

Tunable LEDZ LINE UP

Equivalent to 6500K-2700K Ra82

General TYPE

Fixed

9000TYPE Silvermatt finish Cone
 200lm, Glare Out 30°, Beam angle 74°

7500TYPE Silvermatt finish Cone
 150lm, Glare Out 30°, Beam angle 74°

4000TYPE Silvermatt finish Cone
 125lm, Glare Out 30°, Beam angle 77°

3000TYPE Silvermatt finish Cone
 100lm, Glare Out 30°, Beam angle 70°

1400TYPE Silvermatt finish Cone
 75lm, Glare Out 30°, Beam angle 60°

900TYPE Silvermatt finish Cone
 75lm, Glare Out 30°, Beam angle 60°

Adjustable

3000TYPE White/Black Cone
 100lm, Glare Out 40°, 360°, Beam angle 20°, 29°, 74°

900TYPE Silver matt Cone
 75lm, Glare Out 40°, 360°, Beam angle 16°, 34°, 55°

Tracklight

3000TYPE
 130°, 360°, Beam angle 20°, 29°, 74°

900TYPE
 130°, 360°, Beam angle 18°, 31°, 71°

Downlight Glare-less TYPE

Fixed

2400TYPE Mirror finish cone
 125lm, Glare Out 40°, Beam angle 40°, 49°

1400TYPE Mirror finish cone
 100lm, Glare Out 40°, Beam angle 38°, 57°, 65°

900TYPE Mirror finish cone
 100lm, Glare Out 40°, Beam angle 35°, 41°, 58°

600TYPE Mirror finish cone
 75lm, Glare Out 40°, Beam angle 33°, 44°, 62°

Adjustable

2400TYPE Mirror finish cone
 125lm, Glare Out 40°, 30°, 355°, Beam angle 26°, 36°

1400TYPE Mirror finish cone
 100lm, Glare Out 40°, 30°, 355°, Beam angle 24°, 34°

900TYPE Mirror finish cone
 100lm, Glare Out 40°, 30°, 355°, Beam angle 26°, 36°

600TYPE Mirror finish cone
 75lm, Glare Out 40°, 30°, 355°, Beam angle 27°, 34°

Indirect Light

Linear 32
 L: 1200 (2800lm)

Linear T5
 L: 1200 (1500lm)

High powered series
 L: 1250 (600lm), L: 1000-300

Design Linear Light

Surface mount

Silt

Pendant

Wall mounted Bracket

L: 1200type 2800lm/20.7W
 L: 600 1400lm/11.1W

32, 43

Smart LEDZ Fit / Fit Plus

Gateway

Daylight Sensor

Scene Selector

& LEDZWORKS

Portfolios of Projects using Smart LEDZ



Morning
4000K

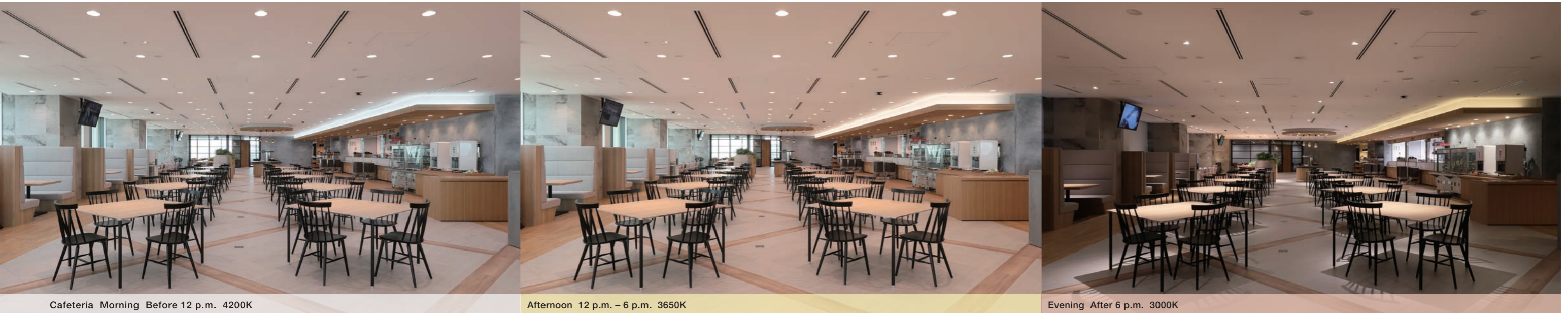
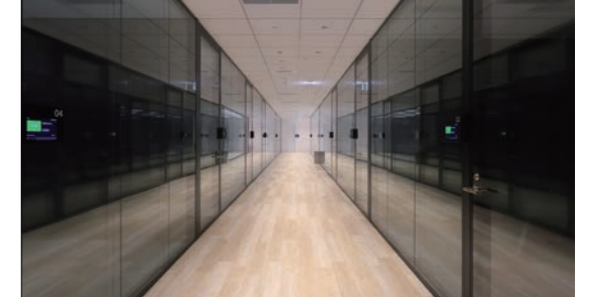
Daytime
3500K

Night
3000K

Special Issue: Tunable White

- 01 Mitsubishi Materials Corporation Head Office
- 02 Seiwa Kaisei Nursery School
- 03 Aeon Mall Sen Sok City
- 04 Ito-Yokado Abeno Store
- 05 Welcia O-Guard Shinjuku Store
- 06 Olinas Mall Core
- 07 Atré Akihabara
- 08 Solaria Plaza
- 09 Kawaguchi City Megurino-mori
- 10 Kinno Buta Restaurant in Acrossplaza Yao
- 11 Renaissance Sangenjaya Sports Club
- 12 Netz Toyota Shizuoka Oguro

DATA
 Location: Chiyoda-ku, Tokyo
 Date: March 2019
 Client: Mitsubishi Materials Corporation
 Design: Mitsubishi Jisho Sekkei Inc.
 Architects: Node Design Consultants Inc.



Cafeteria Morning Before 12 p.m. 4200K

Afternoon 12 p.m. - 6 p.m. 3650K

Evening After 6 p.m. 3000K

Features and Benefits

Tunable Lighting Encourages Communication and Synchronizes with the Circadian Rhythm.

The concept for Mitsubishi Materials Corporation's new office was "borderless, intercommunicating office." The idea was driven by their desire to create new ideas and synergies between various departments and group companies through communication.

This multi-functional space not only caters for meals and social gatherings, but also has multi-purpose rooms for recreational activities, meeting space with sofas, and counter seats for private working environment.

Smart LEDZ system controls lighting fixtures wirelessly, and enables a variety of spaces to be configured. In the cafeteria, the brightness and color temperature shift automatically according to schedule so that they appear to change naturally from morning to afternoon. On the other hand,

when it is dark outside, lights mellow down for a comfortable atmosphere.

Even in areas with little natural light, Smart LEDZ tunable white can help imitate as if there is natural light coming in, thus catering to circadian rhythm.

To accommodate various needs at the multi-functional room, it has pre-configured scene settings, which can be conveniently controlled with a push of a button on the remote or the tablet controller.

This office space will continue to evolve as time goes on to better suit modern demands, and with the flexibility of Smart LEDZ and tunable white, lights can easily be customized to keep up with the future changes.

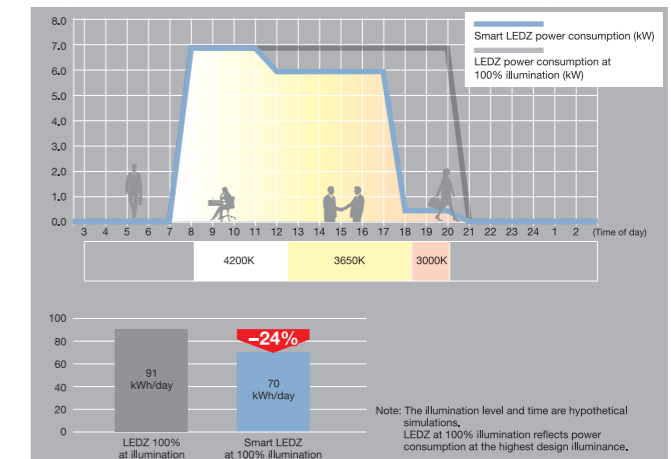


Day mode



Conference mode

Daily power consumption and color temperature changes

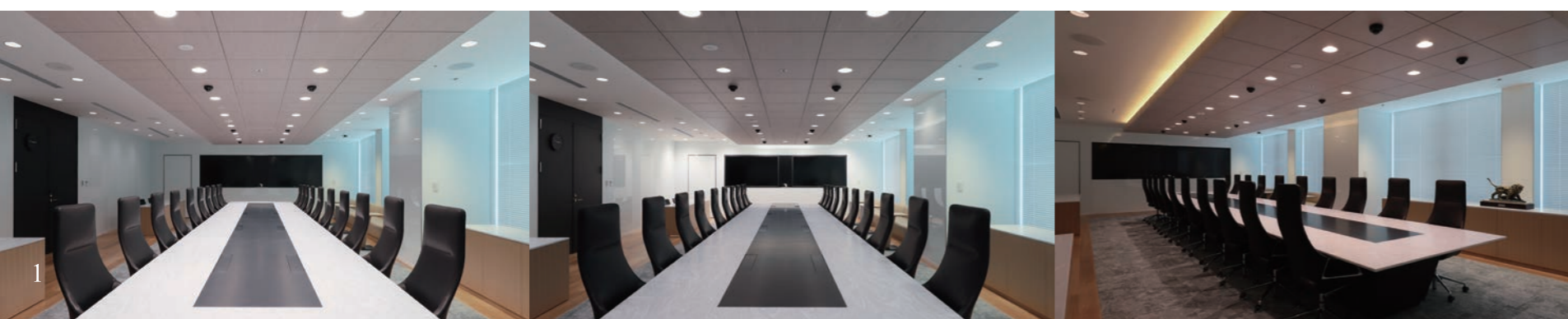


Devices Used



Boardroom

The remote control can be used to change the scene setting to match the nature of the meeting.



02 Seiwa Kaisei Nursery School

DATA
 Location: Osaka City, Osaka Prefecture
 Date: March 2018
 Client: Seigakusha Co., Ltd.
 Design: Souritsu Ltd.
 Contractor: Cohnan Kensetsu Inc.



7 a.m. - 10 a.m. 5000K



10 a.m. - 3 p.m. 4200K



3 p.m. - 5 p.m. 3500K



5 p.m. - 7 p.m. 3000K

Childcare room for infants

After lunch, the bedside lights are gradually dimmed completely, and naps are encouraged.



Features and Benefits

Making a Positive Impact on Children's Healthy Growth with Tunable White

Since its opening in 2018, Seiwa Kaisei Nursery School has accepted children ranging from 6 month old to 5 years old. They believe in the importance of controlled perception of space. According to the nursery, because infants and toddlers have a limited vocabulary, visual information is very important to them. Tunable white lighting was implemented to create a more suitable environment for each individual child.

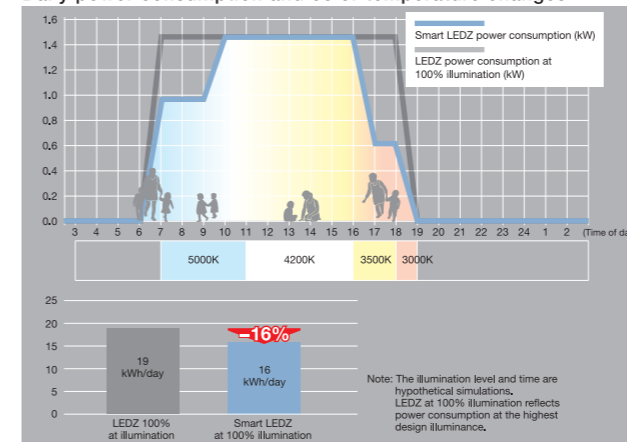
When the day begins at the daycare, the lights are set to daylight color (5000K). From 10 a.m., the color temperature shifts to a warmer white.

At this daycare, not all children eat and sleep at the same time. To accommodate each individual child's needs, there are designated eating space, playing space and sleeping space in the room. If some children start to take a nap in the sleeping space, only the lights in that area will dim down to foster better sleep.

Then from 3 p.m. lights become warmer, and lastly at 5 p.m., they not only become even warmer, but also dim down. Children at this daycare notice these subtle changes in lighting and tend to look up at the ceiling during the transition. When the lights change at 5 p.m., even children who can't read time yet will understand that it is almost time for their parents to come pick them up.

These lighting shifts help children to be more aware of the flow of time. The daycare plans to explore further on how to improve the light scheduling to help children grow with greater independence.

Daily power consumption and color temperature changes



■ Devices Used

Smart LEDZ
ENDO LIGHTING CORP.

Touch-panel tablet controller

Scene selector remote control

Up to 4 scene settings, switchable

Nursery rooms for infants and children aged 1 and 2
Fixed Light

Ra82
Tunable White: 6000K to 2500K
4892 lm 38.8 W

Nursery rooms for children aged 3, 4 and 5
Fixed Light

Ra82
Tunable White: 5000K to 2500K
4699 lm 42.1 W

Nursery rooms for children aged 3, 4 and 5
Bracket

2700K
280 lm 5.0 W

03 Aeon Mall Sen Sok City

DATA
 Location: Phnom Penh, Cambodia
 Date: May 2018
 Client: Aeon Mall (Cambodia) Co., Ltd.
 Master Plan: Cube Development Co., Ltd.
 Environmental Design: Semba Corporation

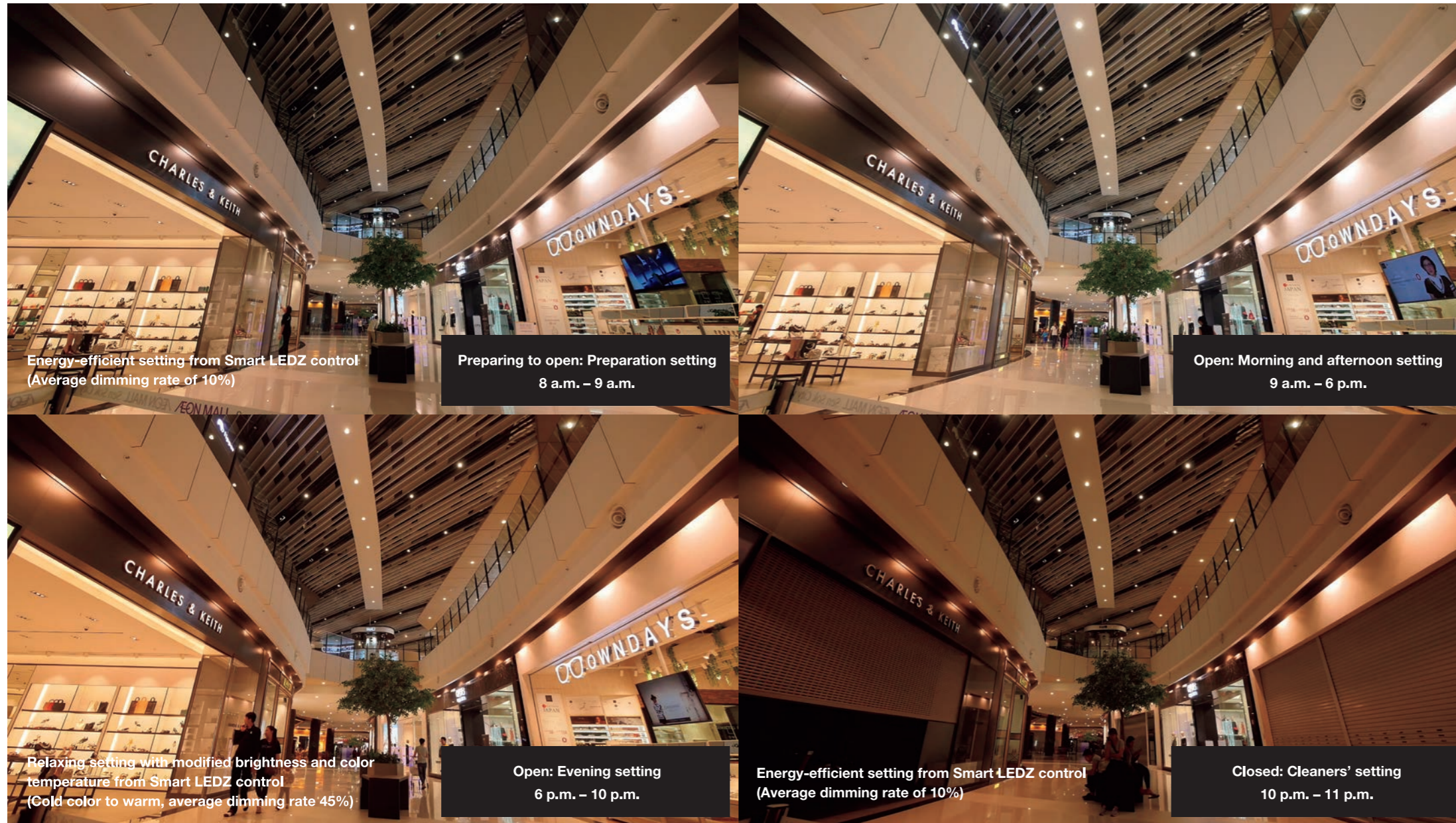
Features and Benefits

Implementation of Tunable White Improves Total Shopping Experience.

Aeon Mall Sen Sok City, the largest Aeon Mall entertainment complex in Southeast Asia, is built on an environmental theme, "The Forest". In addition to LED lightings, the mall introduced a mega solar system and a high efficiency air conditioning system to reduce environmental load. Part of the mission was to provide the visitors a next level shopping experience, focusing not only on the purchasing, but also on the overall time spent at the mall.

The tunable white plays a key role in providing pleasant and lively atmosphere at the atrium. The vertical surfaces and the wrapped pillars of the tenant facade are illuminated with tunable white downlights, while the fixtures are installed with attention to both direct and indirect lighting approach. In this way, the visible areas of the interior will be illuminated, and the change in lighting effect can be displayed to its maximum potential.

From morning to afternoon, color temperature is set to 3500K to make the atmosphere lively. At night time, it's set to 3000K with dimmed brightness to generate a cozy and calm atmosphere. In the area where sunlight comes in, the brightness is adjusted to a lower dimming percentage to reduce the electricity consumption. As a result, the facility achieved an energy efficiency rate of about 38%.

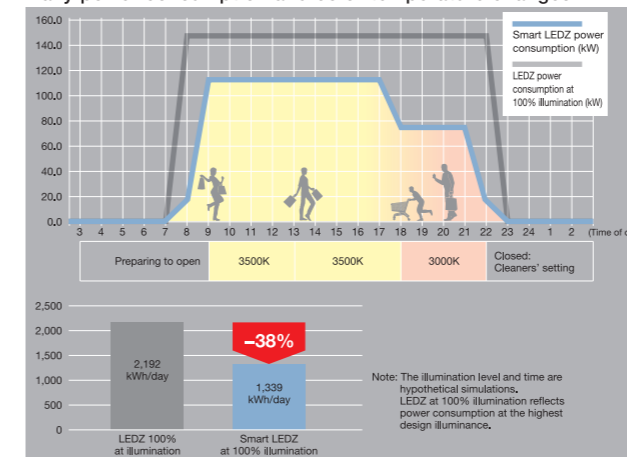


Tunable White downlights are installed on the vertical surface (for downward wall illumination) and the wrapped pillars of the tenant's facade. Changing the color temperature and illuminance of places that readily catch the eye results in greater impact.



Two photos above by Eiichi Kano / Photos provided by Semba Corporation

Daily power consumption and color temperature changes



Devices Used

Smart LEDZ Touch-panel tablet controller	Storefronts of tenant locations Fixed Downlight Multibright CRI95 Color control (4200K~3000K) 7890 lm 123.5 W	Wrapped pillars Fixed Downlight Multibright CRI95 Color control (4200K~3000K) 2871 lm 46.7 W
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04 Ito-Yokado Abeno Store Renovation

DATA
 Location: Osaka City, Osaka Prefecture
 Date: February 2019
 Client: Ito-Yokado Co., Ltd.
 Design: Yoshichu Mannequin Grid
 Lighting Design: Luminous Co., Ltd.



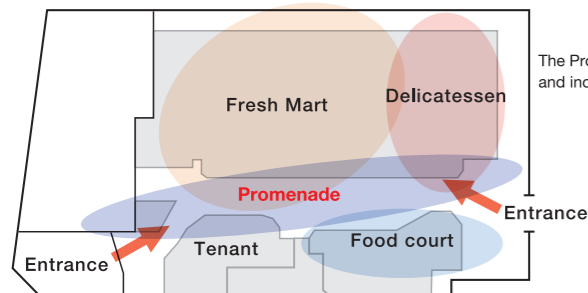
Features and Benefits

Recreating Natural Color Transition of the Sunlight with Tunable White

Ito-Yokado Abeno store is the main tenant of one of the largest shopping centers in Osaka. Abeno area is a highly competitive district with many rival commercial facilities. Ito-Yokado renovated the store to be the role model amongst all their stores in the western Japan region. The main focus of this renovation was the food section at the basement, which links to the subway station and connects four different zones with the promenade. The promenade is meant to be a place of relaxation, where the customers can dine, take a break, etc. Smart LEDZ tunable white was chosen due to its ability to adjust brightness and color temperature. As it is located at the basement without natural light, tunable white can help mimic the morning, afternoon and evening light in place of the sunlight itself.

It is a huge advantage for the store to have the ability to adjust the lighting effect and grouping.

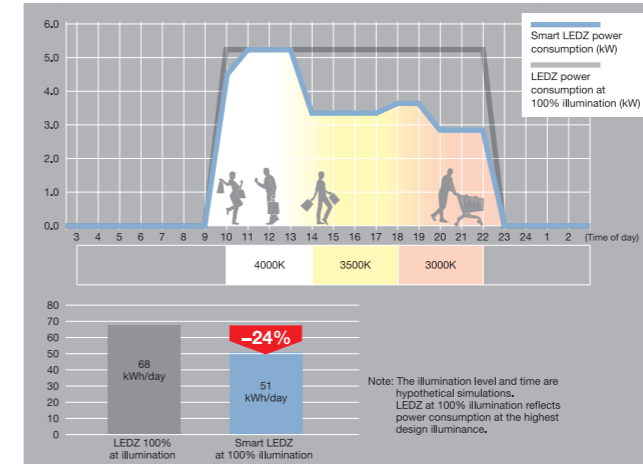
The whole store uses Smart LEDZ lighting control system. Adjusting the brightness based on various factors such as the height of shelves and built-in lighting in refrigerated cases helps optimize the lighting effect while also saving energy consumption. With the rapid changes in today's customer needs and market trends, the sales floor and layout plans also need to keep up with the times. Smart LEDZ makes it possible to adjust the brightness in the necessary areas in order to give a better balance to space. The fact that the settings for lighting can be reconfigured without electrical work, will provide a huge advantage to the store in the coming years.



The Promenade connects the four zones and includes entrances on both sides.



Daily power consumption and color temperature changes



Devices Used

Smart LEDZ

Touch-panel tablet controller

Area	Lighting Type	Device	Power Consumption (W)
Promenade	Fixed Downlight	Multibright CRI95	7890 lm 123.5 W
Promenade	Fixed Downlight	Multibright CRI95	2871 lm 46.7 W
Food Court	Fixed Downlight	Multibright CRI95	760 lm 15.6 W
Meal Select	Track Light	CRI85	4172 lm 50.7 W

05 Welcia O-Guard Shinjuku Store

DATA
Location: Shinjuku-ku, Tokyo
Date: December 2018
Client: Welcia Yakkyoku Co., Ltd.
Design: Chara Search Inc.
Construction: SEC Co., Ltd.

Features and Benefits

Supporting Employee Health through Circadian Lighting

The Welcia O-Guard Shinjuku store is a 24 hour drug store that opened on Shinjuku's main street. Welcia's corporate philosophy is "to provide customers with a healthy life and a richer social environment." This store embodies Welcia's philosophy and has introduced tunable white lighting.

The store adjusts the brightness and color temperature throughout the day in order to create an environment catering to circadian rhythms.

Adaption of tunable white for night shift employees' health

Tunable white lighting was an unexplored territory with endless possibilities for Welcia. The norm for their stores has always been to use bright, white colored lights, but at the same time, they were quite aware of the significant influence lights have on the human body. They decided to introduce tunable white Smart LEDZ in their new drug store for the health of employees who work in shifts to run the 24 hour operating store.

For night shifts, adjusted lighting levels and color temperature help aid employees working against their natural circadian rhythm.

In the morning, bright lighting wakes up a body that is fatigued from the night shift work. At night on the other hand, calm lighting with less stimulation is preferred to rest the body. In fact, there are feedbacks from employees such as "My eyes do not feel tired as often as before" and "I can clearly tell the difference from other stores". As it presents a warm atmosphere even when seen from the outside, it might make people who come after work feel like stopping by the store. Since it is easy to configure the color temperature as well as the controlling group with Smart LEDZ tunable white, Welcia Yakkyoku plans to change the brightness and color every season, and also tune the color in the waiting room into even warmer color for the customers who feel unwell.



Morning: 7 a.m. - 11 a.m. 5000K A comfortable white with a refreshing light

Daytime: 11 a.m. - 6 p.m. 4400K A vibrant light with a fresh and lively white

Evening: 6 p.m. - 11 p.m. 3500K A warm and inviting light

Late night: 11 p.m. - 7 a.m. 3500K Brightness with a calmer tone for reduced stress

In response to the fading outdoor light at sunset, the color temperature and illuminance (brightness) of the in-store lighting are modified. We aimed to create a natural and welcoming atmosphere.

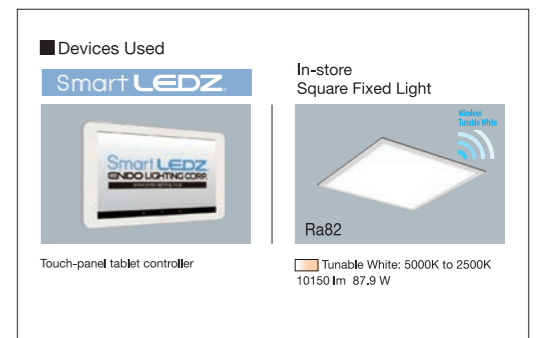
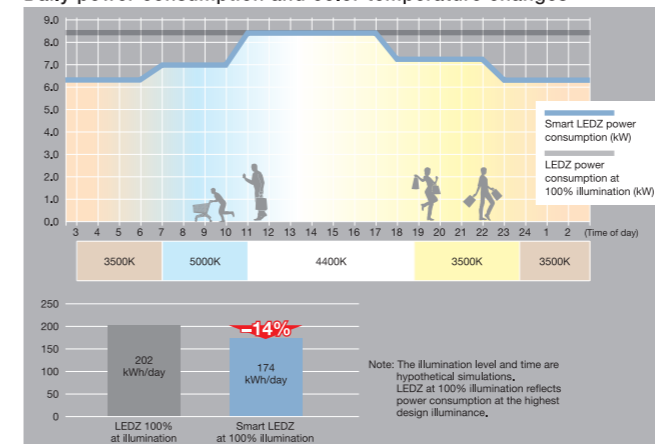


Morning

Daytime

Evening

Daily power consumption and color temperature changes





06 Olinas Mall Core

Features and Benefits

A Space with a Varied and Comfortable Atmosphere Created with Tunable White Lighting for Improved Color Control and Illuminance Levels

The addition of bright visuals, such as those on the ceiling surfaces, creates a space with an appearance of greater depth.



DATA
 Location: Sumida-ku, Tokyo
 Date: September 2018 (renovation)
 Owner: CapitaLand Mall Japan Kabushiki Kaisha
 Environmental Design: Bauhaus Maruei Co., Ltd.
 Construction: Tokyu Construction Co., Ltd.

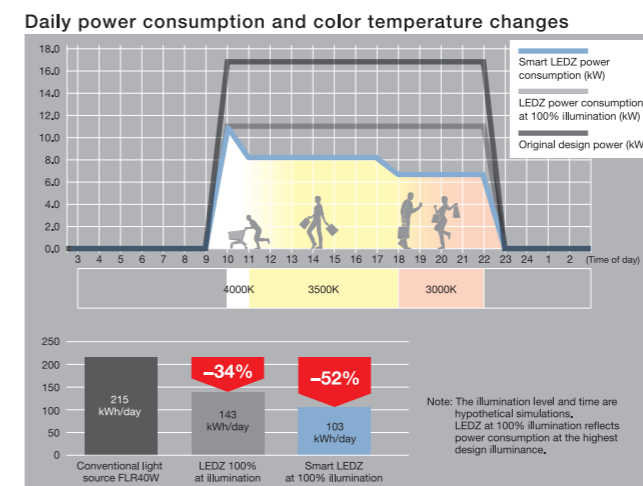
CapitaLand is one of Asia's largest diversified real estate groups. Headquartered and listed in Singapore, it owns and manages a global portfolio which spans across diversified real estate classes. The portfolio includes commercial, retail; business park, industrial and logistics; integrated development, urban development; as well as lodging and residential. They acquired the Olinas property in Kinshicho, Tokyo in 2012, and in 2018, undertook a large-scale renovation.

The main focus of this renovation was for the customers to feel the new and improved Olinas, not only by the new tenants, but also by the experience of the new interior and lightings. The most effective aspect of the renovation of the entire interior was the introduction of tunable white indirect lighting. Tunable white indirect lights not only helped to illuminate the ceiling, but also added new dynamics to the Olinas atrium.

With the flexibility of tunable white, customers can experience natural shift in lighting, from bright and energetic lighting to warm and cozy one.

Adoption of circadian lighting to create a comfortable atmosphere

It is essential for a shopping mall to provide a comfortable atmosphere. Subtle implementation of circadian lighting, which mimics the changes of color and intensity of the sunlight, not only provided aesthetic changes, but also provided added comfort, achieving an ideal shopping environment. Another point of focus for the renovation was to expand the perception of depth. By strategically illuminating areas like the ceiling and pillars, the atmosphere has brightened, and the mall improved its overall visibility both from the inside and outside. In fact, there has been a positive feedback from tenants on the improved atmosphere.



Devices Used

- Smart LEDZ**: Touch-panel tablet controller
- PWM Signal Unit**: Each unit can link up to 50 PWM lighting fixtures.
- Mall Passageway Indirect Lighting L: 1500**: Tunable White: 6000K to 2500K, 2807 lm, 23.1 W
- Mall Passageway Indirect Lighting L: 750**: Tunable White: 6000K to 2500K, 1533 lm, 15.4 W



Morning: 4200K



Daytime: 3500K



Evening: 3000K



Night: 2700K

Atré Akihabara, conveniently located thanks to its direct link to JR Akihabara Station, underwent renovations for the first time since its opening in 2010. This facility was renovated to address the challenge of how to take advantage of its links to the transit terminal — which brings in a diverse mixture of visitors such as foreign tourists and office workers. The objective of the renovation was to increase the turnover rate and boost sales to the steady flow of foot traffic arising from the large number of transit passengers passing by. It set out to achieve this by attracting foot traffic toward the quick daily dining opportunities in locations situated beyond the shops.

Features and Benefits

The “Savannah Effect,” Created through the Use of Tunable White Lighting, Draws Foot Traffic from the Ticket Gates to the Shops Beyond.

Atré Akihabara sought to create a shop atmosphere that shifts to match the rhythm of the day, such as refreshing lighting in the morning, invigorating lighting in the afternoon, calming lighting in the evening, and atmospheric lighting at night. Of course, the color temperature and illuminance are adjusted to accommodate the varying business hours of the respective tenants. In the early morning hours, indirect lighting in the common area of the café is brightened by the refreshing color temperature range in the morning. At night, the color temperature, illuminance, and brightness levels are adjusted to direct the customers’ attention (via the “savannah effect”) away from the ticket gates and toward the restaurants located beyond the shops, which are open until late in the evening. By making the most of the convenience of the direct link to the station, we are contributing to an improved customer attraction rate and store traffic rate with a lighting plan that encourages the customers to follow other lines of foot traffic.

07 Atré Akihabara

DATA
 Location: Chiyoda-ku, Tokyo
 Date: June 2019
 Client: Atré Co., Ltd.
 Design: JR East Design Corporation
 Construction: Tekken Corporation
 Power utility: Nippon Densetsu Kogyo Co., Ltd.

Lunchtime: Invigorating light

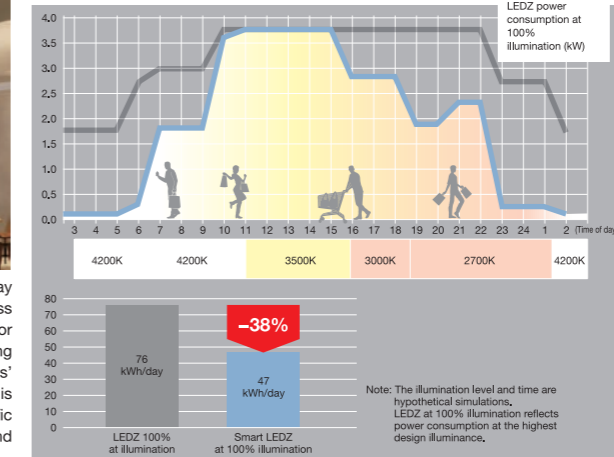


Evening: Lighting for relaxed ambience



The lighting of the common passageway is zoned to accommodate the business hours of each tenant, and the color temperature and illuminance (dimming level) are fine-tuned to the tenants’ needs. After 9 p.m., the lighting is dimmed in a manner to guide foot traffic toward the restaurants located beyond the shops.

Daily power consumption and color temperature changes



Devices Used

Smart LEDZ

Tablet-style Controller

Passageway Fixed Downlight

Ra85

Tunable White: 6500K to 2700K
2973 lm 27.5 W

Passageway Indirect lighting L:1500

Ra82

Tunable White: 6500K to 2700K
3551 lm 21.1 W

Passageway Indirect lighting L:600

Ra82

Tunable White: 6500K to 2700K
1447 lm 11.3 W



Morning: 6 a.m. - 10 a.m. 3800K



Daytime: 10 a.m. - 5 p.m. 3500K



Evening: 5 p.m. - 0 a.m. 3000K



08 Solaria Plaza

Renovation of 1st Floor

Features and Benefits

Tunable White Lighting Allows for the Transmission of Richer Light Ideally Suited to High-sensitivity Commercial Areas

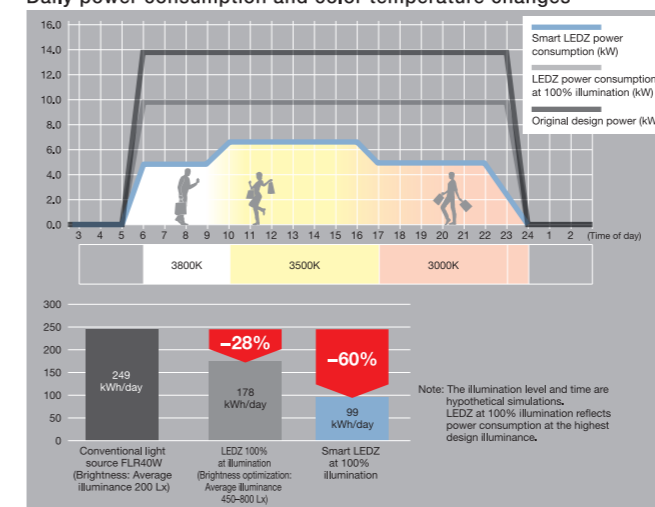
Solaria Plaza, a commercial building located in Fukuoka City's central Tenjin district, was completed in 1989. The recently renovated 1st floor is a busy corridor for foot traffic and a popular meeting place.

One issue that arose during the renovation was the challenge of improving the brightness. Before the renovation, the

commercial facilities located here were rather gloomy during the day, with a brightness of only 200 Lx. This has been improved with a 2.3- to 4-fold increase in brightness ranging between 450 Lx and 800 Lx. At the same time, the renovation plan adopted Tunable White downlights to achieve an optimal light environment tailored to the daily light shifts. The illuminance and color temperature were adjusted to match the ambient daylight. For example, in an effort to create invigorating morning light, "refreshing lighting" (3800K) is used to energize the commuters. During the afternoon, "lively lighting" (3500K) is used to create a cheerful and vibrant light during the hours of peak foot traffic. In the evening, to accommodate the restaurant floor and hotel on the upper floors, a warm color temperature (3000K) was adopted with the intention of creating a soothing and inviting impression for customers. The switchover between each setting takes place in about 30 minutes, with gradual changes to the color temperature and brightness levels, which is a very natural way to effect a transition in the lighting. With the wide variety of Tunable White effects at hand, this facility was able to express new ambience settings suitable for a property in the city center.

DATA
 Location: Fukuoka City, Fukuoka Prefecture
 Date: October 2017
 Client: Nishi-Nippon Railroad Co., Ltd.
 Electrical work: Nishitetsu Densetsu Kogyo Co., Ltd.

Daily power consumption and color temperature changes



Devices Used

- Smart LEDZ
- 1st Fl. Fixed lighting Fixed Downlight
- Touch-panel tablet controller
- Multibright Ra95
- Tunable White: 4200K to 3000K 2855 lm 46.7 W



Funerary Ceremony Room (pre-cremation setting)



Funerary Ceremony Room (inurnment setting)

09 Kawaguchi City Megurino-mori

DATA
 Location: Kawaguchi, Saitama
 Date: April 2018
 Client: City of Kawaguchi, Saitama
 Design: Toyo Ito & Associates, Architects
 Lighting Design: Lightdesign Inc.



Waiting Hall

Features and Benefits

A Lighting Environment that Creates a Solemn Mood Appropriate for Final Farewells

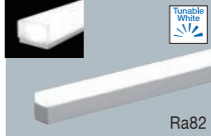
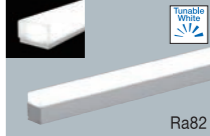

Kawaguchi City Megurino-mori is a cremation facility located in a 9-hectare park near a shoreline and surrounded by greenery. It was designed to evoke a close connection to the earth to reflect our awareness that we are born of the earth and shall return to it. From the large peripheral windows, one has a clear view of the park greenery and shoreline, which creates a very open yet integrated space.

This facility is focused on creating an atmosphere suitable for a place of final farewells where bereaved families can remember the deceased and say goodbye in

peaceful surroundings. In the Entrance Hall and the Waiting Hall, a high soaring ceiling formed of free-flowing curves melds with the pillars, while the indirect lighting emphasizes the beauty of the curves. The room in front of the crematorium, where attendees say their final goodbyes to the deceased and later collect the remains for inurnment, was designed with lighting settings tailored to each purpose. The cornice lighting appears to encircle the room, while the cove lighting directed toward the ceiling creates an environment reminiscent of an evening sky as one sends off the deceased to the heavens with a warm and solemn sentiment. Later, when the attendees gather to collect the remains for inurnment and the bereaved can collect their thoughts before leaving the facility, the lighting transitions to mimic a clear blue sky.



Entrance Hall

Devices Used		
Funerary Ceremony Room (pre-cremation setting) Indirect lighting  Ra82 2500K 1124lm 11.5 W	Funerary Ceremony Room (inurnment setting) Indirect lighting  Ra82 6500K 1124lm 11.5 W	Entrance Hall and Waiting Hall Indirect lighting  Ra82 3000K 2077lm 13.1 W

10 Kinno Buta

Restaurant in Acrossplaza Yao

DATA
 Location: Yao, Osaka
 Date: April 2019
 Client: One Dining Incorporated

This all-you-can-eat “shabu-shabu” restaurant is particular about healthful food and delicious cuisine. In addition to emphasizing good ingredients, it focuses on relaxation with attention to lighting and even details such as wide corridors. Because this restaurant fashions itself as a place where diners can enjoy each other’s good company, all rooms are semi-private in design. This restaurant opened in Acrossplaza Yao this spring with a commitment to offering its customers a most pleasurable dining experience.

Features and Benefits

Smart LEDZ and Tunable White Lighting Create an Environment Supportive of Happy Diners Enjoying Each Other’s Company.

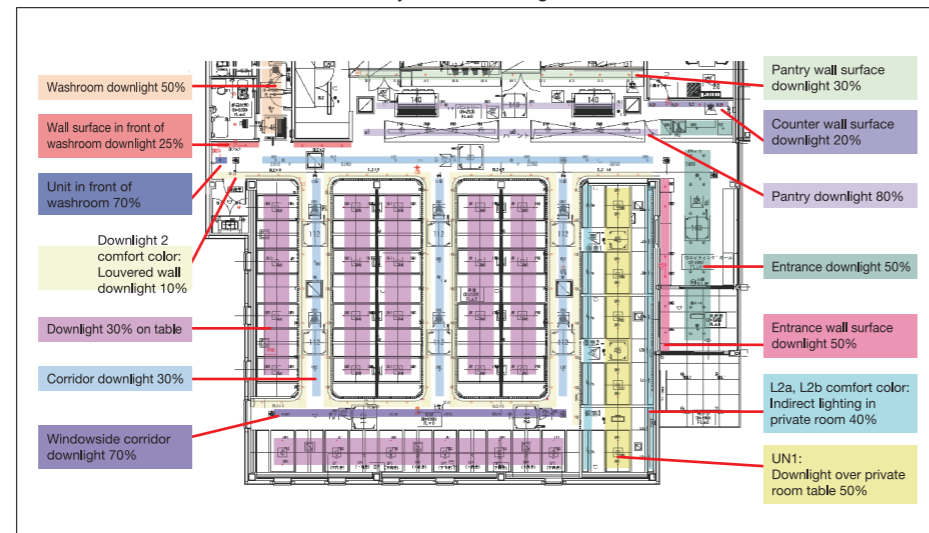
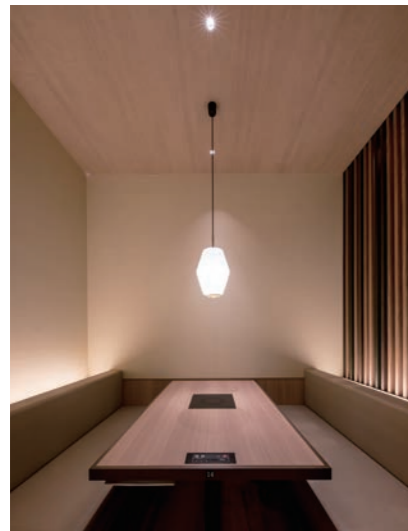
In order to fulfill this restaurant’s objective of creating a relaxing ambience, we implemented several lighting innovations. First, the entire restaurant is divided into 14 zones that include the entrance, tables, corridors, louvered walls, semi-private rooms with indirect lighting, and washrooms. The color temperature in each can be finely adjusted. The restaurant’s concept of “supporting happy diners enjoying each other’s company” is reflected in the effort taken to plan the lighting details. The restaurant has adopted Tunable White lighting that catches the eye and creates a positive impression while highlighting the vertical wooden louvers through indirect lighting in the semi-private rooms. After repeated efforts to fine-tune the color temperature and illuminance (dimming rate) of the freely adjustable programming, the desired outcome was repeatedly sought through trial-and-error to ensure the optimum balance between brightness level and color temperature. In fact, the designers observed the color and appearance of the interior materials at each location on-site while finely adjusting the lighting settings. The result was a very satisfying interior. In particular, the color of the wooden louver walls, which set off the semi-private rooms, can be randomly changed with the ideal color temperature and brightness levels to ensure the louvers maintain their attractive appearance.







The use of Tunable White downlights enables adjustments to the color and appearance of the vertical wooden louvers to reflect the impact of the original design.

The Tunable White indirect lighting in this semi-private room allows for adjustments to the color temperature and illuminance level.

Smart LEDZ allows for detailed zonal adjustment of brightness.



■ Devices Used

 Smart LEDZ Touch-panel tablet controller	 PWM Signal Unit
 Multibright Ra95 Comfortable colors: 2900K to 1900K 806 lm 15.6 W	 Tunable White Comfortable colors: 3000K to 2000K 2532 lm 19.1 W



9 a.m. - 8 p.m. 3500K



8 p.m. - 0 a.m. 3000K

11 Renaissance Sangenjaya Sports Club Lighting Renovation

Renaissance Incorporated has grown to encompass more than 160 sports clubs, fitness studios, and nursing care rehabilitation facilities throughout Japan.

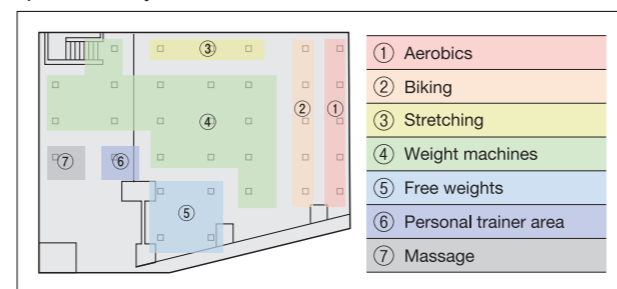
DATA
 Location: Setagaya-ku, Tokyo
 Date: July 2018 (renovation)
 Client: Renaissance Incorporated

Features and Benefits

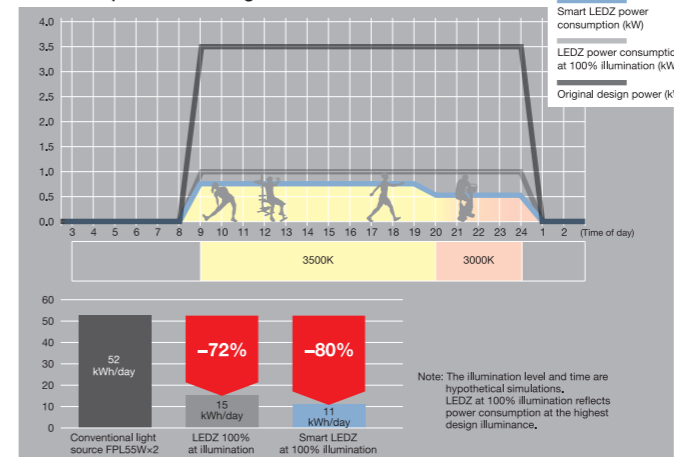
Updated Daytime and Nighttime Lighting Improves Motivation and the Quality of Workouts.

Renaissance Sangenjaya undertook to renovate its training gym by introducing Tunable White Square Fixed lights. Before the update, the facility's conventional light sources — mainly fluorescent lamps — emitted a white light with a daylight color temperature of 5000K. These were replaced with Tunable White Square Fixed lights featuring integrated color control set primarily to warm white 3500K during the daytime and white color 3000K at night. The training gym room is divided into seven areas; at night, the color temperature is further lowered to 2500K in the aerobic area, stretching area, and free weight area. Thus, a lighting environment suitable for the area and time zone is maintained. This innovation is also expected to support improved workouts by contributing to a decreased heart rate when the color temperature is shifted from warm white to a warmer color temperature.

The facility is divided into seven functional areas, with the color temperature and illuminance optimally set to complement the specific activity.



Daily power consumption and color temperature changes



In addition to the changes in color temperature scheduled to harmonize with the daylight, other color temperature changes were made to suit specific applications, including further reductions in color temperature for the free weight and personal trainer areas.

Devices Used

- Smart LEDZ
- Training Gym Square Fixed Light
- Touch-panel tablet controller
- Ra82
- Tunable White: 5000K to 2500K 4699 lm 42.1 W

12 Netz Toyota Shizuoka Oguro



This auto dealer in Oguro — positioned as the flagship dealership of Nets Toyota Shizuoka Corporation — features an innovative approach. It aims to be a welcoming and inviting dealership that entices customers and local residents to stop by without reservation. Highlights include a lounge made with appointments made of natural wood and a stylish coffee shop offering dishes featuring local ingredients. The dealership's objective is to create a comfortable and relaxing space that enables staff to develop a closer bond with customers.

Features and Benefits

Only Smart LEDZ with Wireless Tunable White Lighting Allows for Brightness Adjustment to Match the Season and Event.

Because this dealership is considered a flagship location that develops and introduces new concepts, it must respond flexibly to innovative product display methods ahead of other dealers. After checking each area of the floor for balance between brightness and illuminance, we made adjustments to achieve the optimum lighting environment. We adopted Tunable White indirect lighting and developed settings for daytime and nighttime that operate on a programmed schedule. Moreover, the staff can operate it with a tablet-type controller themselves, switching the settings and changing the brightness to match the season and to accommodate special events.



Daytime: 3650K

Evening: 2500K



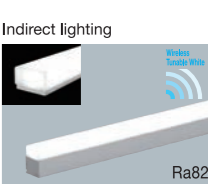

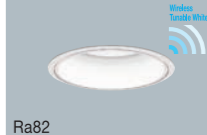


Daytime: 3650K

Evening: 2500K



DATA
 Location: Shizuoka City, Shizuoka Prefecture
 Date: November 2018
 Client: Netz Toyota Shizuoka Corporation
 Design: Sic Inc.
 Construction: Kiuchi Construction Co., Ltd.
 Electrical work: Shizuden

■ Devices Used			
 Smart LEDZ TOUCH-PANEL TABLET CONTROLLER ENDO LIGHTING CORP.	 Dealer building Indirect lighting Ra82	 Indirect lighting Ra82	
	Tunable White: 6000K to 2500K 2679 lm 22.6 W	Tunable White: 6000K to 2500K 1559 lm 14.4 W	
 Dealer building Fixed Downlight Ra82	 Service workshop Fixed Downlight Ra82		
○ 3500K 6635 lm 72.6 W	○ 4000K 6950 lm 72.6 W		



We propose a variety of future-oriented solutions to customer issues.

Tunable White lighting supports healthy circadian rhythms.

When indoor lighting mimics the sun's changing light, a naturally comfortable circadian rhythm, tailored to the rhythms of nature, is supported. The development of healthy interior spaces in tune with nature is likely to become a growing trend.



Tunable LEDZ



Smart LEDZ Fit



Smart Control

Tunable LEDZ

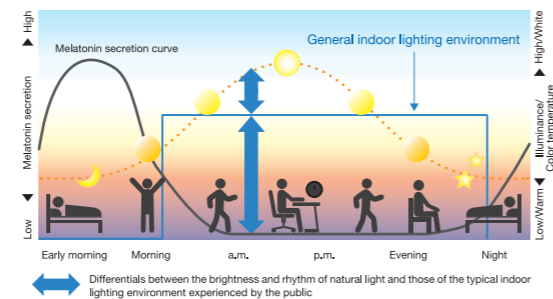
BENEFIT 1

1

Using Tunable White lighting to mimic the natural changes of the day and support a healthy circadian rhythm

There is a close relationship between the daily rhythm of the sun and the rhythm of human life. Organisms have body clocks, and humans have a rhythm that is very close to 24 hours. This is called a "circadian rhythm," and humans naturally become somewhat synchronized to the external environment as determined by sunlight, adjusting it to a 24-hour cycle.

For example, in offices, schools, and medical facilities where many spend much of their day, the lighting environment has a significant effect on the body. Tunable White lighting reduces the difference between the indoor lighting environment and the natural ambient light. Therefore, Tunable White supports the natural adjustment of biological rhythms. We are committed to the development of indoor environments that support human health.



In contemporary indoor lighting environments in which the color temperature and brightness levels remain constant, a measurable difference arises between natural ambient light and indoor lighting as time passes. This is believed to affect the secretion of melatonin. When melatonin production is suppressed, some people have difficulty sleeping. By closely reproducing the natural rhythm of light with Tunable White light-quality LEDs, one can increase or decrease the secretion of melatonin, thereby contributing to a setting conducive to either a more alert or more relaxed state of mind.

Certification to the WELL Building Standard

WELL certification is a building certification system. Operated by the International WELL Building Institute (IWBI) of the U.S.A., it is intended to evaluate healthy and productive spaces. It consists of a list of evaluation items based on eight concepts: air, water, nourishment, light, fitness, comfort, mind, and innovation. Under the category of lighting, "circadian lighting design" and "electric light glare control" are essential factors in the certification matrix. As seen in this example, initiatives to design environments focused on the health of workers are accelerating worldwide.



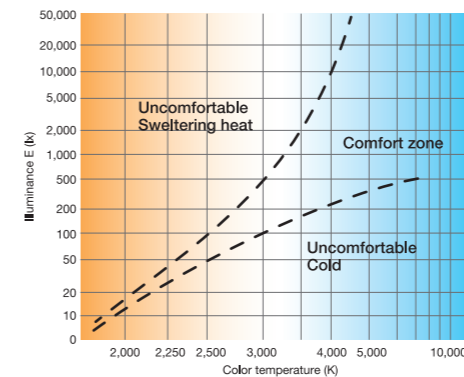
Tunable LEDZ

BENEFIT 2

2

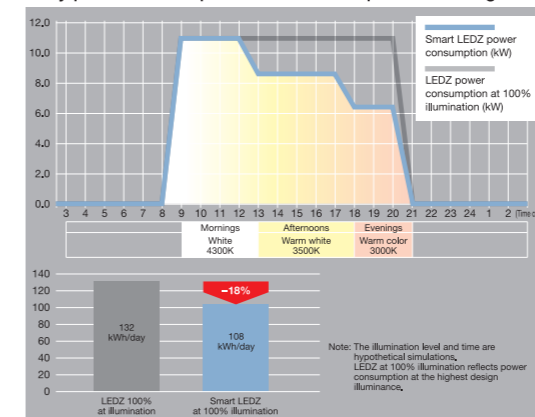
Creating comfortable spaces while reducing energy consumption: Optimal relationship between color temperature and illuminance

The **Kruithof curve** is a phenomenon related to color temperature and illuminance of lighting. For example, lighting with a low color temperature gives a mild, warm, and comfortable impression when illuminance is low, but when the illuminance is above a certain level, it can create an unpleasant sense of sweltering heat. When designing a lighting environment, it is important to consider this aspect of comfort as well.



According to this phenomenon, we believe we can reduce the illuminance at low color temperatures while also reducing energy consumption.

Daily power consumption and color temperature changes



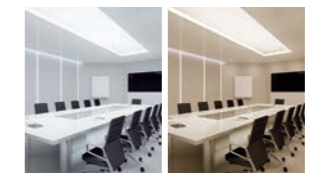
Tunable LEDZ

BENEFIT 3

3

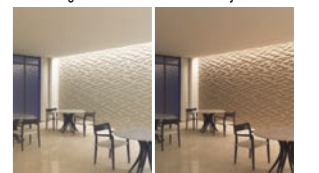
Tunable White lighting providing control of color temperature and illuminance contributing to the development of a revolutionary lighting environment.

Easy shift to optimal lighting for specific purposes



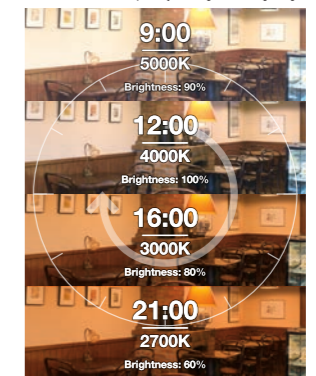
Typical lighting for a meeting. A bright illuminance setting at a warm color temperature makes the material easy to see.

Seasonal changes in color temperature focused on creating more comfortable interiors year-round

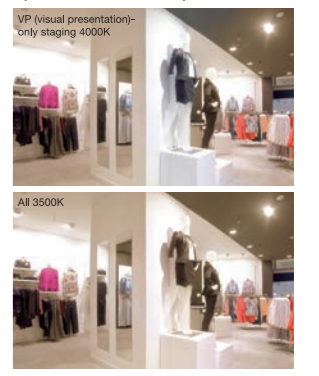


Spring & summer setting Autumn & winter setting

Lighting is adjusted according to the visitor class and time of visit. Hospitality is staged with lighting.

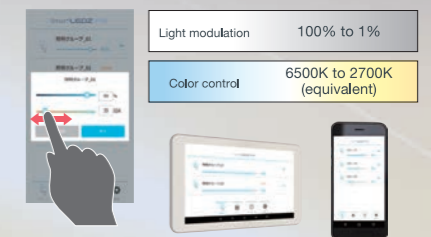


Point-toning to emphasize specific zones and products



Tunable LEDZ x Smart LEDZ Fit x Smart LEDZ Fit Plus

Luminous flux and color temperature are freely controlled with the touch of a finger.



It is also priced lower than PWM control.

