.

Permitted defects

Texture changes

Special inspection challenges

High 3D differences within the object, part includes two concentric rings that both require inspection.

Production Environment

Line handling method

Robotic placement for visual inspection

Inspection triggering method

Automatic

PLC type and protocol

1/0

Allowed inspection cycle time

3 seconds / part



Part Description

Name

Gear Box Housing

Materials

Metal

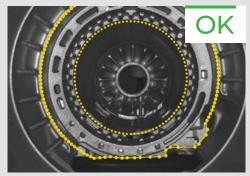
Production process

Casting

Industry

Automotive









Valve - Outer Rim Integrity Check

Inspection Use Case

Application

Outer rim integrity check

Inspection Objective

Metal valve which will be placed in an injector. Outer rim of the valve should be intact and complete, without any breaks.

Potential Defect Types

Dents, damages

Permitted defects

- · Scratches on the surface of the valve.
- Light reflections on the outer rim and some of the areas.

Special inspection challenges

- Round metal object with rotation freedom.
- · Light reflection to be ignored.

Production Environment

Inspection triggering method

Automatic

PLC type and protocol

1/0

Production speed

40 ppm

Part Description

Name

Valve

Materials

Metal

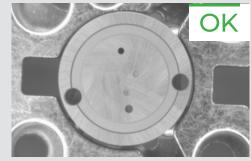
Production process

Assembly

Industry

Automotive

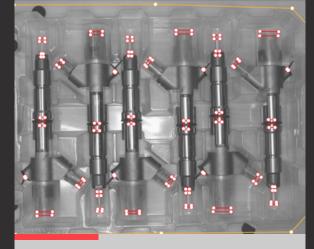








Injector's Pallet -Integrity Check



Part Description

Name

Injectors' Pallet

Materials

Metal and Plastic

Production process

Packaging

Industry

Automotive

Inspection Use Case

Application

Check for missing semi-transparent cap + small black cap

Inspection objective and potential defect description

A pallet of 6 injectors, which need to be checked in 1 shot for completeness making sure no missing semi-transparent plastic cap or small rubber black cap

Potential Defect Types

Missing caps

Permitted defects

- There could be slightly different batches and models or parts in the pallet.
- Rubber cap may vary in shape and how completely it was pushed on during assembly, leading to slight variation in the position of the end of the cap.

Special inspection challenges

Parts are not fixed and can move slightly in the pallet.

Production Environment

Inspection triggering method

Manual

Production speed

40 ppm









Battery Pack -Stickers - Placement Verification

Inspection Use Case

Application

Placement verification

Inspection objective and potential defect description

Ensure proper placement of 2 rubber stickers on the back of the battery pack. First objective is verifying the sticker is complete and fully placed on the battery pack. Second is ensuring that each sticker is placed in the designated area. The stickers have a placement tolerance in all directions (up, down, left, right).

Potential Defect Types

Sticker misplacement, defects in sticker's shape.

Permitted defects

The stickers have some degree of freedom

Special inspection challenges

High variability of the sticker look

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

Production speed

12 ppm

Part Description

Name

Battery pack

Materials

Plastic, Rubber

Part Size

28 cm x 12 cm

Production process

Automated line

Industry

Automotive









Oil Tube Assembly Verification

Inspection Use Case

Application

Assembly verification

Inspection Objective and Potential Defect Description

Ensure existence of plastic screws assembled on the tube

Special inspection challenges

The tube is very thin.

Production Environment

Line handling method

Assembly station

Inspection triggering method

Manual

Part Description

Name

Oil injection tube

Materials

Metal, Rubber, Plastic

Part Size

120 cm x 13 cm

Production process

Assembly line

Industry

Automotive













Application

Assembly verification

Inspection objective and potential defect description

Ensure existence of components and polarity of capacitors on the PCB.

Special inspection challenges

Components appearance highly varies between pcb instances.

Production Environment

Line handling method

Assembly Line

Inspection triggering method

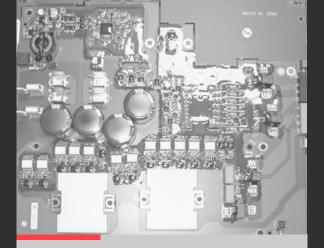
Automatic

PLC type and protocol

1/0

Production speed

60 ppm



Part Description

Name

PCB

Materials

PCB, Electrical components

Part Size

30 cm x 26 cm

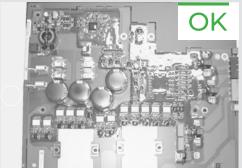
Production process

Assembly line

Industry

Electronics













Application

Tension assembly verification

Inspection objective and potential defect description

Safety carabiner locks the spare wheel in place in the trunk of a car. Four carabiners and straps ensure that the spare wheel doesn't move around the trunk in case of an accident. Checking that carabiner is in place and tensed correctly.

Special inspection challenges

Carabiner position can vary.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC type and protocol

1/0



Part Description

Name

Safety Carabiner

Materials

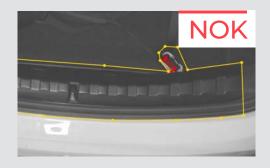
Metal / Plastic

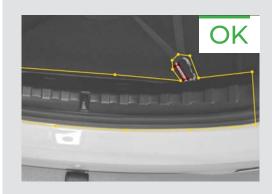
Production process

Assembly

Industry

Automotive













Application

Plastic injection molding inspection

Inspection objective and potential defect description

Inspection for multiple defects that are common to plastic injection molding such as marks, dents, burn marks etc.

Possible defects

- Sink marks/pores/dents that form when the outer plastic shell hardens before the internal plastic has had an opportunity to cool
- 2. Short shots caused when there is an inadequate amount of plastic material to fill the mold main issue in this use case
- 3. Burn marks caused by trapped compressed air during the molding process
- 4. Flash marks, which is the excess plastic that extends from the end of the molded part

Permitted defects

Minor color changes. Granularity change on some of the clips causes light reflection

Special inspection challenges

Mold changes over time.

Production Environment

Line handling method

Conveyor Belt

Inspection triggering method

Automatic

PLC type and protocol

Profinet

Inspection cycle time

40 ppm



Part Description

Name

Cover Clips

Materials

Plastic

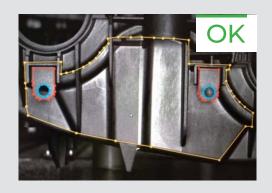
Production process

Injection Molding

Industry

Automotive









Piston Coating - Process Verification



Part Description

Name

Piston

Materials

Metal

Part Size

10 cm x 9 cm

Production process

Metal Coating

Industry

Automotive

Inspection Use Case

Application

Coating process verification

Inspection Objective and Potential Defect Description

The purpose of the inspection is to ensure the proper spreading of coating material on the piston before oven curing.

Special Inspection Challenges

Highly reflective part with very few features.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

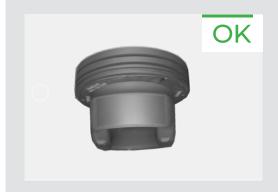
PLC type and protocol

1/0

Production speed

60 ppm









Plastic Connector -Injection Molding Check

Inspection Use Case

Application

Plastic injection molding inspection.

Inspection objective and potential defect description

- 1. detect missing pins
- 2. detect bent pins
- 3. detect pins with excess plastic

Permitted defects

- 1. Dust specks are visible at large zoom
- 2. Pin head roundness can be slightly different

Special inspection challenges

Mold changes over time.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC type and protocol

Profinet

Production speed

60 ppm



Part Description

Name

Plastic connectors

Materials

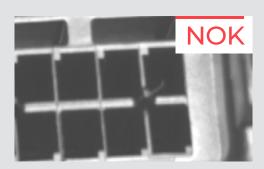
Plastic

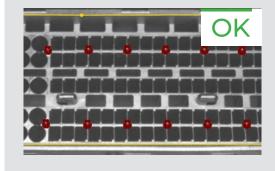
Production process

Injection Molding

Industry

Automotive











Rubber sealing and plastic Injection **Molding Inspection**

Inspection Use Case

Application

Rubber and plastic injection molding inspection

Inspection objective and potential defect description

This product is used as part of a car's air conditioning system. The white rubber blocks outside air from entering the car interior. Any missing rubber, torn rubber, or small holes should be detected.

Permitted defects

Minor shade changes. Minor surface variation ("clouding") on black plastic.

Special inspection challenges

- 1. Windows in the plant allow sun to shine on the product at certain times of day.
- 2. Needs to check several angles of the product in short time.
- 3. Products often come in 2+2 format

Production Environment

Line handling method

Robotic arm

Inspection triggering method

Automatic

PLC type and protocol

Relay Switch

Production speed

60 ppm



Part Description

Name

White Rubber around Black

Inspection Materials

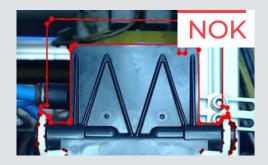
Rubber

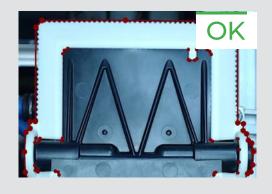
Production process

Injection Molding

Industry

Automotive









Piston Crown -Damages Check



Name

Piston Crown

Materials

Metal

Production process

Forging/CNC

Industry

Automotive

Inspection Use Case

Application

Check top surface (crown) of a piston

Inspection objective and potential defect description

Pistons are used in every combustion engine. The S70 checks for dents and scratches that are caused in the production process.

Permitted defects

Texture changes, water stains

Special inspection challenges

Different surfaces reflect light in different ways and some areas are dark, which makes it hard to see the defects there.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

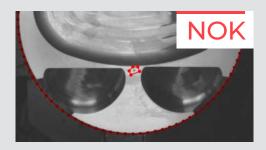
Automatic

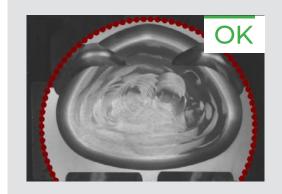
PLC type and protocol

Profinet

Production speed

60 ppm









Piston Side -Integrity Check



Part Description

Name

Piston Bump

Materials

Metal

Production process

Forging

Industry

Automotive

Inspection Use Case

Application

Check bump and pocket of a piston

Inspection objective and potential defect description

Pistons are used in every combustion engine. Here the S70 inspects for the integrity of the piston's bump and for scratches in the side of the piston's pocket.

Permitted defects

Texture changes.

Production Environment

Line handling method

Robotic arm

Inspection triggering method

Automatic

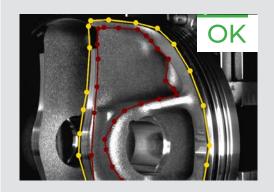
PLC type and protocol

Profinet

Production speed

40 ppm









Clutch Disk - Defect Inspection

Inspection Use Case

Application

Check for milling swarf / chips

Inspection Objective

Ensure the integrity of the tunnels and detect milling swarf / chips.

Possible Defects

Swarf / chips leftovers from milling in tunnels

Permitted defects

Small holes in the bottom of the tunnels.

Production Environment

Line handling method

Manual / Conveyor belt

Part Description

Name

Clutch Disk

Materials

Metal

Part Size

10 cm radius

Production process

Milling

Industry

Automotive









Clutch Connector - Pins Inspection

Inspection Use Case

Application

Integrity & milling swarf / chips leftovers

Inspection Objective

Ensure Integrity of clutch connector pins and detect milling swarf / chips leftovers

Possible Defects

Milling pieces & damaged connector pins

Production Environment

PLC communication

1/0

Part Description

Name

Clutch Connector Pins

Materials

Metal

Part Size

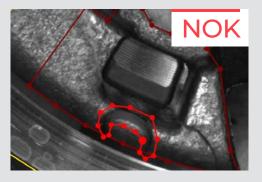
10 cm radius

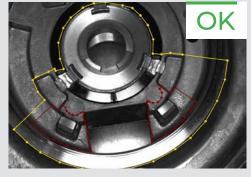
Production process

Milling

Industry

Automotive









Medical Stopcocks - Integrity Check

Inspection Use Case

Application

Plastic handle inspection.

Inspection objective and potential defect description

- Sink marks that form when the outer plastic shell hardens before the internal plastic has had an opportunity to cool
- 2. Short shots caused when there is an inadequate amount of plastic material to fill the mold
- 3. Burn marks caused by trapped compressed air during the molding process
- 4. Flash marks, which is the excess plastic that extends from the end of the molded part

Permitted defects

Minor shade changes.

Special inspection challenges

Mold changes over time.

Production Environment

Inspection triggering method

Automatic

PLC communication

1/0

Production speed

60 ppm



Part Description

Name

Medical Stopcocks

Materials

Plastic

Part Size

3 cm X 2 cm

Production process

Injection Molding

Industry

Pharmaceutical









PCB - Soldering Integrity and Shortening Inspection

Inspection Use Case

Application

Check soldering integrity, ensuring no shortening between 2 solder points (e.g. two solder points accidentally being soldered together), and no foreign objects on the solder points.

Inspection objective and potential defect description

Soldering is done on numerous points on every PCB. The goal is to verify that the soldering is done well, filled to the edge (but not beyond), that there is no shortening between 2 or more solder points and no foreign objects attached to the solder point.

Permitted defects

Texture changes.

Special inspection challenges

Solder tail and shape vary.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC communication

1/0

Production speed

60 ppm

Part Description

Name

PCB

Materials

Plastic, Metal

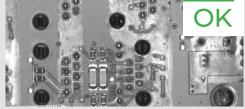
Production process

Soldering

Industry

Electrical

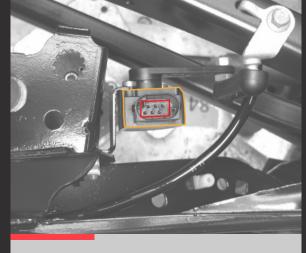








Electrical Connectors Pins - Verification



Part Description

Name

Electrical Connector Pins

Materials

Plastic and Metal

Production process

Assembly

Industry

Electronics

Inspection Use Case

Application

Pins Verification

Inspection objective and potential defect description

Ensure proper pins positioning and integrity

Production Environment

Line handling method

Assembly Line

Inspection triggering method

Automatic

PLC communication

1/0

Production speed

60 ppm









Cap Assembly Verification

Inspection Use Case

Application

Assembly verification

Inspection objective and potential defect description

Ensure the existence of a cap on the tube.

Special inspection challenges

The cap might have different shapes and colors.

Production Environment

Line handling method

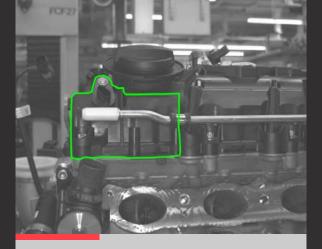
Assembly Line

Inspection triggering method

Automatic

PLC communication

1/0



Part Description

Name

Engine

Materials

Plastic, Metal

Part Size

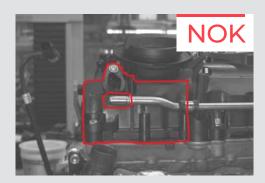
80 cm x 96 cm

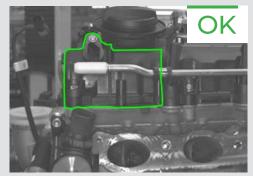
Production process

Assembly

Industry

Automotive







Plug Connection Inspection



Part Description

Name

Engine

Materials

Plastic, Metal

Part Size

80 cm x 96 cm

Production process

Assembly

Industry

Automotive

Inspection Use Case

Application

Verify plug tightly closed

Inspection objective and potential defect description

Ensure the electrical cable is fully connected and secured.

Production Environment

Line handling method

Assembly Line

Inspection triggering method

Automatic

PLC communication

1/0









Thread Defect Inspection



Part Description

Name

Tube

Materials

Metal

Part Size

37 cm x 7 cm

Production process

Machining

Industry

Automotive

Inspection Use Case

Application

Defect Inspection

Inspection objective and potential defect description

The objective is to inspect the threads on the tube which might get damaged or misformed during production.

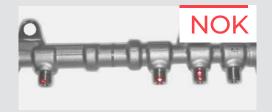
Production Environment

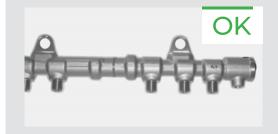
Line handling method

Manual

Inspection triggering method

Manual









Gasket / O-ring Assembly Verification

Inspection Use Case

Application

Assembly verification

Inspection objective and potential defect description

Ensure proper insertion of the gasket/o-ring into the pipe.

Defect types

- Missing gasket/o-ring
- Misplaced gasket/ o-ring
- Torn gasket/ o-ring

Permitted defects

 Small visual differences on the gasket surface

Production Environment

Line handling method

Assembly Line

Inspection triggering method

Automatic

PLC communication

Profinet

Production speed

60 ppm



Part Description

Name

Pipe

Materials

Plastic, Rubber

Materials

35-55 mm diameter

Production process

Assembly

Industry

Sanitary









Oil Pump Pins Integrity verification

Inspection Use Case

Application

Integrity

Inspection objective

Ensure pins aren't damaged

Potential Defect types

Scratches, dents

Permitted defects

Oil stains

Production Environment

PLC communication

1/0

Part Description

Name

Oil Pump Pins

Materials

Metal

Materials

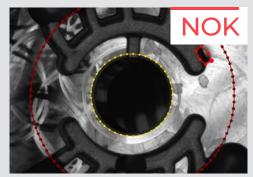
25 cm X 10 cm

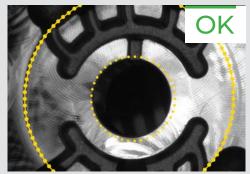
Production process

Casting, CNC

Industry

Automotive







Injector Pins Assembly Verification



Application

Assembly verification

Inspection objective and potential defect description

Part of the injector includes small metal pins – electrical connectors, which need to be inspected for defects during the assembly process.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC Communication

1/0

Production speed

60 ppm



Part Description

Name

Injector

Materials

Metal

Part Size

16 cm x 6 cm

Production process

Assembly

Industry

Automotive









Injector Housing Welding Inspection

Part Description

Name

Injector Housing

Materials

Metal

Part Size

16 cm x 6 cm

Production process

Welding

Industry

Automotive

Inspection Use Case

Application

Inspection of complete laser welding around the connector.

Inspection Objective and Potential Defect Description

The pin housing is laser welded to the injector's body. If the welding is incomplete, it may affect the part later, causing major car problems.

Special inspection challenges

A welded part is very similar to a non welded part.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC communication

1/0

Production speed

60 ppm







Blower Wheel Integrity Check

Inspection Use Case

Application

Integrity check

Inspection objective

- Check for Injection molding defects on a plastic blower wheel.
- Check for blockage or excess plastic material in middle hole

Potential Defect types

Injection molding defects on the outer ring of the blower:

- Sink marks/ pores / dents that form when the outer plastic shell hardens before the internal plastic has had an opportunity to cool.
- 2. Short shots caused when there is an inadequate amount of plastic material to fill the mold
- 3. Burn marks caused by trapped compressed air during the molding process
- 4. Flash marks, which is the excess plastic that extends from the end of the molded part
- 5. Center hole could have excess plastic that may cause blockage.

Permitted defects

Slight coloring differences

Special inspection challenges

2 parts are being made simultaneously (L+R), so the fans are turning both ways.

Production Environment

Line handling method

Handling Arm

Inspection triggering method

Automatic

PLC communication

Relay switch

Production speed

60 ppm



Part Description

Name

Blower Wheel

Materials

Plastic

Part Size

13 cm diameter

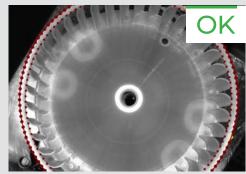
Production process

Injection Molding

Industry

Automotive









Parting Wall Integrity and No Excess Plastic

Inspection Use Case

Application

Excess material check

Inspection objective

This object is a 'parting wall', part of a car's HVAC system. The holes should to be clear of any excess plastic material left over from the plastic injection system.

Potential Defect types

Excess plastic material blocking the holes.

Permitted defects

The holes can have some texture flaws.

Special inspection challenges

The holes are see through without unified background.

2 similar parts come out of the machine (1+1), but the second part is turned 180 degrees

Production Environment

Line handling method

Handling Arm

Inspection triggering method

Automatic

PLC communication

Relay

Production speed

40 ppm



Part Description

Name

Parting Wall

Materials

Plastic

Part Size

25cm x 35 cm

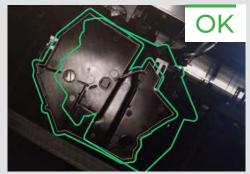
Production process

Manufacturing

Industry

Automotive

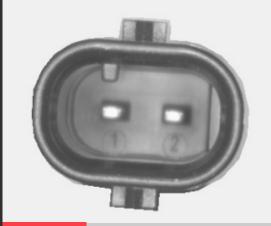








Plug Pins and Plastic Injection Inspection



Part Description

Name

Plug

Materials

Metal, Plastic

Production process

Assembly, Plastic injection

Industry

Automotive

Inspection Use Case

Application

Inspect for existing/bent pins and deformations in the plastic injection.

Inspection Objective and Potential Defect Description

During assembly the pins of the connector may bent and this will damage part's functionality. Deformation in the plastic injection will cause a loose connection which will lead to disconnection of the plug.

Special Inspection Challenges

Part is very small

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

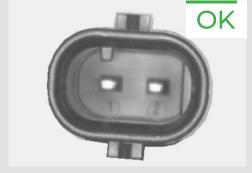
PLC type and protocol

1/0

Production speed

2 ppm









Compressor Body Porosity Inspection



Part Description

Name

Compressor body rear end

Materials

Metal

Part Size

17 cm diameter

Production process

Metal casting

Industry

Automotive

Inspection Use Case

Application

Test for porosity on surface

Inspection Objective and Potential Defect Description

During the manufacturing process, the part may have pores on its surface. Those needs to be found before the assembly process in order to avoid failing later in testing.

Production Environment

Line handling method

Manual

Inspection triggering method

Manual









Rings Assembly Verification



Part Description

Name

Orbiting scroll

Materials

Metal

Part Size

16 cm diameter

Production process

Assembly

Industry

Automotive

Inspection Use Case

Application

Verify presence of ring inserts and validate rings are level with part's surface.

Inspection objective and potential defect description

6 rings are placed inside the holes in the part. The rings must be present, and leveled with the surface, to avoid assembly faults.

Special inspection challenges

Highly reflective

Production Environment

Line handling method

Manual

Inspection triggering method

Manual







Parts in Pallet Inspection



Application

The purpose is to inspect for the existence and proper position of parts inside pallet before shipment.

Inspection objective and potential defect description

Improper packaging will cause damage to parts during the shipment, missing parts and/or incorrect parts being shipped.

Special inspection challenges

Number of parts may vary in each shipment.

Production Environment

Line handling method

Manual

Inspection triggering method

Manual

Inspection cycle time

30 sec



Part Description

Name

Pallet of parts

Materials

Plastic, Metal

Part Size

36 cm x 24 cm

Production process

Packaging

Industry

Automotive









Valve O-ring Inspection

Inspection Use Case

Application

Proper o-ring assembly and existence inspection.

Inspection objective and potential defect description

Missing or incorrect o-ring will affect assembly of the part and will damage its performance.

Production Environment

Line handling method

Conveyor belt

Inspection triggering method

Automatic

PLC communication

1/0

Production speed

60 ppm

Part Description

Name

Valve

Materials

Metal

Part Size

22 cm x 10 cm

Production process

Assembly

Industry

Automotive









Valves Pallet Presence / Absence / Positioning

Inspection Use Case

Application

Presence / Absence / Positioning

Inspection Objective

Ensure the existence and correct positioning of sub-components (injector valves) before robotic pickup for automatic assembly in the injector body.

Potential Defect Types

- Absence of sub-component / missing part
- Wrong positioning orientation, location

Special Inspection Challenges

72 sub-components in 1 shot, each of them can have a different defect type.

Production Environment

Line handling method

Conveyor belt

Production speed

40 ppm

Part Description

Name

Valves Pallet

Materials

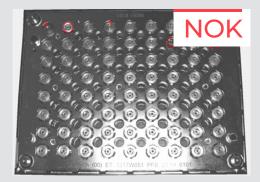
Metal, Plastic

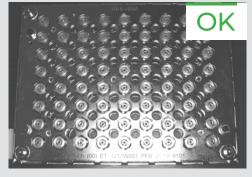
Production process

Automatic robot pick-up for Assembly

Industry

Automotive









Pipe Rubber Ring Assembly

Inspection Use Case

Application

Assembly

Inspection Objective

Ensure rubber ring existence and insertion.

Potential Defect Types

Missing rubber ring, partly inserted ring

Permitted defects

White marks on the rubber ring

Part Description

Name

Pipe

Materials

Metal, Rubber

Part Size

5 cm diameter

Production process

Assembly

Industry

Sanitary









Insert Housing Defect Inspection



Application

Defect inspection

Inspection Objective

The inspected area is an insert housing which may break or crack after the part insertion.

Potential Defect Types

Plastic cracks and damages caused by part insertion

Production Environment

Line Handling Method

Assembly Line

Inspection Triggering Method

Automatic

PLC communication

1/0

For Sales, Service & Spares contact:





Part Description

Name

Insert Housing

Materials

Plastic, Metal

Part Size

32 cm x 23 cm

Production process

insertion

Industry

Automotive



