

LED FLOOD LIGHTING

SPORTS LIGHTING

# CASE STUDY

## Yankee Stadium

New York USA

GigaTera<sup>®</sup>

by



LIGHTING  
TECHNOLOGY  
INTERNATIONAL





**Interview with MLB Official Auditor Michael Owen**

*"The lighting level of the infield is 25+% higher and the level in the outfield is 50+% higher than the last measurements of the HID system in June 2015. The infield uniformity is approximately the same and the outfield uniformity is much better than the last HID lighting systems' measurements. All of this is achieved while energy usage is reduced by 35-40%. This system is the brightest and has the best uniformities of any ballpark in MLB."*

Summary

The first successful Major League Baseball stadium to light up with LEDs was Safeco Field in Seattle, home of the Mariners. This was made possible with cutting edge technology designed and installed by GigaTera LED, but the success did not stop here. Yankees Stadium in New York were happy with their recently installed MUSCO metal halide system, but when the Yankees team experienced lighting produced by GigaTera - they had to have it too. Once the players returned to New York, Yankees Stadium management and GigaTera LED moved swiftly to sign a contract for the complete replacement of their sports field lighting.

The technology deployed at Safeco Field had already been improved, so the original 800w SUFA lights were upgraded to the new SUFA-A 1KW model. This dramatically improved the lighting conditions at Yankees Stadium but still included an overall energy reduction of 40%. The infield is now 25% brighter and the outfield now 50% brighter than when lit by 2KW metal halide fixtures. Importantly, the new lights enabled the stadium to become Ultra High Definition (UHD) broadcast ready and eliminate the risk of the flicker phenomenon known to occur in the capture of Super Slow Motion pictures.

Highly acclaimed by the participating MLB Ocial Auditor, Michael Owen, who has more than 30 years experience, the GigaTera SUFA-A solution at Yankee Stadium far surpasses MLB regulations in terms of luminance and uniformity. A state of the art lighting environment has been achieved with nearly no deviation in the luminance values of the infield and the outfield. Also, unique to the SUFA design is the unprecedented control of glare or uncontrolled light pollution for a much more pleasant viewing experience. The enabling of convenient dimming of the lights behind the home plate with this level of glare control now allows the Yankee Stadium sign in front of the stadium to be viewable from most parts of the stadium. This is the second case ever of LED adoption at MLB stadiums and has succeeded in becoming the best-lit stadium in the world to introduce GigaTera as the new standard for 'the sports lighting of the future'.

At the '2015 Green Sports Alliance Summit', KMW's LED sports lighting brand, GigaTera, was announced as the provider of the newly installed lights for the New York Yankee Stadium just in time for the 2016 season opener. A result of KMW's focus to innovate and take technologies to their limits, KMW is now recognized in the American sports lighting industry as a professional LED sports lighting company. This success will also serve as the model on which to expand upon future sports lighting needs in the United States as well as establish itself as a global leader in the worldwide sports lighting market.

\*New York Yankees: The New York Yankees is one of New York's home teams located in the Bronx, New York City, New York. The team was founded in 1901 as part of the American East Division and was one of the 8 original teams during the early days of baseball.

In 2014, the American economic magazine, Forbes, had stated that the New York Yankees were ranked number 1 in terms of the team value assessment in the sports related brand value assessment with a brand value estimation of around half a billion dollars.

\*Auditor: Specialist that measures the MLB stadium lighting and determines and assesses the suitability of the lighting.

Project

The Yankee Stadium has replaced 888 units of metal halide products in 1kW, 1.5kW, and 2kW power levels from a well known lighting company 'MUSCO' with 692 units of SUFA-A 1kW products. 6 installers were assigned for the removal of the old lights and 20 employees were assigned to install the new lights simultaneously. After the installation of the new lights, 3 installers were tasked with aiming the lights precisely to match GigaTera's ideal settings calculated through computer simulation.

This last step took just 4 days for a total installation completion time of two weeks. The project originally was expected to take over a month but had moved ahead at a much quicker pace, which was a pleasant surprise. A factor in this reduction is the ability to hang the lights on the edges of the stadium instead of being limited to light towers.

Using detailed imaging for the stadium was one of the most important processes in the overall project. To do so, the GigaTera optical team installed flags at units based on a grid with 30ft x 30ft squares along the ground following a lighting simulation. The team then proceeded with the detailed imaging using a laser beam. Because the SUFA-A product has the rotate and tilt functions available for each module unit, it is possible to install uniform lighting without even an iota of overlap.

Though it had rained once during the installation, the installation was able to proceed without halt due to the IP66 grade rating of the product. The second MLB stadium to be fitted with LED lighting, Yankee Stadium held the 6th Pinstripe Bowl on December 27th giving fans a first chance to experience the newly fitted GigaTera lights.

Benefits

- 25% brighter infield than the existing HID lighting, more than 50% brighter outfield
- Same levels of brightness and uniformity in both the infields and outfields
- Energy reduction improved by 35-40%
- Enabling of event lighting and dimming with GeSS controls
- State of the art glare control and individual unit dimming allows the Yankee Stadium sign to now be viewable from almost any part of the stadium
- Elimination of flicker phenomenon during the broadcasting of super slow motion
- Ultra High Definition (UHD) broadcasting now enabled
- Improvement in color rendering index allows athletes, fans, and viewers to see colors more similarly to how they would look under natural sunlight.
- Can be turned on/o instantly without the need for warm ups.
- Product lifetime improved by twenty-fold over existing lighting.

*" The Seattle Mariners received an overwhelming response from fans, athletes and networks after replacing the lights. The good news for us is we had a little more time for the lighting technology at the company to improve. Being able to further improve on the technology was to our advantage. "*

-Yankees Stadium Operations VP Doug Behar during a CBS interview-

CRI Difference

*Both fans in the stands and those watching at home can enjoy games under optimal conditions compared to the previous lighting system thanks to the improvements in the color reproduction ratio that is closest to natural light.*

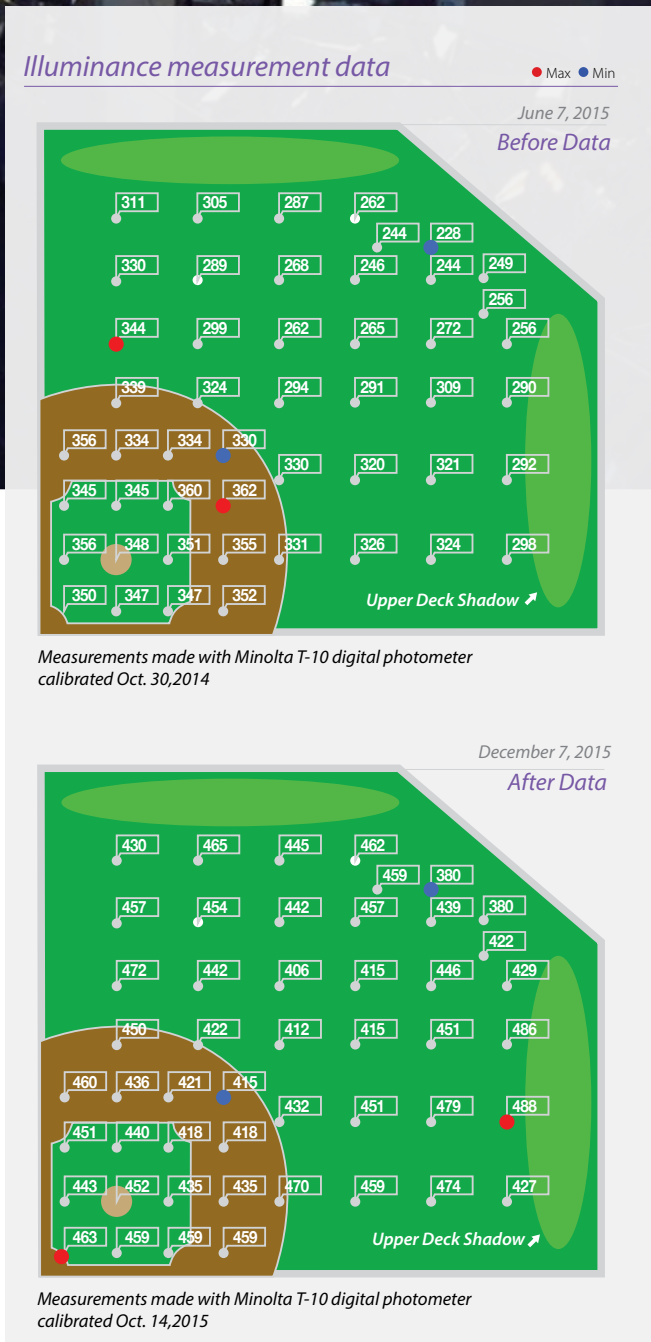


Non Flickering

*Catching the subtleties of baseball is important during game broadcast-ing. Clear viewing is possible with no flickering during ultra-slow motion playback beyond 960 frames per second or with UHD 4K broadcasting.*







### Illuminance measurement data

		Before	After
Average FC level	Infield	348 fc (3,746 lx)	441 fc (3,746 lx)
	Outfield	291 fc (3,132 lx)	443 fc (3,132 lx)
Min. FC level	Infield	330 fc (3,552 lx)	415 fc (3,552 lx)
	Outfield	228 fc (2,454 lx)	380 fc (2,454 lx)
Max. FC level	Infield	362 fc (3,896 lx)	463 fc (3,896 lx)
	Outfield	344 fc (3,703 lx)	488 fc (3,703 lx)
Uniformity	Infield	1.10	1.116
	Outfield	1.51	1.28
Enhance Illuminance	Infield	25%	
	Outfield	50%	

### Air View

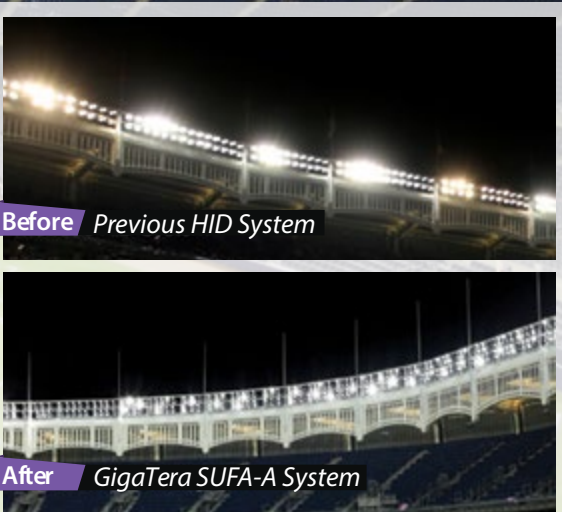


### Site Information

Application	Sports Flood Lighting
Location	Yankee Stadium (New York, USA)
Light source	SFA1K0
Lighting support	GigaTera & PlanLED Technical Team

### Installation Data

Comparison Category	Before	After	Remarks
Lighting Unit	MUSCO	GigaTera	Replaced in December 2015
Number of Fixtures	888 pcs	692 pcs	Housekeeping lighting included
	- 1kW : 226 pcs	- 1kW : 692 pcs	
	- 1.5kW : 486 pcxs		
	- 2kW : 136 pcs		
Total Power Consumption	1,227kW	692kW	Energy reduction 43%
CRI	-	Greater than 80Ra	
FC Level (average)	348 fc(3,746 lx)	441 fc(4,747 lx)	25% improvement
	291 fc(3,132 lx)	443 fc(4,768 lx)	52% improvement
Uniformity (Max./Min.)	Infield 1.10	1.116	
	Outfield 1.51	1.28	15% improvement
Control System	-	Individual Unit Lighting Controls	GeSS



### Installation Photo





SUFA-A 1.2kW  
LED Sports Flood Lighting



Applications  
Sport Stadiums  
Indoor Venues  
Ports

Certification  
UL

Description

Tilttable and rotatable for easy aiming  
Stable cooling structure that points the heat release  
Boosted installation efficiency thanks to the slimmed-down product  
Linkage with wired, wireless control systems

Specifications

Model Name		SFA1K2
Power Consumption		1200W
Light Source		High Power LED Chips
Correlated Color Temperature		5000K (3000K / 4000K / 5700K available)
Luminous Flux *	126,000 lm	132,000 lm
Luminous Efficacy *	105 lm/W	110 lm/W
LED Driving Current	-	-
Color Rendering Index	80 Ra	70 Ra
Light Distribution	15° / 20° / 30° / 45°	
LED Chip Manufacturer		CREE
Input Voltage		200 ~ 277 Vac
Input Current		Max. 7.0A (@200 Vac)
Power Factor		≥0.9 at Max load
Frequency		50 / 60 Hz
Surge Protection		Line-Line 20kV, Line-FG 20kV
Driver Type		-
Fixture Manufacturer		KMW INC. / Made in Korea
Size ( W x L x H )		14.3 x 29.8 x 23.5 (inch)    363 x 757 x 595.5 (mm)
Weight (Driver excluded)		39.7 lb    18.0 kg
Material	Body	Cast Aluminum
	Optic	Silver Coating Reflector
	Cover	Tempered Glass 3.2T (Clear)
Finish		Powder Coating
IP Rating		IP66
Mounting Option		Wall Mount
Operating Temperature		-22°F ~ 131°F    -30°C ~ 55°C
Life Time		50,000 Hours (@77°F / 25°C)
Warranty		5 Years (12 hours usage per day)

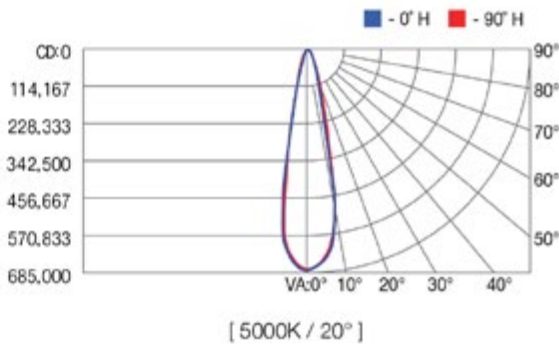
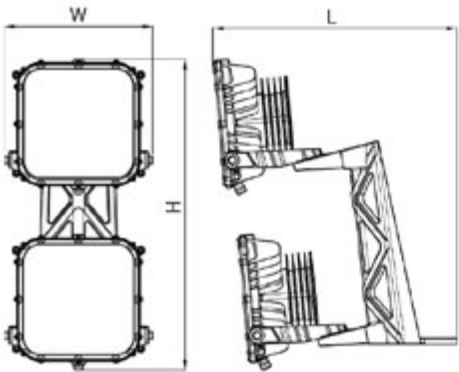
Option

Control System	Wireless (ZigBee) / Wired (RS-485)
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\*Tolerance : ± 5%

Photometry

See photometric .ies files for details.







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