

# Smart Factory System

## Full Line-up

Maintain a full product line of verified high quality products required by factories, warehouses and other industrial facilities.

- Hi-Bay / Bay Lighting
- Flood Lighting
- Area Lighting
- Roadway Lighting

## World Best Technology

World class telecommunications company that develops major products that are configured to telecommunications base stations

- RRH / RRA / Blackhole Filter



## Smart Control

Maintain comprehensive control technology through a convenient, flexible and creative design and configuration.



## Pioneering Spirit

Release leading convergence products in the market through thinking ahead and R&D that likes taking on challenges





## Middle Power & Reflection

- High luminous efficacy - Typically 5% higher than lens
- Reflection ratio of 98% - Silver evaporation
- Minimum glare & minimum loss of luminance



## Smart Lighting Control

- Easy & economically efficient in maintenance, network build-up & expansion when compared to other control systems
- Support smart & step-by-step upgrades

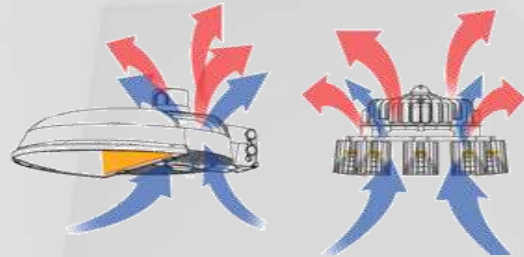


GigaTera<sup>®</sup>  
beyond light

Core

Technology

## Heat Dissipation Technology



- 24 years experience of advanced heat dissipation technology
- Enhanced heat transfer through a Vertical Heat Sink Structure
- Lowest junction temperature control & middle power chip

## In-house Driver Development



- Acceleration test at 80°C for 2 months, 1440 hours
- Customized driver for all products
- Guaranteed minimum 50,000 hours

# Differentiated Lighting Solution by GigaTera<sup>®</sup> beyond light



- Outstanding Lighting Technology
- Intelligent Lighting Controls
- Diverse Product Line-up

**Lighting Efficiency**

**130 lm/W**

Light Efficiency by Type of Light

3 wavelength lamps	<b>70 lm/W</b>
Metal halide	<b>80 lm/W</b>
Natrium	<b>90 lm/W</b>
Existing LED	<b>100 lm/W</b>
GigaTera LED	<b>130 lm/W</b>

### ❖ *Saving Cost*

When compared to other light sources(metal halide, natrium) or existing LED products a fewer number of lights can provide the necessary quantity of light required by the workplace reducing initial investment costs.

### ❖ *Reduce Maintenance*

Thanks to the advantages of reduced amount of lighting equipment and fewer lighting units required, maintenance costs and future ongoing costs can be innovatively reduced.

### ❖ *Flexible Operation*

Through the management of effective lighting the management organization can be slimmed down and unified, making it possible to systematically manage energy

### ❖ *Improved Corporate Image*

In proactively dealing with the global issue of carbon emissions regulations the company leads the way in responding to national energy policy and can obtain the amicable trust of consumers.

# Smart Factory System Diagram



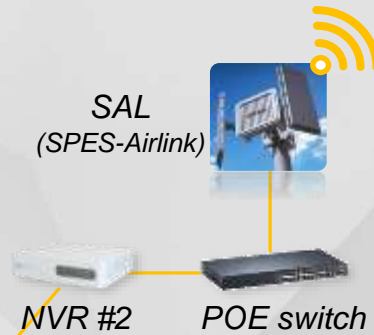
VMS  
(Video Monitoring System)



Standby



Active



NVR #2

POE switch

NVR #3

POE switch

•  
•  
•

NVR #n

POE switch



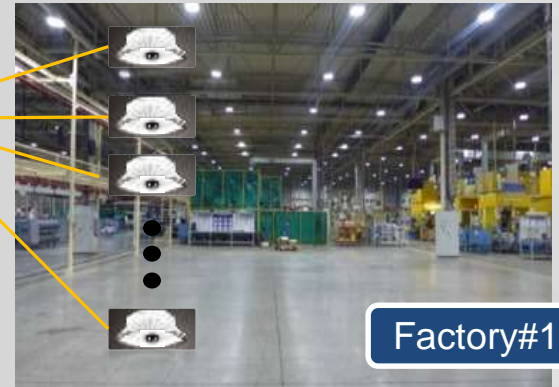
NVR #1



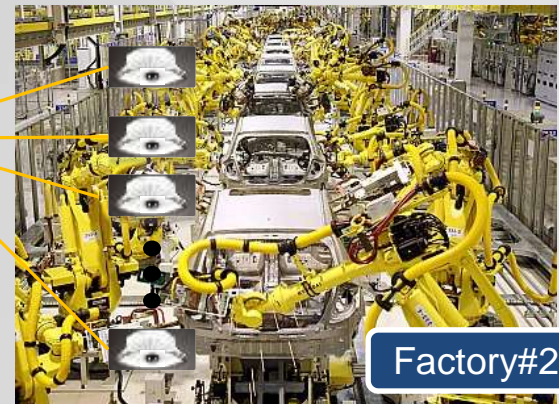
Road #1



Road #2



Factory #1



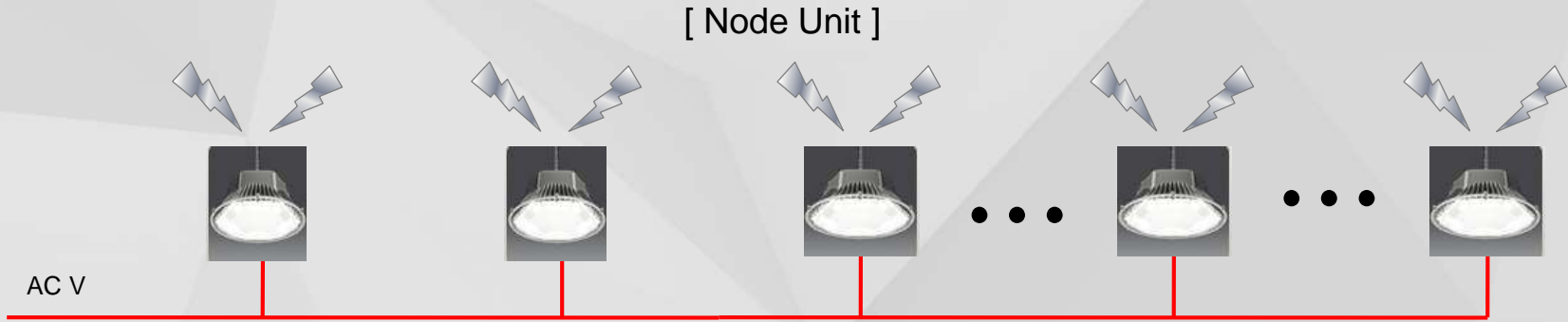
Factory #2

# Optimized Control System by **GESS**<sup>®</sup>

- ❖ **Maximized energy reduction through controls customized to the workplace**
- ❖ **Optimal integrated solutions for lighting controls**
- ❖ **Real time monitoring and controls**
- ❖ **Quick reporting of the occurrence of a problem for a quick response**
- ❖ **Creates diverse statistical analysis and reports**





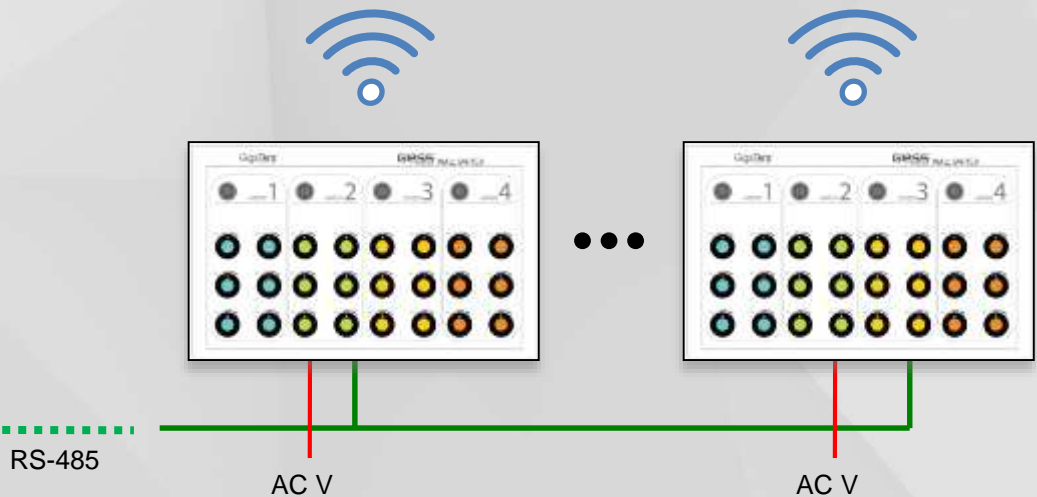


[ GUI Program ]

PC Program

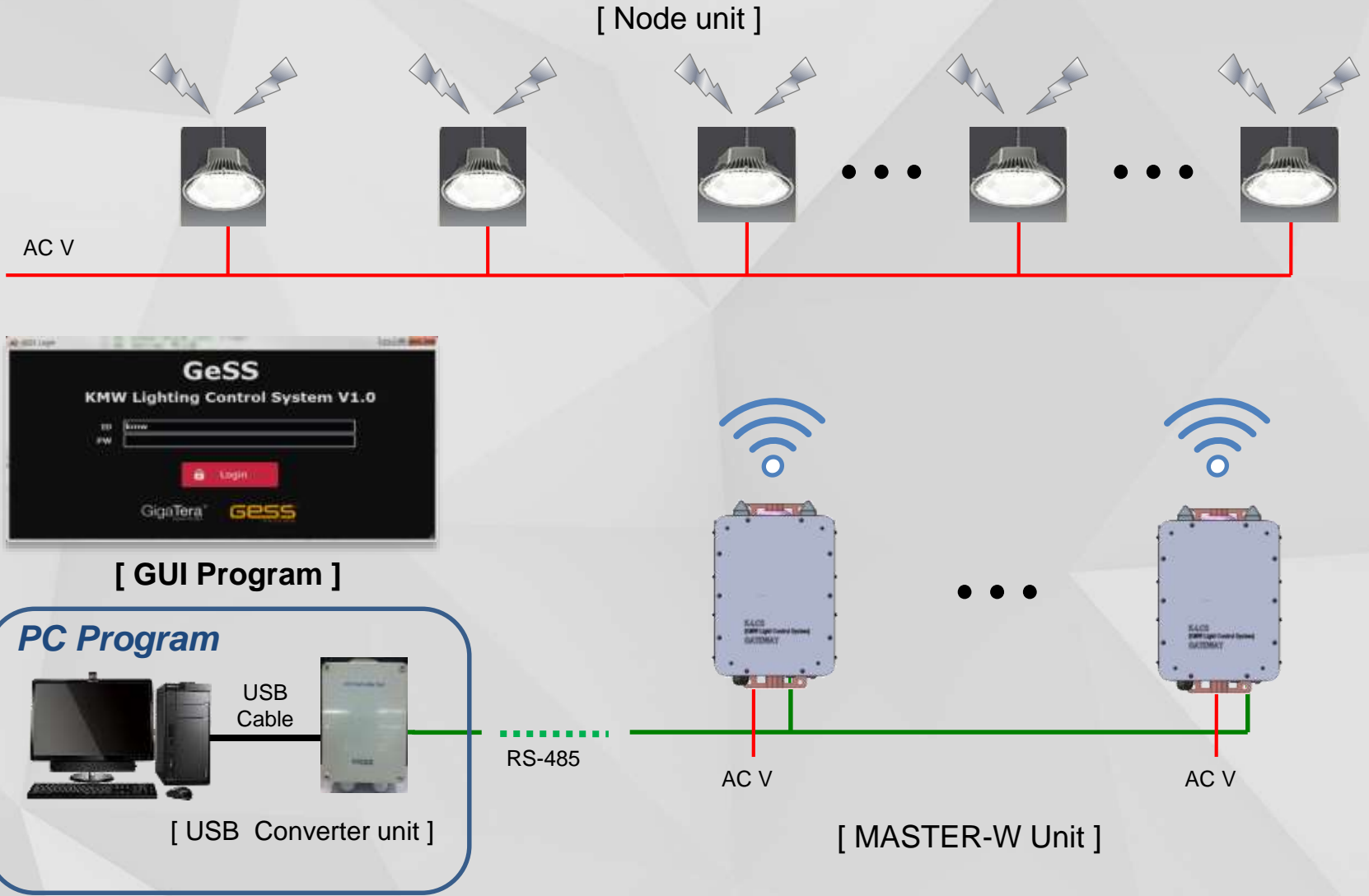


[ USB Converter Unit ]



[ Wall Switch ]  
(IPC-24Z)

RS-485



- ❖ The GUI program is operated to implement lighting condition monitoring and event controls of the master and slave unit.



[ PC Program ]

Item	Description
Process	Greater than Intel Core™ i3 2.5GHz
Core	Greater than Dual(2) Core
OS	Window 7/XP
HDD	500GB SATA 2.5inch HDD
RAM	2GB

- ❖ Module that connects to the USB port of a PC converting the received control commands to the RS-485 signal that is transmitted to the Master unit



[ USB Converter unit ]

Item	Description
Input Voltage	DC 5V
Power Consumption	20mW @DC 5V
Communication Method	USB, RS-485
Data Rate	38400[bps], 8-N-1



[ MASTER-W Unit ]

- ❖ Analyzes the control commands received by USB CONVERTER and transmits them to the node unit
- ❖ Manages the controls and conditions of a maximum of 200 node units

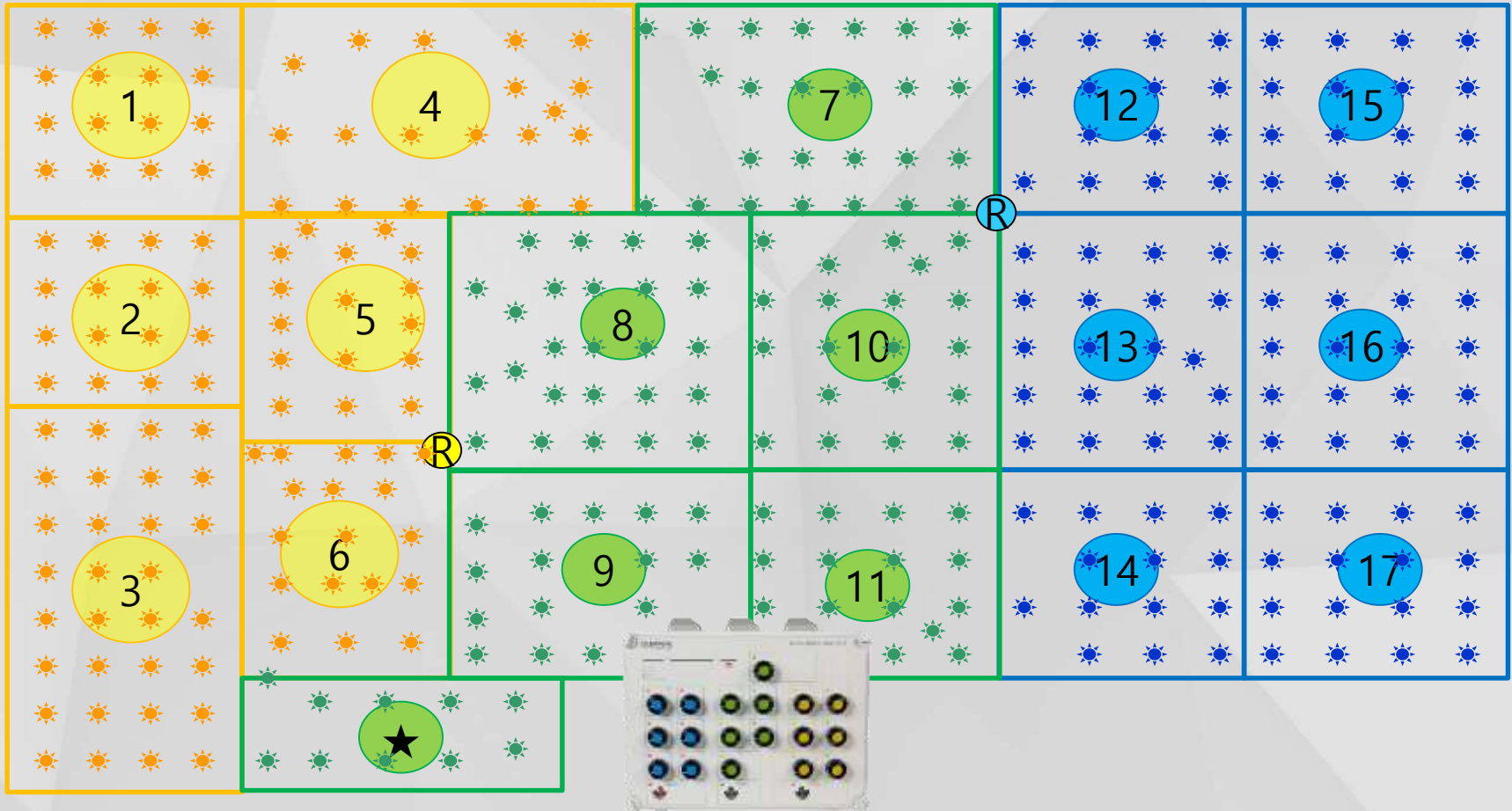
Item	Description
Input Voltage	AC 220V / 60Hz
Power consumption	2.5W @AC 200V
Communication Method	2.4GHz Wireless
Data rate	250,000[bps]



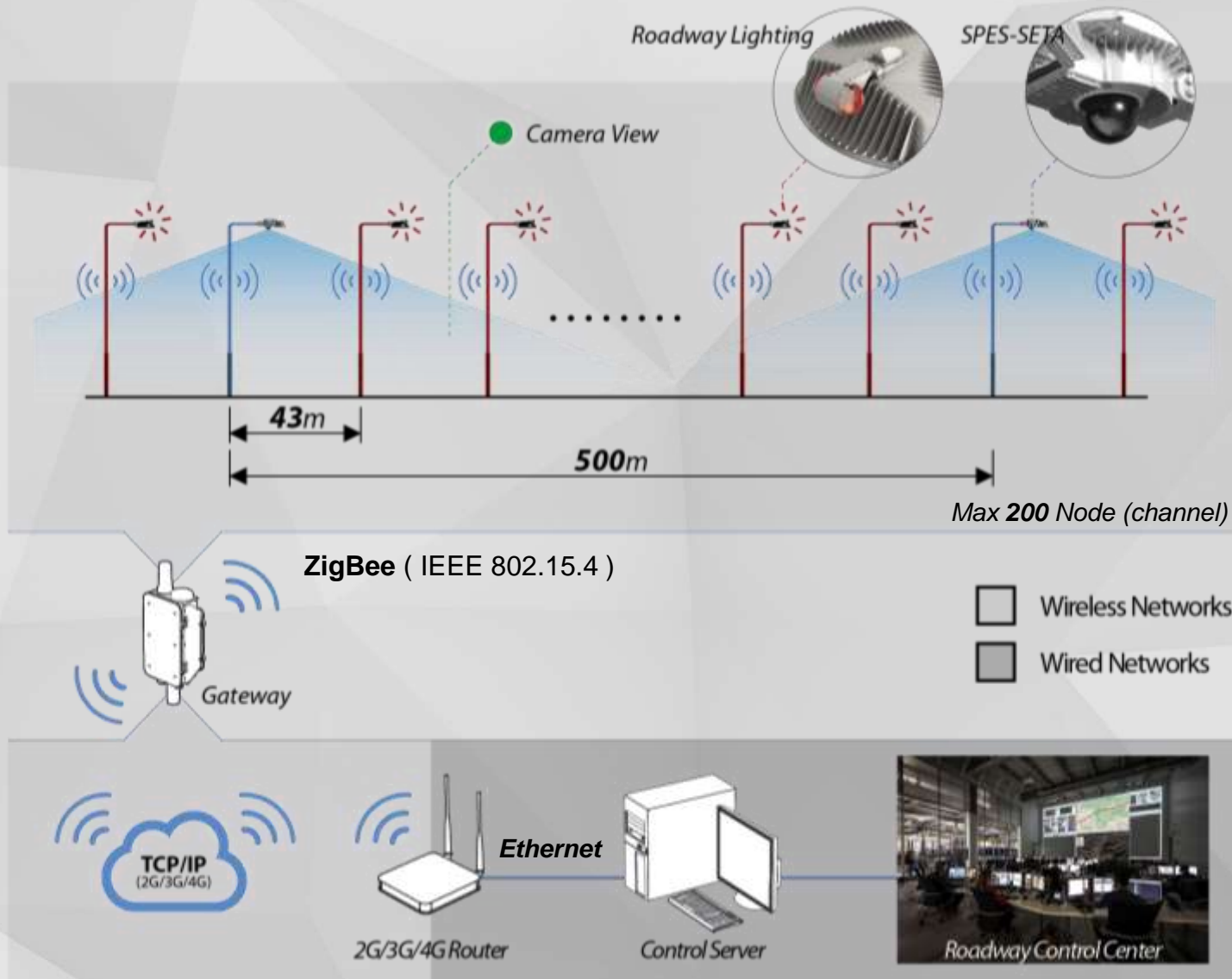
[ Node unit (built\_in) ]

- ❖ A module that analyzes the control commands received from the Master–W unit, controls the lighting, and conducts the control of the dimming and On/Off controls

Item	Description
Input Voltage	DC 15V
Power consumption	30mW @DC 15V
Communication Method	2.4GHz Wireless
Data rate	250,00[bps]
Dimmer Level	PWM, 0 – 10VDC controls



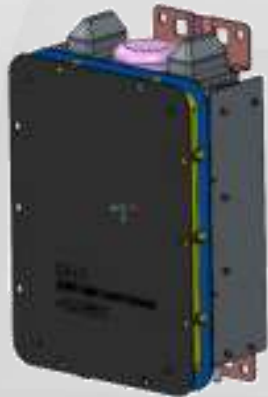
- Wall Switch #1 uses Wireless RF Channel 12 to control Groups 1 ~ 6 Group (111ea)
- Wall Switch #2 uses Wireless RF Channel 16 to control ★ Groups 7 ~11 (116ea)
- Wall Switch #3 uses Wireless RF Channel 20 to control Groups 12~17 (99ea)





[ Node ]

- 1) Dimming (1 – 10 V), dimming range (10% ~ 100)
- 2) Power on/off
- 3) Power Consumption, Current detection, Voltage detection
- 4) Data report (Voltage/Current)
- 5) Power Consumption : not more than 2.5W
- 6) Independent RTC IC
- 7) Remote program update / Hardware Reset



[ Gateway ]

- 1) Communication/command linker between Monitoring System and node over 3G (Option GSM)
- 1) Monitoring/control of NODE over ZigBee
- 2) Self time correction and timer function over built-in GPS module
- 3) Monitoring power consumption, Voltage, Current
- 4) Download through Debug Port

(\* Gateway to be mounted with clamp on lighting pole or on any building wall.)



[ SERVER ]



[ Mobile App. ]

### ❖ *Monitoring*

- 1) Real time monitoring of all onsite data (under condition of lights out, black out and communication, and power consumption conditions)
- 2) Location of outdoor lighting and confirmation of point information
- 3) Diverse monitoring layout provided according to the outdoor lighting information

### ❖ *Control*

- 1) Warning is issued if malfunction occurs confirming the location on the site and the status
- 2) Warning system with diverse channels (SMS, email, etc.)
- 3) There are manual/automatic system controls in case the site is inaccessible due an occurrence of an emergency
- 4) Streetlight shut off controls/ setting time/dimming controls/power disconnection(remote controls)

### ❖ *Communications*

- 1) Real-time transaction processing (reaction speed) guarantee
- 2) Filtering of the equipment system for malfunctions, data storage and inquiry
- 3) Diverse onsite equipment CONTROLLER(PC) and data interface

### ❖ *Management*

- 1) Statistical analysis and reports produced that include emergency and abnormal occurrences
- 2) System authority, group management, location search
- 3) User's current connection status and current use status of system

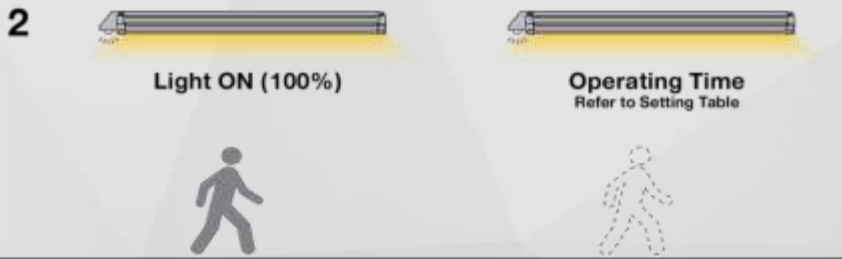
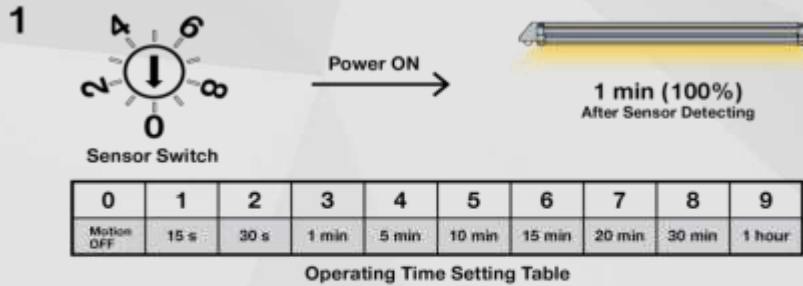




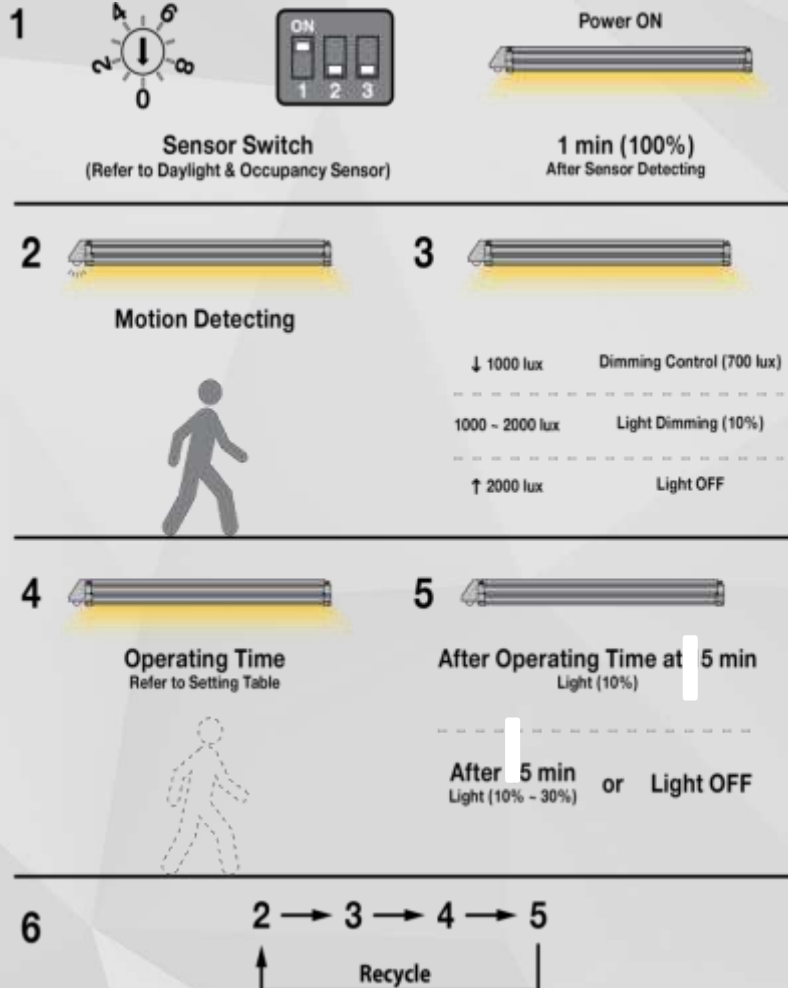
❖ Sensor that detects the amount of light picked up by the luminance sensor and automatically adjusts the lighting

❖ The dimming controls would be implemented in case there is a sensor measurement value of less than 1000Lux so that a luminance of 700Lux could be maintained.

❖ If a sensor measurement value of more than 1000Lux is maintained for 5 minutes the lighting will be turned off.



- ❖ The occupancy sensor automatically controls the lights when human movement is detected
- ❖ Possible to set up the Sensor Switch hold time for the lighting for durations between 15 seconds to 1 hour
- ❖ When the sensor detects human movement it runs the lights to 100% Lights ON
- ❖ Runs at Bi-Level set up values if no movement is detected during hold time.
- ❖ The Bi-Level set up can be adjusted among 3 dip switches, and can be adjusted between OFF and 30%

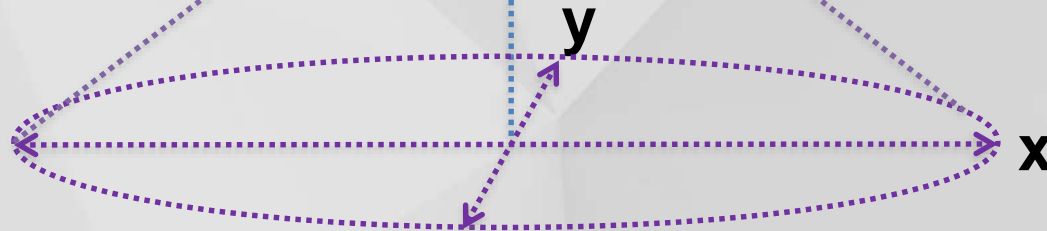
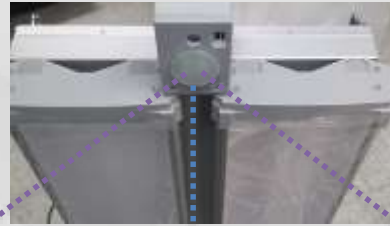


❖ Sensor that automatically controls the lights by an occupancy sensor and daylight sensor through comprehensive detection

❖ The occupancy sensor has to continue to detect human movement for the lighting to remain on, and once the daylight sensing comes on, from that point on, dimming will be controlled according to the luminance.

❖ The Bi-Level set up may be moved to a pre-determined value if the sensor does not detect movement during the maintenance period

❖ Maintaining a luminance sensor measurement value of more than 1000Lux will cause the lighting to turn off.



H(height)	Sensor Distance	
	x	y
5 M	7 M	3.5M
6 M	7.2 M	3.6 M
7 M	9.4 M	4.2 M
8 M	11 M	4.7 M
9 M	13 M	6 M
10 M	14 M	6.6 M

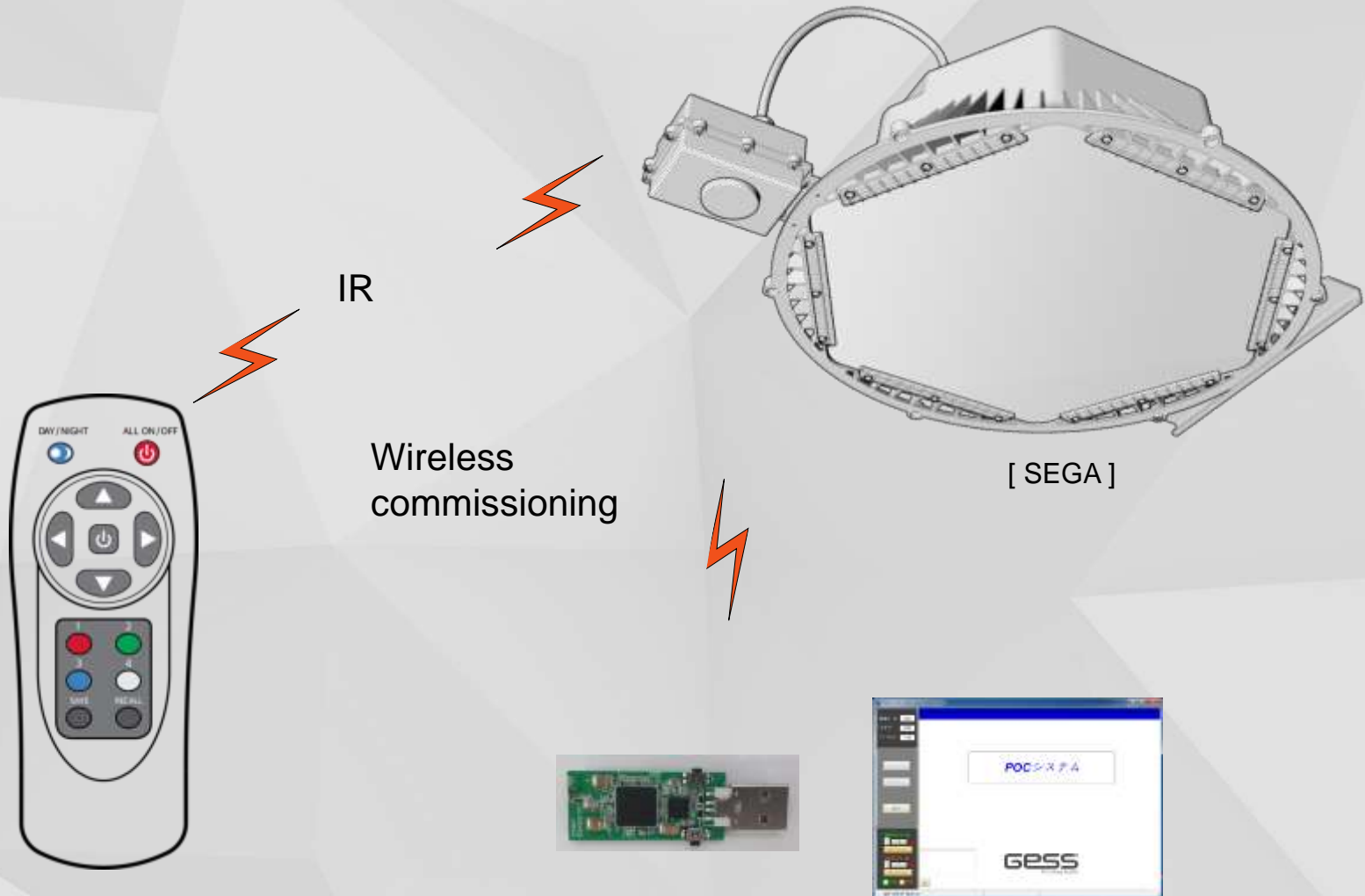
(\* Sensor distance can change depending on the sensitivity controls and the onsite situation. )

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# GeSS – Sensor Application Example

**GeSS™** : SENSE

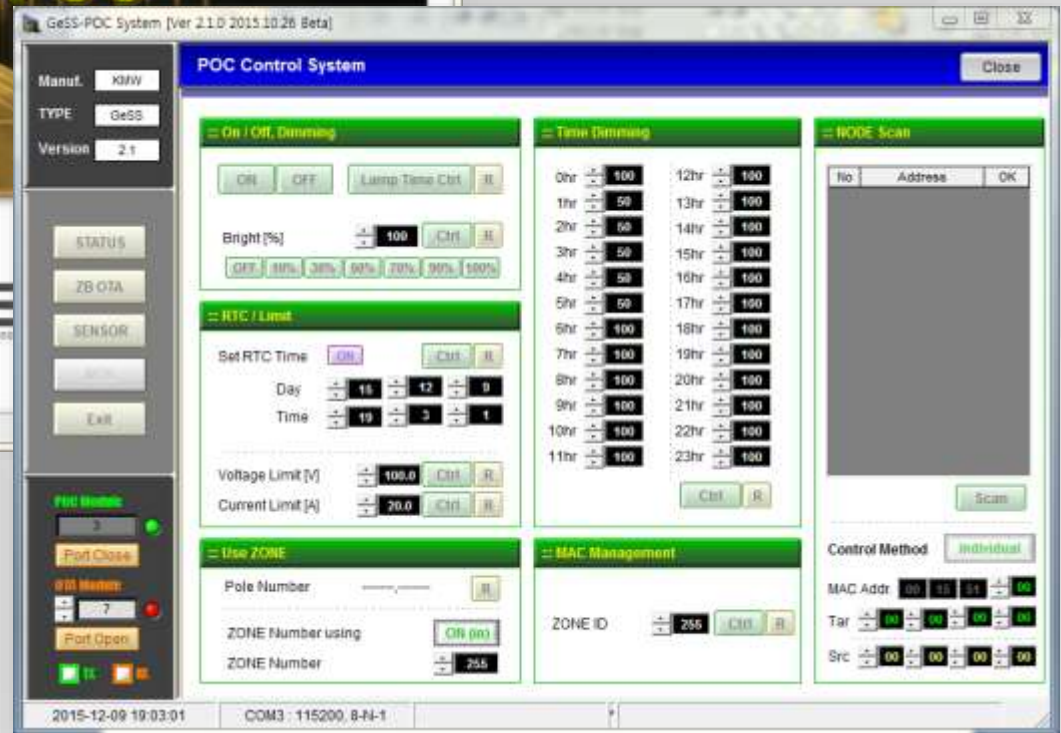


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GeSS – POC

POC (Commissioning PC Program)



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**GeSS – IPC**

**IPC** (Intelligent Power Controller)



[ IPC-6Z ]



[ IPC-1Z ]



[ IPC-2Z ]



[ IPC-3Z ]



[ IPC-12Z ]



[ IPC-18Z ]



[ IPC-24Z ]

### ❖ Master Switch

The Master Switch turns the lights ON/OFF in all group (units of 6 zones), or it is used when converting to mode (set up / disable) from sensor control modes

### ❖ Dimming Switch

The Dimming Switch controls the On/OFF Dimming in the relevant zone

### ❖ Group State LED

A red LED will light up If all the zones in all the groups are turned off, and a green LED light will light up when the lights are on in just 1 zone

### ❖ Auto Mode LED

When moving to Auto Mode, the Sensor control mode, the red light will come on.

### ❖ Manual Mode LED

When controlling manually (in person) a red LED light will come on.

### ❖ IR Receiver (Option)

Receiver location that receives the transmission from the IR signal when controlled using the remote control



**EKOSMART**  
(Slovenia)



[ FACTORY 1 ]

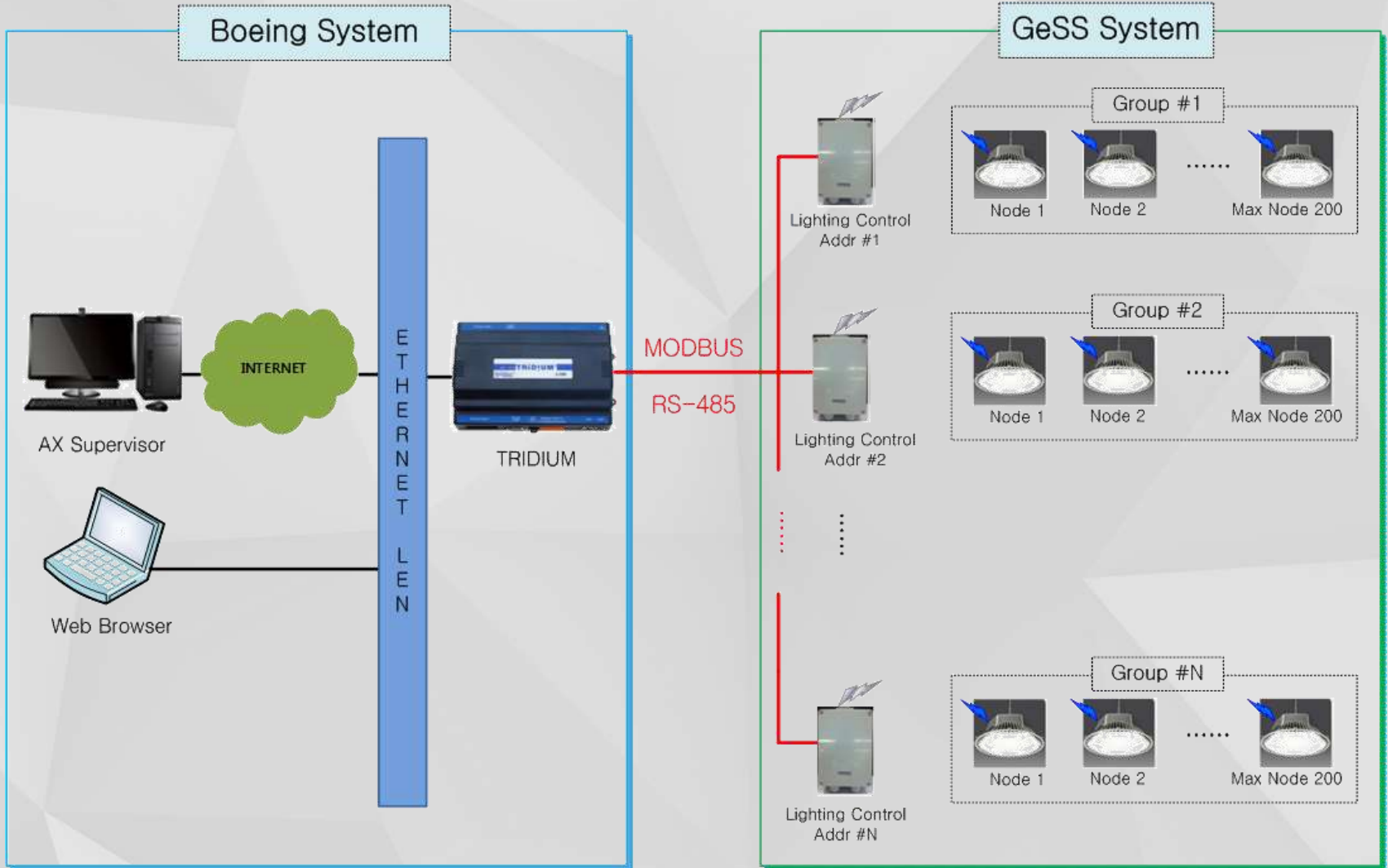


[ FACTORY 2 ]



[ FACTORY 3 ]





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## Diverse Product Line-up

### High-Bay Lighting

*SHE/SEGA*

### Bay Lighting

*EFL/IBL/NANA/SORA/ZARA*

### Flood Lighting

*MAHA/WAPA/BIFA/TM*

### Area Lighting

*NM/NEMA/GIWA*

### IT Convergence

**SPES** 

### Control Solution

**GESS**

### Roadway Lighting

*META/SETA/JETA*

### Office Lighting

*TERA/TOPA/I-TUBE/GAGA*

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## Diverse Line-up

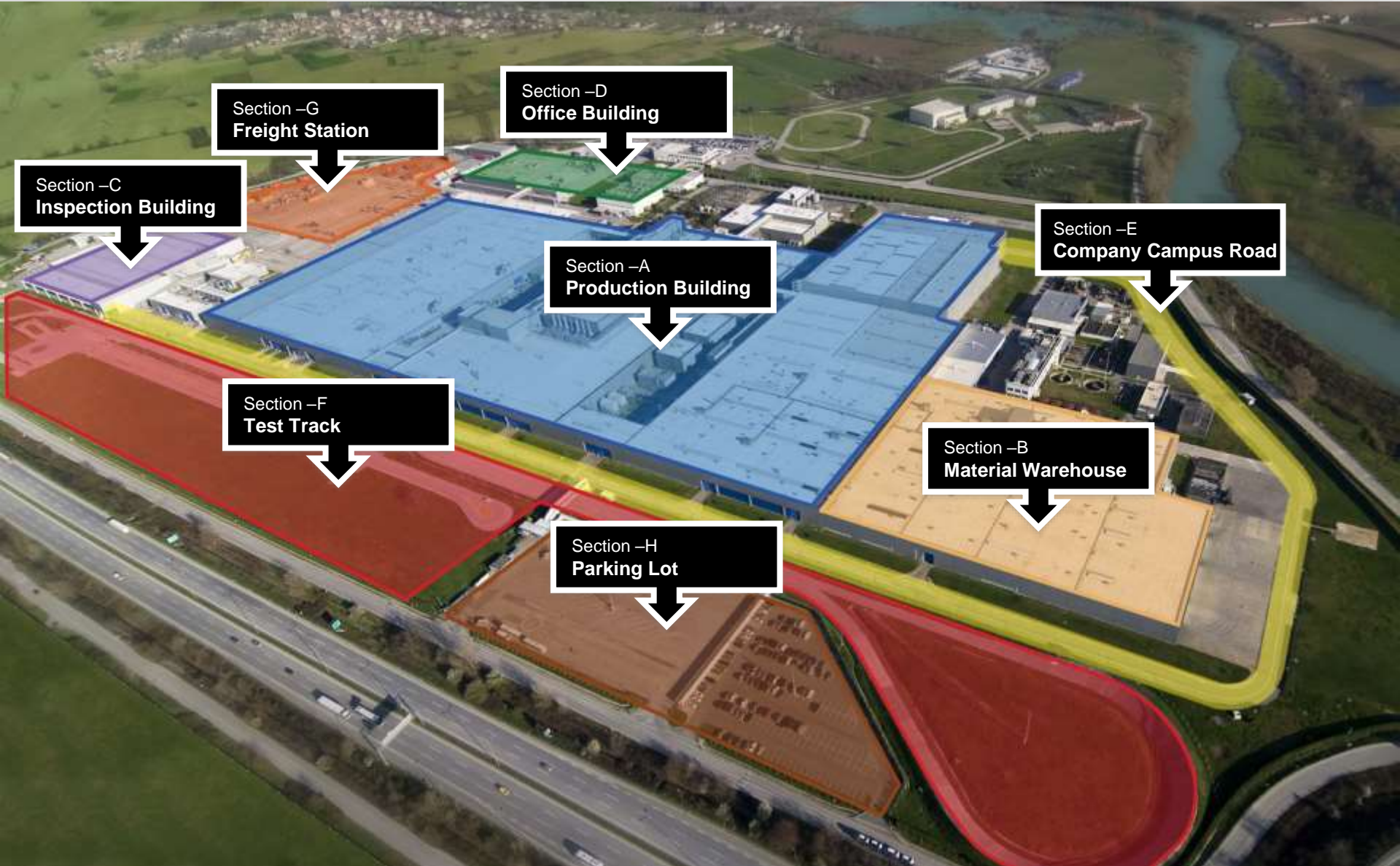
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# Product Line-up

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# Classification of Different Facilities in Production Site



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Section A/B

# Bay Lighting Solution

Section -A  
Production Building

Section -B  
Material Warehouse



## SEH Series

- ◆ High Power Solution
- ◆ Unrivaled Efficacy **125lm/W**
- ◆ Wired/Wireless Control

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SEH350	<b>350W</b>	<b>125 lm/W</b>	<b>43,750 lm</b>	<b>4000K 5000K</b>
SEH400	<b>400W</b>		<b>50,000 lm</b>	
SEH500	<b>500W</b>		<b>62,500 lm</b>	

## Applications





## SEGA Series

- ◆ Unrivaled Efficacy **130lm/W**
- ◆ Wired/Wireless Control
- ◆ Individual Cooling Structure

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SE080	<b>80W</b>	<b>130 lm/W</b>	<b>10,400 lm</b>	<b>4000K 5000K 5700K 6000K</b>
SE100	<b>100W</b>		<b>13,000 lm</b>	
SE130	<b>130W</b>		<b>16,900 lm</b>	
SE160	<b>160W</b>		<b>20,800 lm</b>	

### Applications



## EFL Series

- ◆ Economic Bay Lighting
- ◆ Easy Replace & Install
- ◆ Excellent Cooling Structure

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
EFL070	<b>70W</b>	<b>125 lm/W</b>	<b>8,750 lm</b>	<b>3000K 4000K 5000K 5700K</b>
EFL100	<b>100W</b>	<b>125 lm/W</b>	<b>12,500 lm</b>	
EFL130	<b>130W</b>	<b>130 lm/W</b>	<b>16,900 lm</b>	

### Applications





## IBL Series

- ◆ Indirect Bay Lighting
- ◆ Non-Glare
- ◆ Neat Design

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
IBL130	<b>130W</b>	<b>105 lm/W</b>	<b>13,650 lm</b>	<b>3000K 4000K 5000K 5700K</b>
IBL170	<b>170W</b>		<b>17,000 lm</b>	
IBL200	<b>200W</b>		<b>21,000 lm</b>	
IBL400	<b>400W</b>		<b>42,000 lm</b>	



## NANA Series

- ◆ Visually Comfortable
- ◆ Indirect Reflection
- ◆ Non-Glare

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
NA65	<b>65W</b>	<b>105 lm/W</b>	<b>6,825 lm</b>	<b>4000K 5000K 5700K</b>
NA80	<b>80W</b>		<b>8,400 lm</b>	



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Section C : Inspection Building

# Automotive LED Light Tunnel

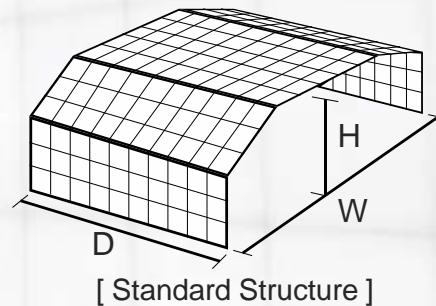
Automobile Inspection  
Paint Inspection  
Defect Detection



## APL

LED Array Panel Lighting

- ◆ Seamless All Around Panel Lighting
- ◆ Optimal Lighting for Paint Shop / VPC Shop
- ◆ Excellent Cooling Structure
- ◆ Non Shadow Inspection Lighting



### Standard Structure Specification

Panel Size	<b>600 * 600mm</b>
Tunnel Size	<b>5.6 * 5.4 * 3.1m</b>
Panel Qty	<b>153ea</b>
Total Power	<b>6,120W</b>

Model	Power	Luminous Flux	CRI	Color Temperature
APL040	<b>40W</b>	<b>3,200 lm</b>	<b>90 Ra</b>	<b>5700K 2700K</b>



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Section D : Office Building

# Office Lighting Solution



## I-TUBE Series

- ◆ Easy to replace & installation
- ◆ Glare-free & Non-flicker
- ◆ Optimal uniformity

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
ITB10	<b>10W</b>	<b>110 lm/W</b>	<b>1,100 lm</b>	<b>3000K</b>
ITB16	<b>16W</b>	<b>115 lm/W</b>	<b>1,840 lm</b>	<b>4000K</b>
ITB19	<b>19W</b>	<b>110 lm/W</b>	<b>2,145 lm</b>	<b>5700K</b>
ITB20	<b>20W</b>	<b>110 lm/W</b>	<b>2,145 lm</b>	<b>6500K</b>



## Application



## TERA Series

- ◆ Variety of sizes
- ◆ Simple & neat design
- ◆ Non-flicker & light weight

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
TER016-14	16W	115 lm/W	1,800 lm	3000K 4000K 5000K 5700K
TER022-14	22W	115 lm/W	2,530 lm	
TER032-14	32W	110 lm/W	3,520 lm	
TER032-22	32W	115 lm/W	3,680 lm	
TER034-22	34W	100 lm/W	3,400 lm	
TER036-22	36W	112 lm/W	4,032 lm	
TER045-22	45W	115 lm/W	5,175 lm	
TER040-24	40W	110 lm/W	4,400 lm	

## Application



## TOPA Series

- ◆ Refined & comfortable light
- ◆ Dimming control (optional)
- ◆ Sense of dimensional design

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
TOP 034-22	34W	105 lm/W	3,570 lm	3000K 4000K 5000K 5700K
TOP 040-24	40W	115 lm/W	4,600 lm	





## GAGA Series

- ◆ 6”/8” Recessed Downlight
- ◆ Easy & convenient install
- ◆ Light weight (400g)



Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
GAG008	<b>7.5W</b>	<b>105 lm/W</b>	<b>787.5 lm</b>	<b>3000K</b> <b>4000K</b> <b>5700K</b>
GAG010	<b>10W</b>	<b>105 lm/W</b>	<b>1,050 lm</b>	
GAG015	<b>15W</b>	<b>100 lm/W</b>	<b>1,500 lm</b>	
GAG020	<b>20W</b>	<b>90 lm/W</b>	<b>1,800 lm</b>	
GAG034	<b>34W</b>	<b>110 lm/W</b>	<b>3,740 lm</b>	



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Section E : Company Campus Road  
Section F : Test Track

# Roadway Lighting Solution

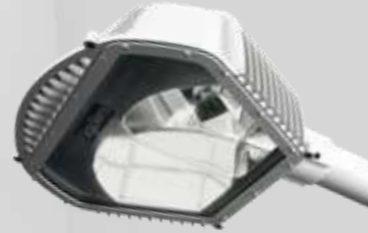
Section -E  
Company Campus Road

Section -F  
Test Track



## META Series

- ◆ Standard Roadway Lighting
- ◆ Wireless & Sensor Control
- ◆ Diverse Product Lineup



## SETA Series

- ◆ Automatic RGB Conversion
- ◆ Lighting Control System
- ◆ Diverse Mounting Options

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
MT100	100W	130 lm/W	13,000 lm	4000K 5000K 5700K
MT130	130W		16,900 lm	
MT150	150W		19,500 lm	
MT180	180W		23,400 lm	

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SET060	60W	120 lm/W	7,200 lm	3000K
SET080	80W	125 lm/W	10,000 lm	4000K
SET100	100W		12,500 lm	5000K
				6500K

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Section H : Parking Lot

# Area Lighting Solution



## NM Series

- ◆ Light uniformly at all angles
- ◆ Glare control with cutoff optics
- ◆ NEMA-Photo sensor (option)



## NEMA Series

- ◆ Easy & Perfect Aiming
- ◆ External Separate Driver
- ◆ Stable Cooling Structure

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
NM050	<b>50W</b>	<b>95 lm/W</b>	<b>4,750 lm</b>	<b>4000K 5000K 5700K</b>
NM070	<b>70W</b>		<b>6,650 lm</b>	
NM100	<b>100W</b>		<b>9,500 lm</b>	
NM130	<b>130W</b>		<b>12,350 lm</b>	

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
NEM040	<b>40W</b>	<b>110 lm/W</b>	<b>4,400 lm</b>	<b>5000K</b>

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Section G : Freight Station

# HighMast & Flood Lighting Solution

Section -G  
Freight Station



## MAHA-NEO Series

- ◆ Replacement for 1.5kW HID
- ◆ Unrivaled Efficacy **130lm/W**
- ◆ High-power Flood Lighting

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
MAN600	<b>600W</b>	<b>130 lm/W</b>	<b>78,000 lm</b>	<b>3000K 4000K 5000K</b>



## MAHA Series

- ◆ Standard Flood Lighting
- ◆ Wired/Wireless Control
- ◆ Excellent Energy Saving

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
MA150	<b>150W</b>	<b>130 lm/W</b>	<b>19,500 lm</b>	<b>3000K 4000K 5000K</b>
MA200	<b>200W</b>		<b>26,000 lm</b>	
MA300	<b>300W</b>		<b>39,000 lm</b>	
MA400	<b>400W</b>		<b>52,000 lm</b>	



## SUFA Series

- ◆ Replacement for 2kW (SF800)
- ◆ Excellent Cooling Structure
- ◆ Diverse Light Distribution

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SF200	<b>200W</b>	<b>105 lm/W</b>	<b>21,000 lm</b>	<b>3000K 4000K 5000K</b>
SF400	<b>400W</b>		<b>42,000 lm</b>	
SF800	<b>800W</b>		<b>84,000 lm</b>	



## SUFA-X Series

- ◆ Wired & Wireless Control
- ◆ Diverse Product Lineup
- ◆ Slimmed-down Design




Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SFX400	<b>400W</b>	<b>110 lm/W (70Ra) 105 lm/W (80Ra)</b>	<b>44,800 lm</b>	<b>3000K 4000K 5000K 5700K</b>
SFX500	<b>500W</b>		<b>55,000 lm</b>	
SFX600	<b>600W</b>		<b>66,000 lm</b>	
SFX800	<b>800W</b>		<b>88,000 lm</b>	
SFX1K0	<b>1,000W</b>		<b>110,000 lm</b>	
SFX1K2	<b>1,200W</b>		<b>132,000 lm</b>	



## WAPA Series

- ◆ Inspiring night view
- ◆ Optimal Uniformity
- ◆ Suitable for Billboard Lighting

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
WP050	<b>50W</b>	<b>125 lm/W</b>	<b>6,250 lm</b>	<b>3000K 4000K 5000K 6500K</b>
WP075	<b>75W</b>		<b>9,375 lm</b>	
WP100	<b>100W</b>		<b>12,500 lm</b>	

Installation height	Environment and conditions	Proposal product
<p><b>High ceiling</b> (Greater than 10m)</p>	<p>Factories with high ceilings require a great deal of expenses and time excluding power consumption to replace, maintain and clean the lighting located along the high ceiling. Likewise, using a product that uses a reduced number of light sources or using a product with a long life time is necessary for reducing the time and frequency required to perform maintenance. Also, the higher the ceiling, the more effective the concentrating type of distribution product for the smooth lighting controls for the work surface.</p>	 <p>SEH      SEGA</p>
<p><b>Middle-height ceiling</b> (6~10m or higher)</p>	<p>With a factory height of 6~10m, instead of the lighting output of the product, the width and uniformity is elevated canvassing the entire work surface with light, which is effective in boosting workability and productivity.</p>	 <p>SEGA      EFL      IBL</p>
<p><b>Low-ceiling</b> (Lower than 6m)</p>	<p>Enough attention should be paid to glare in work places with low ceilings. In particular, for local illumination that is required detailed work in most cases one would have to move closer towards the light source to perform such tasks. A product is effective if it takes into consideration indirect lighting when using the control room and display gage or when using the display and other workability factors.</p>	 <p>IBL      NANA      SORA</p>





## Reduced carbon emissions

Through introduction of LED lighting that can innovatively reduce carbon emissions it is possible to proactively cope with the carbon emissions regulations of each country, and one can win amicable consumer trust through claim to being an eco-friendly business.



## Reduced power costs & maintenance costs

With LED lighting it is possible to reduce up to 80%(including reductions obtained via the control settings) of previous energy usage when compared to existing traditional lighting. Not only does this reduce electricity usage expenses, but it also makes it possible to reduce maintenance costs (arising from the frequent replacement costs and installation costs during replacement).



## Work Efficiency & Boosted Productivity

When introducing LED lighting it is possible to create a pleasant work environment by boosting luminance by more than 60% compared to the existing lighting. The improved environment boosts work efficiency and productivity lowered the ratio of defective products.



## Development of a safe work place



Real time integrated control system of the inside/outside of the factory makes it possible to quickly deal with safety and disaster emergencies.



Possible for quick response to accidents and disasters with the intelligent hard hat (natural disaster use / industrial site use)

# Advanced & evolved Convergence Solution by GigaTera<sup>®</sup> beyond light

- Integrated System
- Absolute Safety & Security
- Advanced Networks



Global leader in LED lighting

**GigaTera**  
beyond the light

**IT Convergence**  
**Safety & Security**  
**Solution**



## SPES-SEGA

- ◆ Fire detection and alarm system
- ◆ Detection use infrared sensor
- ◆ Wireless controls / Wireless link



## SPES-SETA

- ◆ IT Convergence Roadway Lighting
- ◆ Full HD PTZ IP Camera
- ◆ WiFi / LTE 4G Support

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SE130	<b>130W</b>	<b>130 lm/W</b>	<b>16,900 lm</b>	<b>5000K</b>

Model	Power	Luminous Efficacy	Luminous Flux	Color Temperature
SST	<b>120W</b> (LED:100W CAM:20W)	<b>125 lm/W</b>	<b>12,500 lm</b>	<b>5000K</b>

## LED lighting, CCTV Camera, wireless transmission AP built in design

- Maximizes energy reduction by applying high efficiency LED street lighting
- High resolution video footage through Full HD (1920 x 1080p) support
- 450Mbps speeds supported through built-in high-performance wireless AP
- Initial investment saving (CAPEX) and reduction of operating costs (OPEX)
- Improvement in the city's aesthetics through an integral system
- Acquisition of ICT converged quality certifications numbers 1 ~ 3 which are recognized by the Korean Government
- Acquired certification from the Ministry of Science, ICT and Future Planning(TTA) and the Telecommunications Technology Association



[ ICT Converged Quality Certi



[ Lighting ]



[ CCTV ]



[ Antenna ]

Global leader in LED lighting

GigaTera<sup>®</sup>  
beyond the light

SPES<sup>®</sup> - SEGA  
**Fire Suppression System**

# Fire Suppression System

CONCEPT



GigaTera<sup>®</sup>  
beyond light

## ❖ Fire Suppression System



### Early Detection of Fire

When a fire starts, the point of ignition is identified and the fire is extinguished or the spread of fire is prevented reducing damage.



### Wireless Controls / Wireless Link

A joint fire extinguishing system among remote controls and modules using the wireless node



### Motorize

The structure can tilt vertically and horizontally using the stepping motor, spur, gear and shaft.



### Sensor \_ infrared sensor

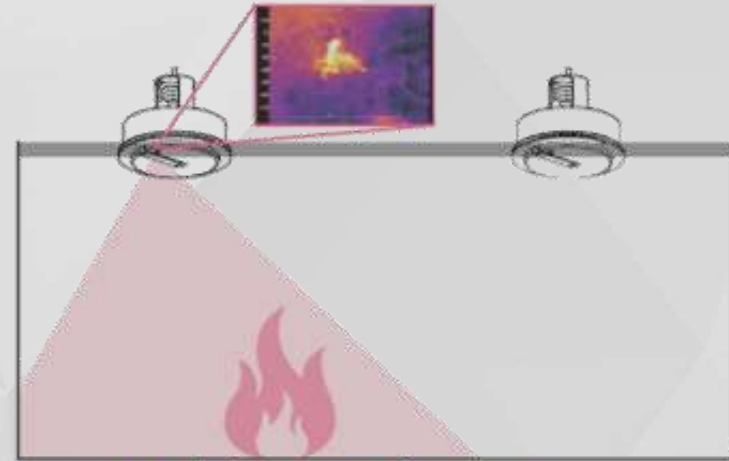
Fire identified and location determined using spark detection image processing via the infrared sensor



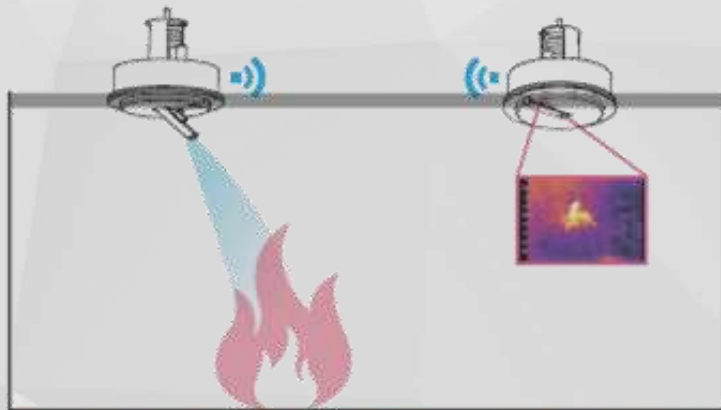
### Alarm System

Control Room / Fire Station Automatic Alarm System

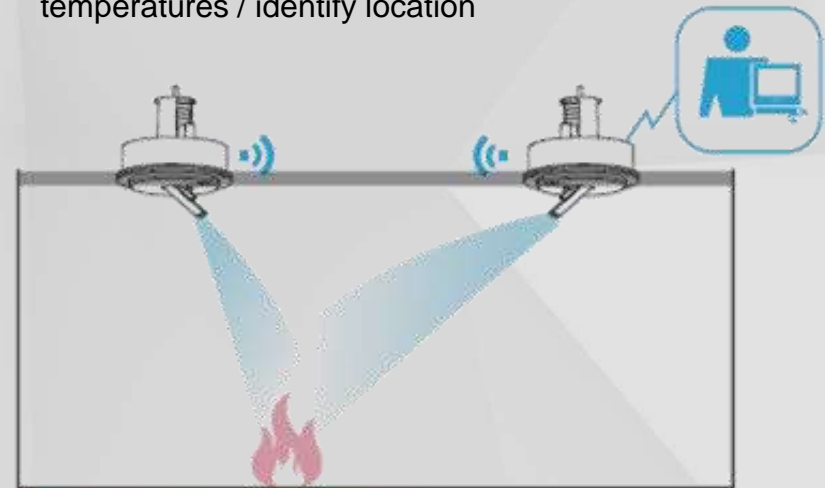
❖ Possible application scenario



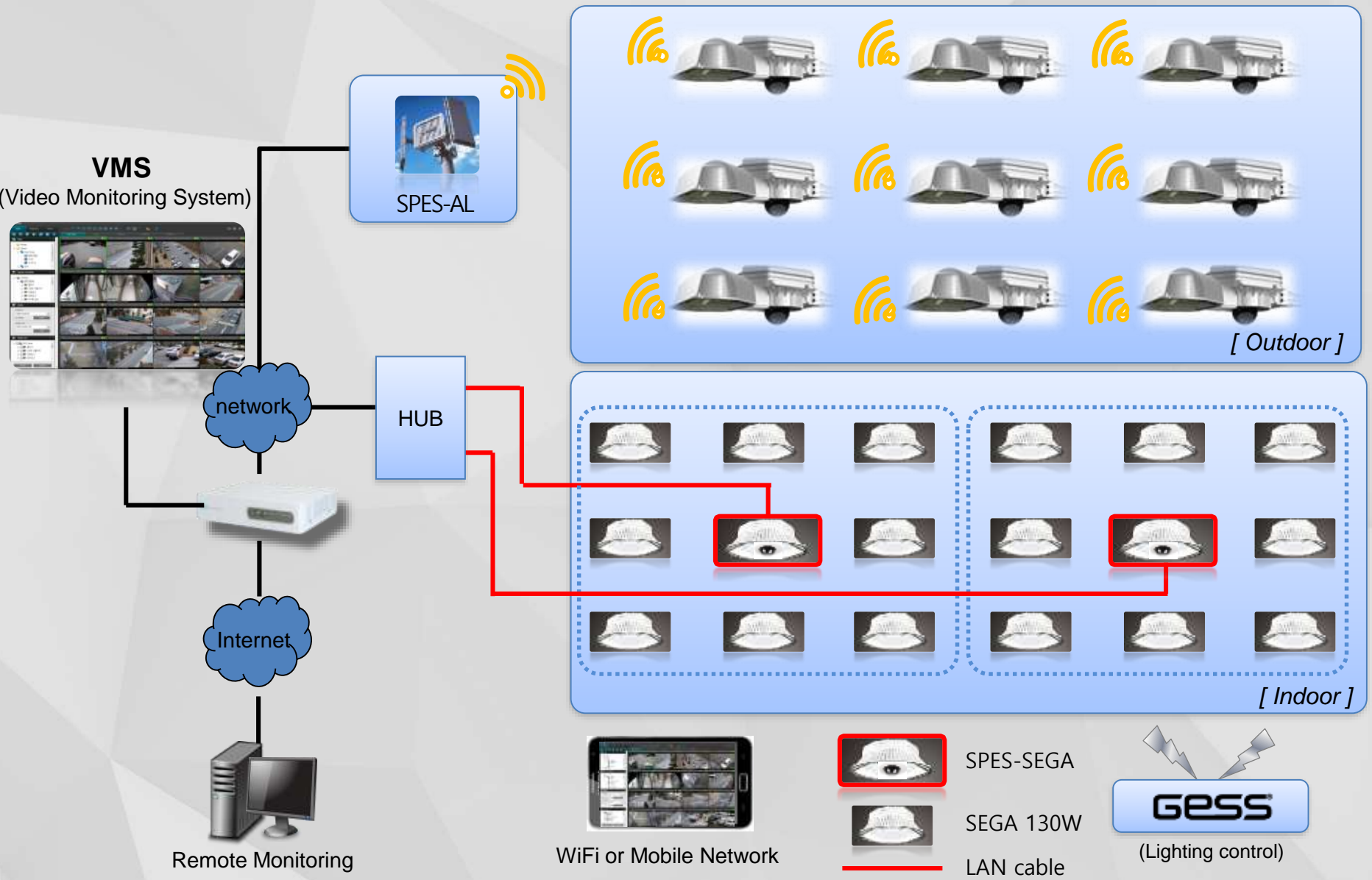
Infrared light sensing / distinguish different temperatures / identify location



Extinguish fires as they start / wireless module communications / distinguish secondary fire



Extinguish joint fires / control room communications





## Safety + Communication + Lighting

Specialized for the industrial work site, SAGA-H is a smart converged hard hat that integrates the advanced IT technology with built in lighting and sensor functions. It is embedded with the optimal functions for reacting to an industrial accident.

- *Smart hard hat for industrial work sites*
- *Wireless Functions*
- *LED Lighting*
- *Impact and Fall Detection*
- *Distress Signal Function*

### SAGA-H Feature



사고정보전송



비콘기능



비상알림



충격센서



핸즈프리



LED조명



무전기능

\*상기 사양은 모델에 따라 다르게 적용됩니다.

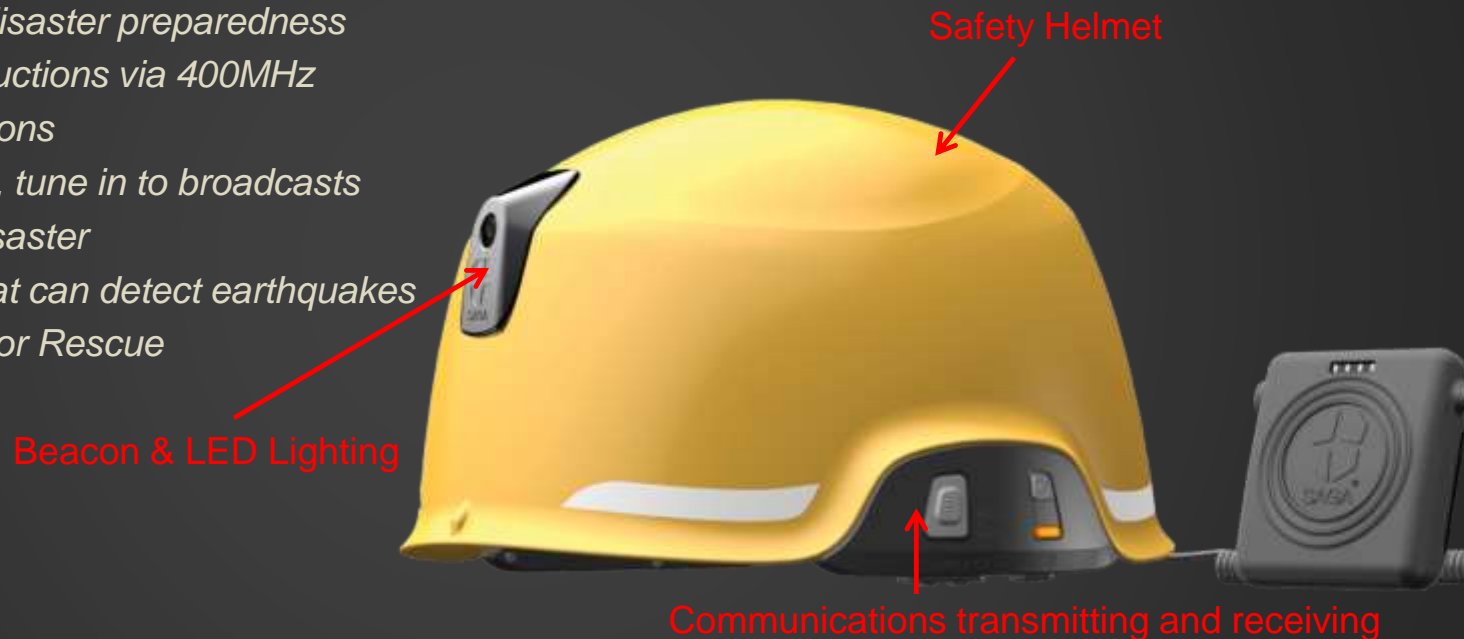


● Color variation

## Safety + Communication + Lighting

No one can predict the future occurrence of an 'accident' that can happen to anyone. However, just because accidents can not be predicted does not mean that they cannot be prevented.

- *Lightweight for disaster preparedness*
- *Evacuation instructions via 400MHz telecommunications*
- *Built in FM radio, tune in to broadcasts related to the disaster*
- *Gyro function that can detect earthquakes*
- *Distress Signal for Rescue*



- Acquired 1st certification for compatibility of industrial converged new domestic product(Issuing Organization: Ministry of Trade, Industry and Energy, October, 2014)
- Delivered to Japan as a disaster relief product
- Hitachi Group Consumer Marketing (Discussions are underway to supply 100,000 units annually)

Installing and Replacing LED lighting which are certified for their high efficiency



Energy Reduction

Installation of high resolutions IP Camera



Prevent Accidents

Linked configuration with integrated situation control system



Integrated System Configuration

Energy reduction, accident detection and creation of a  
**“Safe Workplace”**

## Symbolization

- Inspires a sense of safety by workers through accident prevention in the workplace
- LED lighting with integrated CCTV improves the production environment compared with other factories and provides differentiated safety assurances

## Savings

- Reduced installation costs ⇒ convenient CCTV+LED all-in-one
- Reduced maintenance costs ⇒ LED lamps that are highly efficient, and have a long life time

## Convenience

- Convenient Installation⇒Camera installed inside the product
- Expansion of installation area⇒Ceiling of factory interior

## Integrated Situation Monitoring

- Safety and Security Monitoring, Confirmation of an Emergency Situation
- Outstanding discernment for night monitoring

**GigaTera**<sup>®</sup>  
beyond light

# Global Reference

- **KIA Motors** Factory
- **Donghee** Factory
- **Boeing** Factory
- **Donwon** Factory
- **Seahawks** VMAC
- **Garuda** Airport
- **Abu Dhabi** Airport
- **Smart** Toshkent
- **Smart** Round Rock



### Project Summary

As part of a large scale factory lighting replacement project that consisted of replacing the existing metal halide 450W lighting in 7 automobile production buildings in Slovakia with SEGA 130W product. This was an example in which there was an large increase in the work efficiency and quality improvement through an energy reduction of more than 70%, a luminance improvement of more than 87%, and an improvement in the color rendering index of 27%.

### Project Date

December 2014

### Control Option

Index		Before	After
Lighting Fixture		<b>MH</b>	<b>SEGA</b>
Power Consumption		<b>450 W</b>	<b>130 W</b>
Lighting Units		<b>3,408 ea</b>	<b>3,408 ea</b>
Energy Saving		<b>71 %</b>	
Illuminance (Engine Shop)	Average	<b>193 lx</b>	<b>360 lx</b>
	Enhance	<b>87 %</b>	



## Project Summary

In this case the existing MH lighting in a factory building located in Czech owned by an automobile parts production company was replaced at a 1:1 ratio with SEGA 130W. Along with an energy reduction of more than 70%, there were also definite improvements in the uniformity, color rendering and average luminance creating a pleasant environment to work.

## Project Date

October 2014

## Control Option

Index		Before	After
Lighting Fixture		<b>MH</b>	<b>SEGA</b>
Power Consumption		<b>450 W</b>	<b>130 W</b>
Lighting Units		<b>479 ea</b>	<b>479 ea</b>
Energy Saving		<b>71 %</b>	
Illuminance	Average	<b>241 lx</b>	<b>476 lx</b>
	Enhance	<b>98 %</b>	



## Project Summary

This was a case of replacing the factory lighting in a factory building located in Czech owned by an automobile parts production company with SEGA 160W. The existing MH 450W lighting was replaced at a 1:1 ratio with GigaTera's product. The results were a 65% reduction in energy and a nearly 149% increase in luminance.

Also an example of creating an environment where energy reduction could be maximized through the introduction of the GeSS Air System.

Project Date

May 2014

Control Option

GeSS Air

Index		Before	After
Lighting Fixture		<b>MH</b>	<b>SEGA</b>
Power Consumption		<b>450 W</b>	<b>160 W</b>
Lighting Units		<b>330 ea</b>	<b>330 ea</b>
Energy Saving		<b>65 %</b>	
Illuminance	Average	<b>240 lx</b>	<b>597 lx</b>
	Enhance	<b>149 %</b>	



After



Before



## Project Summary

Case study of the NANA 600W installed at the VMAC (Virginia Mason Athletic Center), the practice arena of the Seahawks, a professional football team in Seattle, Washington, USA.

## Project Date

June 2015

## Control Option

Wireless (DIM)

Index		Before	After
Lighting Fixture		<b>MH</b>	<b>NANA</b>
Power Consumption		<b>875 W</b>	<b>600 W</b>
Lighting Units		<b>203 ea</b>	<b>150 ea</b>
Energy Saving		<b>51 %</b>	
Illuminance	Average	<b>403.5 lx (37.5 fc)</b>	<b>1022.2 lx (95fc)</b>
	Enhance	<b>153 %</b>	





Hangar Lighting Installation  
**Garuda\_Indonesia**



Hangar Lighting Installation  
**Abu Dhabi\_UAE**



Project Summary

Case study of 39 units of META-Whistle and 4 units of SPES-SETA being introduced to the main road connecting the Airport in Toshkent the capital of Uzbekistan in the trial installation case for the GigaTera Smart Roadway System (Control & Alert)

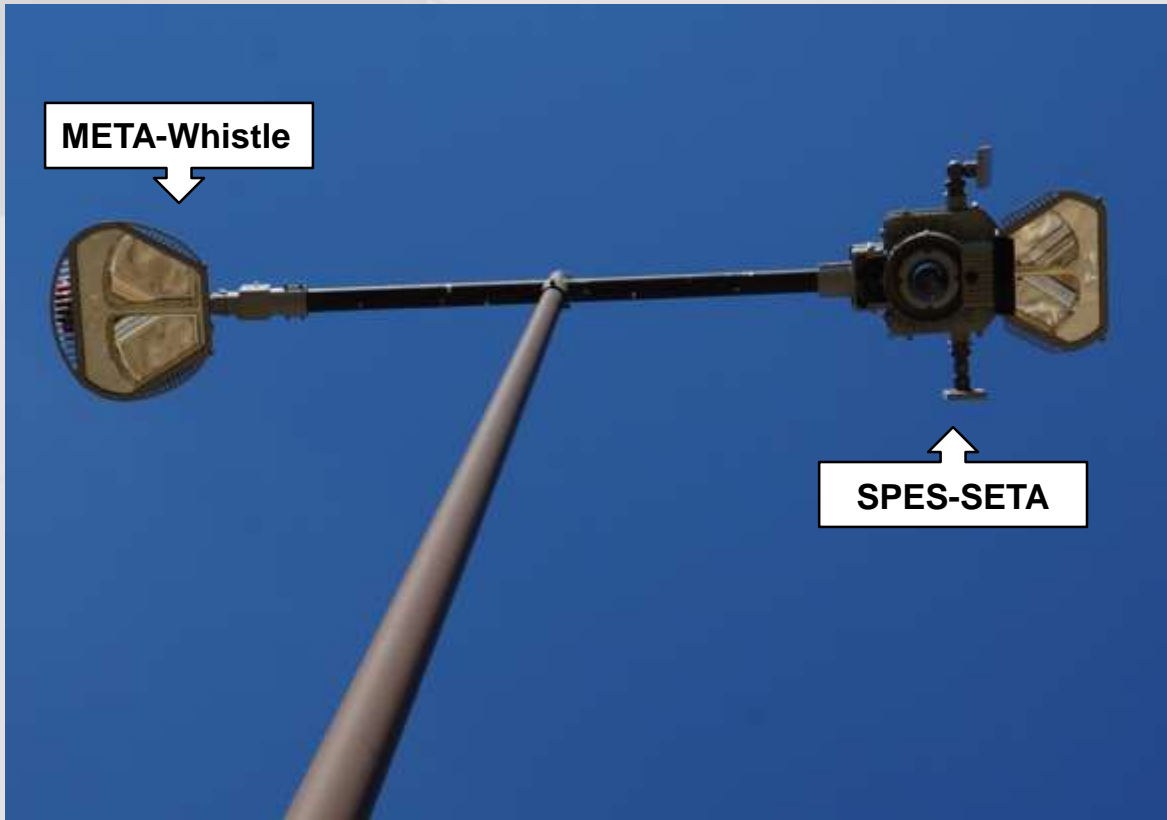
Project Date

July 2015

Control Option

GeSS / Video Monitoring System

Index		Before	After
Lighting Fixture		<b>HPS</b>	<b>META-W / SPES</b>
Power Consumption			<b>150 W / 120 W</b>
Lighting Units		<b>43 ea</b>	<b>39 ea / 4 ea</b>
Energy Saving			
Luminance (1Lane)	U <sub>0</sub> (Min./Avg.)		
	U <sub>1</sub> (Min./Max.)		



### Project Summary

This trial installation case using the GigaTera Smart Roadway System along a main road in Round Rock, Texas, USA displayed the successful establishment of a next generation communications solution (Small Cell) that includes lighting, security and safety and is receiving rave reviews from locally involved individuals and the press.

### Project Date

October 2015

### Control Option

GeSS / Video Monitoring System

Index		Before	After
Lighting Fixture		<b>HPS</b>	<b>META-W / SPES</b>
Power Consumption			<b>150 W / 120 W</b>
Lighting Units		<b>43 ea</b>	<b>39 ea / 4 ea</b>
Energy Saving			
Luminance (1Lane)	U <sub>0</sub> (Min./Avg.)		
	U <sub>1</sub> (Min./Max.)		



Shin Yokohama, Japan



TM Selangor, Malaysia



Buddhist Temple, Japan



# Thanks for your attention!

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