

## CASE STUDIES





## Case Study - Product Application

### Food Packaging Inspection

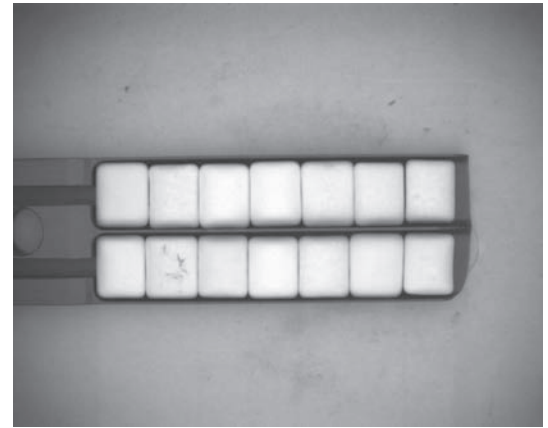
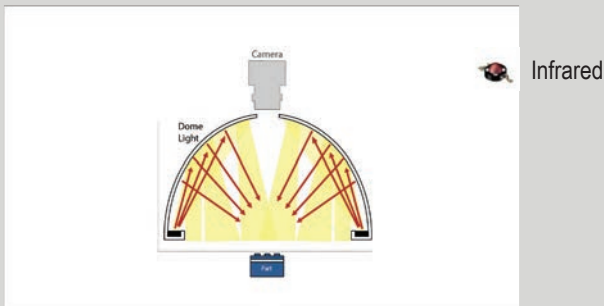


Solution: DLD180-850 (IR)  
0.8ms Shutter Speed, Infrared removed color.



Multi color classic hard shelled chewing gum

### Illumination - Inspection Setup



IR light removes color and retains material texture

### Vision & Automation Opportunity:

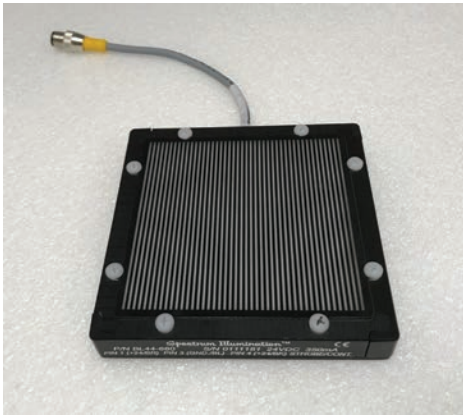
Customer needed to improve quality control of their gum packaging. Color of the gum was not an issue. Packaging inspection requirements: Number of items and quality of gum per package. Production speed must be maintained while enhancing the quality inspection process to maintain product margins.

### Vision & Automation Solution:

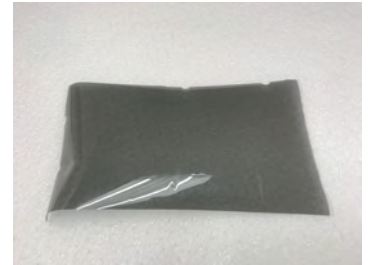
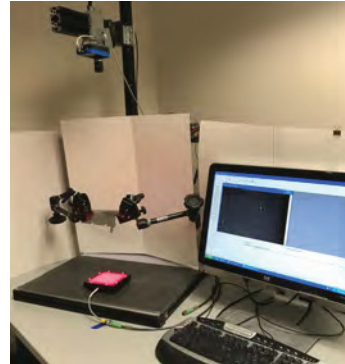
SI engineering lab mocked up the opportunity. SI engineer applied infrared light to remove color, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's DLD180-850 (Dome Light in infrared), 0.8ms shutter speed. Smart camera identifies package count and product quality.

## Case Study - Product Application

### Optical Distortion in Plastic Material Inspection

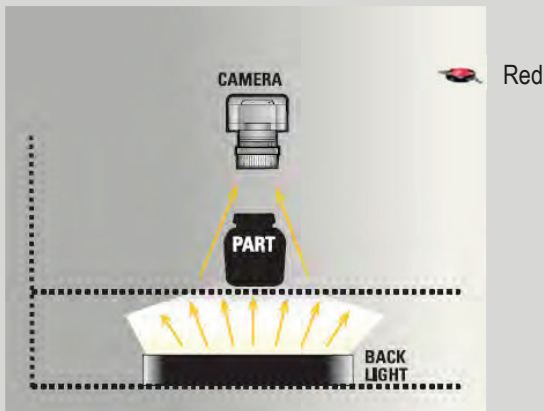


Solution: BL44-660 (red) with special distortion diffuser, 16 mm lens, 15ms shutter speed, working distance 30", light 14" from target.



Polarize film and lab setup.

#### Illumination - Inspection Setup



#### Vision & Automation Opportunity:

Identify quality issues in polarizing film material.  
Looking for distortion in material and/or lamination.  
Production speed must be maintained while identifying rejected materials.



Seal inspection with BL44-660 (red) light with distortion diffuser.

#### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's BL44-660 (red) Back Light, with distortion diffuser, 16 mm camera lens, 15ms shutter speed, light 14" from target and working distance of 30". Smart camera & software identifies distortion in back light distortion diffuser lines.



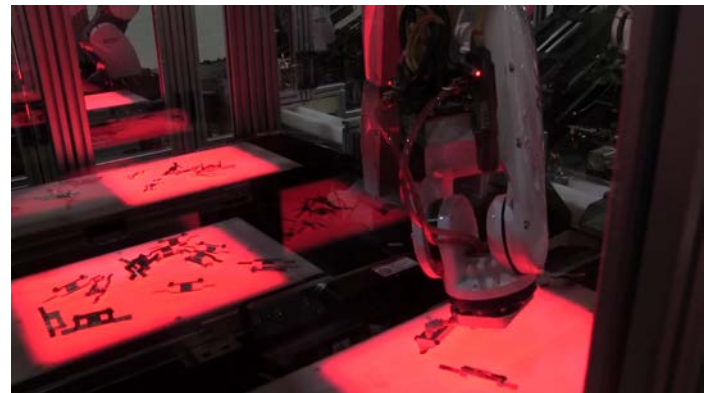


## Case Study - Product Application

### Conveyor Back Light & Pick and Place Robot

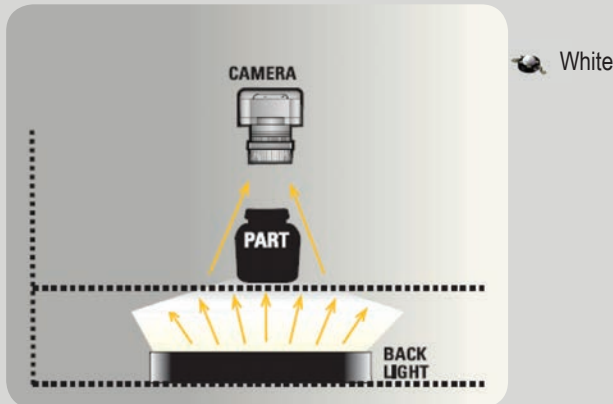


Solution: EBL1212-660 (red)



Nachi MZ07 with Datalogic Vision System Pick and Place

#### Illumination - Inspection Setup



#### Vision & Automation Opportunity:

Lighting conveyors and assembly lines to meet the demands of today's advanced manufacturing environment can be a challenge. Custom embedding back lights into conveyors and assembly lines is standard for Spectrum Illumination.

#### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied back light, removed diffuser mounting screws from the top of the light. Diffuser is now secured to the light from inside the unit. EBL1212-660 (red) Conveyor Series Back Light was the perfect solution. 24 VDC to match the conveyor setup with no driver required. Smart camera identifies parts on the conveyor and assembly line. Robot used the machine vision solution to pick and place parts.

## Case Study - Product Application



### Paper Inspection

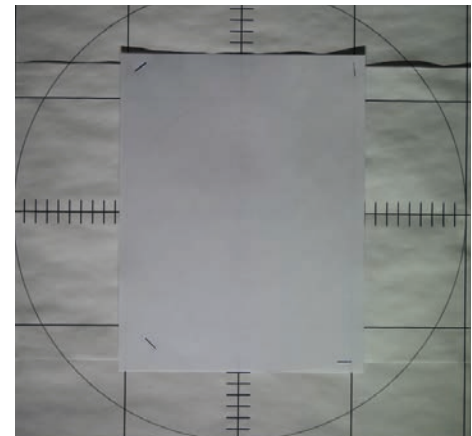
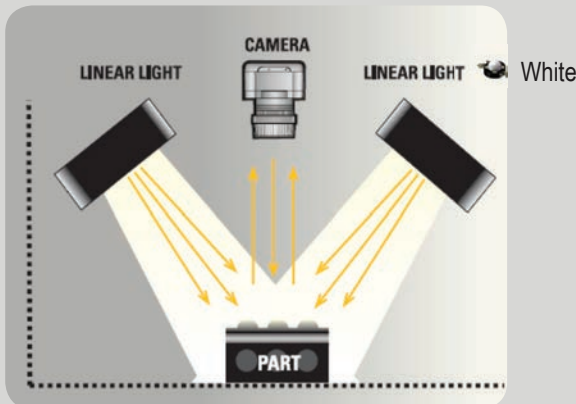


Solution: MLL117.25-WHI (quantity 4) 16 degree frosted optics, 15 degree light mounting angle, light 22" from target with diffuser.



Metal staples

### Illumination - Inspection Setup



Illuminated paper with staples in 4 corners

### Vision & Automation Opportunity:

Customer's paper inspection process needed a solution to identify staples in the paper. All metal staples and foreign objects must be removed before paper is recycled. Production speed must be maintained while identifying and removing rejected materials.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, light mounting angles, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's MLL117.25 linear light in white (Qty 4), LED optics - 16 degree frosted, 15 degree light mounting angle, light 22" from target. Smart camera identifies staples in paper.

## Case Study - Product Application

### Dental Implant Inspection

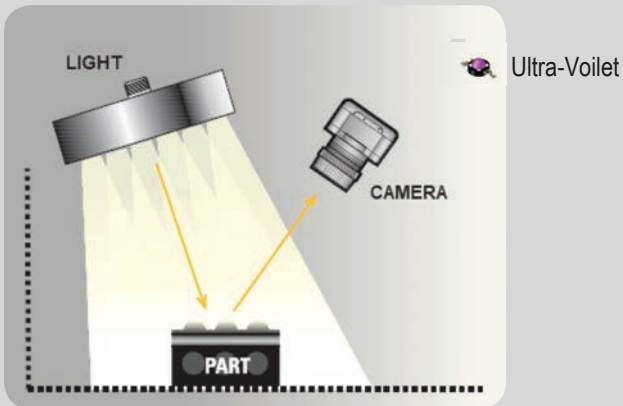


Solution: EL300-395 (UV)



Dental Implants

### Illumination - Inspection Setup



Dental Implants under UV linear light.

### Vision & Automation Opportunity:

Dental implant inspection for quality and material consistency. Teeth, one of the most important factors in human physical and mental health require consistent look and feel. Manufacturing is not an exact science therefore inspection is required. Inspection is for spots and finish damage.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, light mounting angles, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's EL300-395 (UV) linear light, LED optics - 16 degree frosted, 15 degree light mounting angle, light 22" from target. Smart camera identifies spots and surface damage.

## Case Study - Product Application



### Bottle Seal Inspection

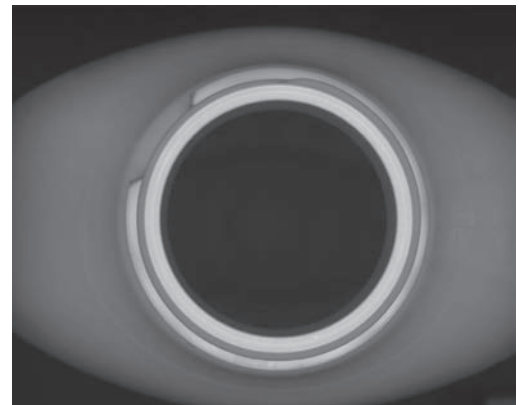
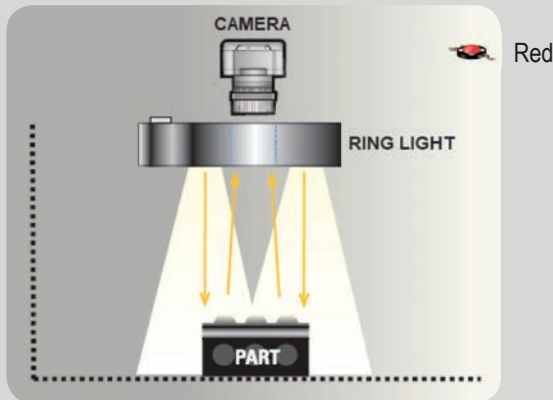


Solution: MRL5.5-630 (red)  
Back light configuration 16 mm lens, 15ms shutter speed, light 3" from target.



Sealed Mustard Bottle

### Illumination - Inspection Setup



Seal inspection with MRL5.5-630 (red) ring light

### Vision & Automation Opportunity:

Customer's bottling process required product inspection before filling. Seal surface defects cause product failure and product line down time. Defective bottles must be rejected before entering automated filling process. Production speed must be maintained while identifying rejected materials.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's MRD5.5-630 (red) ring light, backlight configuration (without LED lens) and white diffuser, 16 mm camera lens, 15ms shutter speed, light 3" from target. Smart camera identifies seal defects in bottle.



## Case Study - Product Application



### Bolt Coating Inspection

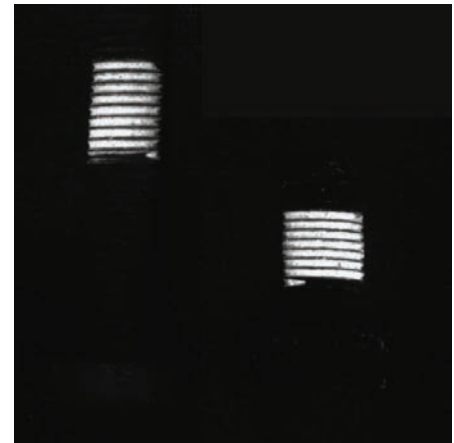
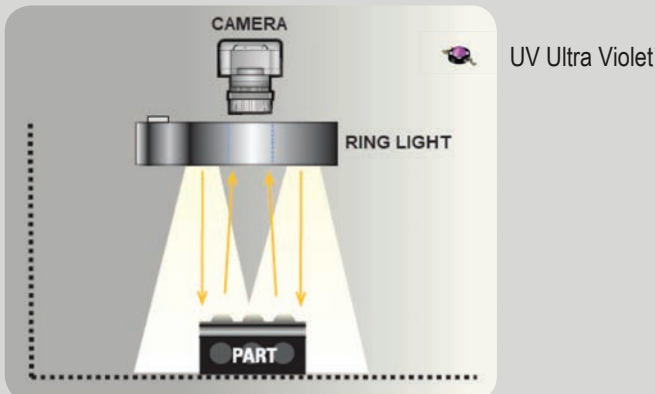


Solution: MRLD5.5-365 (UV)  
100ms Shutter Speed, with Camera UV Blocker



Bolts with Resin Coating Applied.

### Illumination - Inspection Setup



Bolt inspection with MRLD5.5-365 (UV) Ring Light

### Vision & Automation Opportunity:

Automotive, Aerospace and Industrial environments count on 100% compliance when it comes to safety. Bolts must be coated to remain secure. Bolts without coating must be rejected before entering production and shipping process. Production speed must be maintained while identifying rejected materials.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's MRLD5.5-365 (UV) ring light, UV blocker camera lens with 100ms shutter speed. Smart camera verifies bolts have coating applied.



**Case Study - Product Application**



**Food Packaging Inspection**

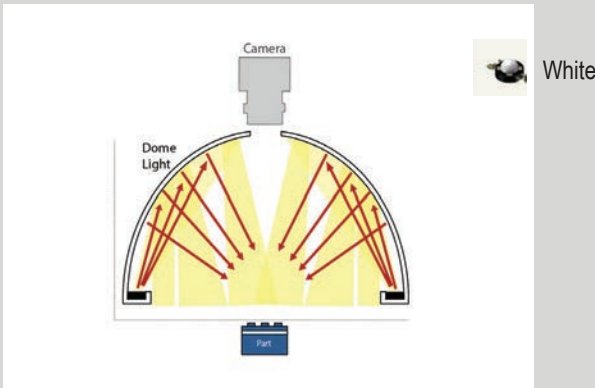


Solution: MDL12.25-WHI 6mm lens, 1ms shutter speed, light 400mm from target.



Choco Cono Packaging (very reflective surface)

**Illumination - Inspection Setup**



Dome light removes glare

**Vision & Automation Opportunity:**

Customer request checking for package splice, open package, glue units, bar code. Production speed must be maintained (400 units per minute) while enhancing the quality inspection process to maintain product standards.

**Vision & Automation Solution:**

SI engineering lab mocked up the opportunity. SI engineer applied 12.25" white dome light, 6mm camera lens and product positioning to develop repeatable quality testing solution. MDL12.25-WHI dome light. Vision system identifies defects and removes product from production line.

## Case Study - Product Application



### Food Packaging Inspection

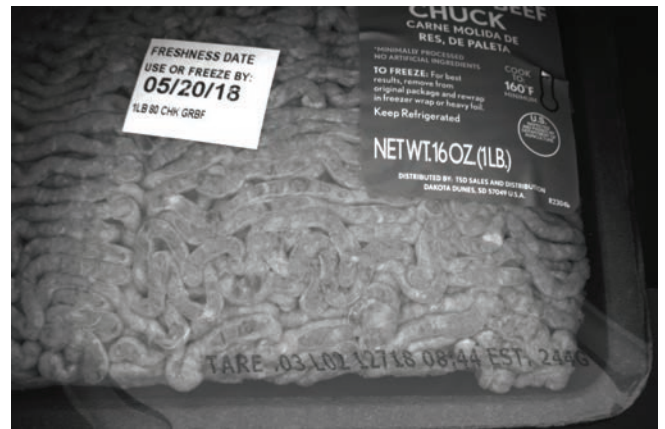
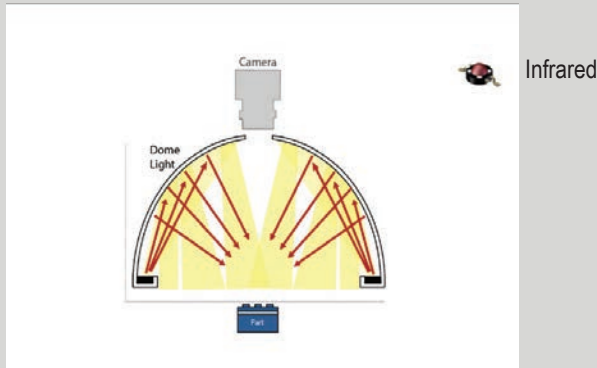


Solution: WMDL7-WHI (washdown dome)  
2.5ms Shutter Speed, light 1" from target.



Ground beef lot tracking code and freshness code

### Illumination - Inspection Setup



Washdown Dome removes glare from product

### Vision & Automation Opportunity:

Packaging inspection requirements: Read product tracking code from plastic wrapping and also identify the presents of freshness sticker. Production speed must be maintained while enhancing the quality inspection process to maintain product margins.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied white color, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's WMDL7-WHI (wash down dome light in White), 2.5ms shutter speed, light 1" from target. Smart camera identifies package lot information.

## Case Study - Product Application



### Food Packaging Inspection

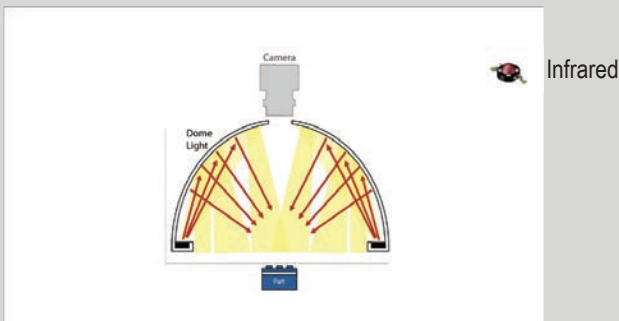


Solution: WMDL7-WHI Washdown Dome  
2.5ms Shutter Speed, light 1" from target.



Eckrich meat packaging

### Illumination - Inspection Setup



Washdown dome removes glare from product

### Vision & Automation Opportunity:

Packaging inspection requirements: Read UPC code on reflective packaging. Production speed must be maintained while enhancing the quality inspection process to maintain product margins.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied white color, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's WMDL7-WHI (Washdown Dome Light in white), 2.5ms shutter speed, light 1" from target. Smart camera identifies package lot information.



## Case Study - Product Application

### Game Controller Inspection

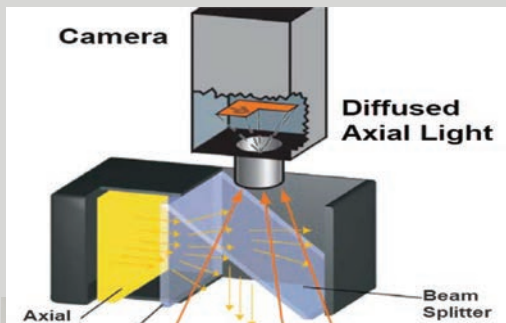


Solution: MDL12.25-WHI & MDA2-WHI



Very reflective surface - Xbox 360 Game Controller

### Illumination - Inspection Setup



Dome light removes glare, Diffused Axial light removes the image of the hole from the dome.

### Vision & Automation Opportunity:

Customer needed to validate that the center hand label is applied to controller. Production speed must be maintained while enhancing the quality inspection process to maintain product standards.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied white lights, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's DL12.25-WHI & MDA2-WHI. Smart camera identifies center label is applied to controller.

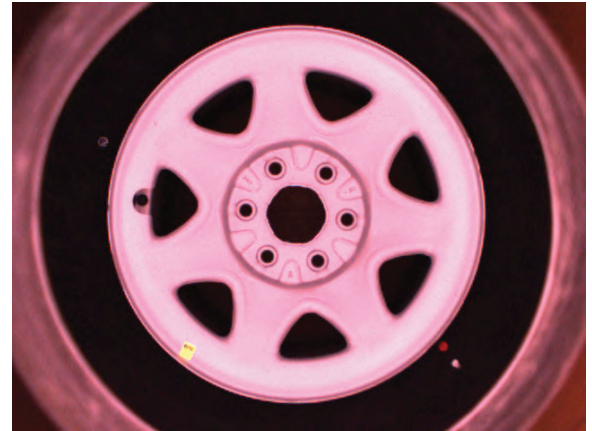
## Case Study - Product Application



### Tire - Wheel Inspection

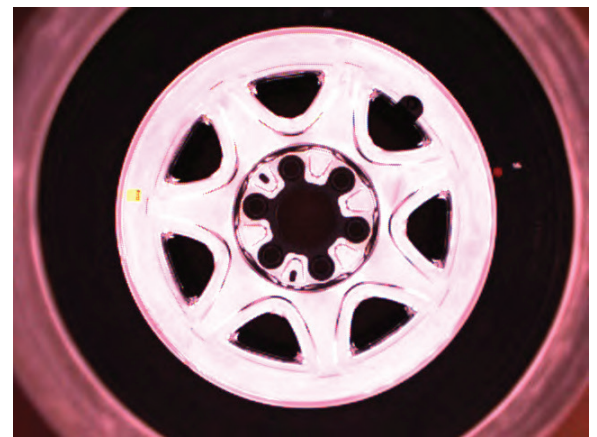
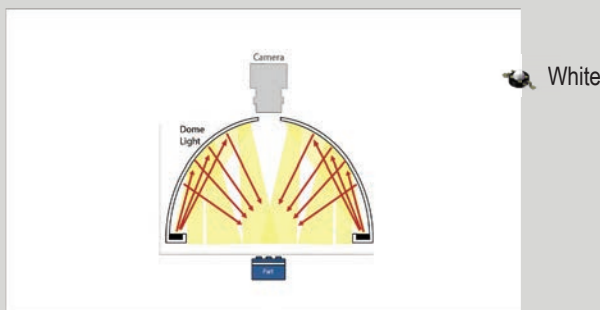


Solution: DL29.25 - WHI  
1.5ms Shutter Speed, red gain boost w/Color Camera.



Aluminum Wheel with Red and Yellow Marks

### Illumination - Inspection Setup



Chrome Wheel with Red and Yellow Marks

### Vision & Automation Opportunity:

Customer's tire and wheel inspection wanted a solution to identify & verify key markings on the tire. Production speed must be maintained while enhancing the quality inspection process to maintain product margins and reduce product failure liability.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied light colors, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's DL29.25 Dome Light in White, color camera 1.5ms shutter speed with red gain boost. Smart camera identifies tire markings on both Chrome and Aluminum wheels.

## Case Study - Product Application



### Stamp Metal Part Inspection

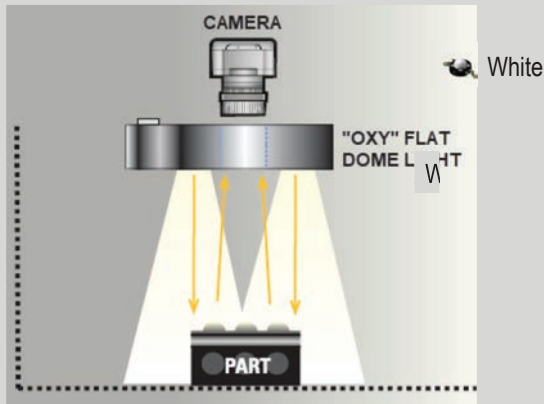


Solution: OL66 - WHI, 25 mm lens, 0.8ms shutter speed, light 1.188" from target.



Stamping process

### Illumination - Inspection Setup



Part inspection with OL66-WHI

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied LED lens optic types, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's OL66-WHI "Oxy" Flat Dome Light, 0.25 mm camera lens, 0.8ms shutter speed, light 1.188" from target. Smart camera identifies text & numbers on stamped part.

### Vision & Automation Opportunity:

Metal stamping process required product inspection. Printed text area is flat, medium tapered or full tapered. Inspection process must be able to identify text under all three conditions. Parts with missing ID text must be rejected. Production speed must be maintained while identifying part text.



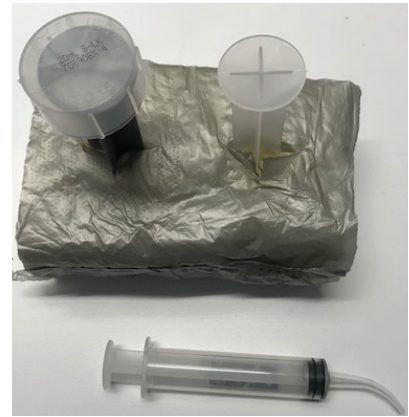
## Case Study - Product Application



### Syringe Inspection

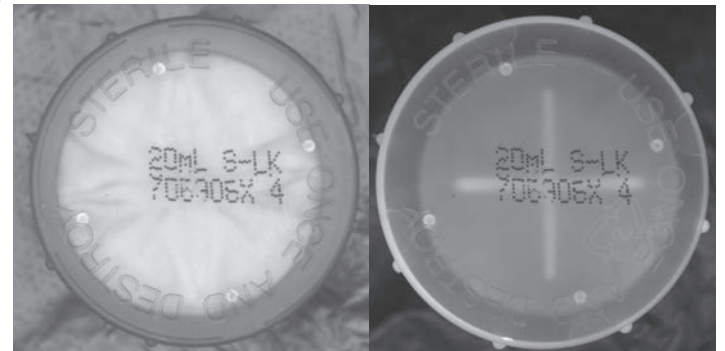
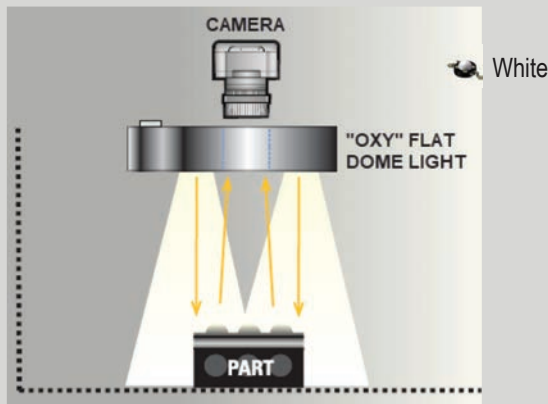


Solution: OL66 - WHI, 16 mm lens, light 4.5" from target.



Syringe Device

### Illumination - Inspection Setup



Syringe top with OL66-WHI "Oxy" Flat Dome Light.

### Vision & Automation Opportunity:

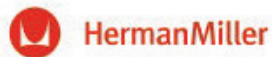
Customer required the ability to inspect syringe tops for part number. The plunger is gray and natural. Inspection process must be able to identify text under both conditions. Parts with missing text must be rejected. Production speed must be maintained while identifying part text.

### Vision & Automation Solution:

SI engineering lab mocked up the opportunity. SI engineer applied white LEDs, camera lenses and product positioning to develop repeatable quality testing solution. Spectrum Illumination's OL66-WHI "Oxy" Flat Dome Light, 0.16m camera lens, light 4.5" from target. Smart camera identifies text numbers on syringe tops mounted on both gray and natural colored plunger.

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