

Introduction

REFAS Centralized Dimming System (CDS)

A locally manufactured energy saving product with Europe technology , suitable for street lighting, compound lighting, façade lighting and indoor lighting applications.

REFAS Centralized Dimming System (CDS) provides the flexibility to control the light dimming levels and energy consumption hence achieving maximum energy saving and reducing electricity cost. Our CDS is design and manufactured for local tropical environment with robust components.

REFAS CDS is suitable for outdoor installations that are subjected to unpredictable lightning surges throughout the year.

Our CDS units are very maintenance friendly, as it is manufactured using components that are easily available in the market. Furthermore, we can provide on-site training to customers on the proper method of maintenance for the CDS units which are simple and require minimum supervision.

The initial investment cost of our CDS is much lower when compared to the other electronic system available in the market and therefore the payback period for our product is much shorter.

Based on the energy saving of 20-25%, a typical road or highway project can expect a return on investment (ROI) of around 2.5 -3.5 years.

Characteristic

REFAS Centralized Dimming System (CDS)

- Reduction in Energy Consumption
- Tropicalized Design
- Robust without any sensitive Electronic Components
- Built-in Electrical Protection
- Fire Hazard prevention by usage of Fire Resistant cables
- Flexible and Ease of Change to Setting Modes
- Common Components used for Ease of Maintenance.

Specifications

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All external compound/street/flood/path lightings shall be provided with time switches with battery/spring reserve and manual bypass or by other appropriate method for manual switching.

The lighting systems shall be of such design so that at the desired time the lighting level can be reduced if required.

The lighting systems shall be controlled by three (3) preset levels, e.g. Full Output (100%), Dimming Level L1 and Dimming Level L2.

A dual dimming switching system, controlled by time switches shall be incorporated for the dimming of the lighting systems for the period during the desired time of the night until the next morning.

The dimming system should be tropicalized without having any electronic control components and circuits in the design.

The system shall not impose any significant change of power factor or increase in harmonic component levels.

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Installation of CDS

The CDS unit is available and suitable for both indoor and outdoor lighting applications.

The CDS unit is assembled and integrated into a epoxy powder coated metal enclosure.

All standard CDS version is protected with overload and short circuit protection by means of circuit breakers or fuses (optional).

Indoor Installations.

For indoor installation, the CDS unit is assembled in a metal enclosure or cabinet. The enclosure or cabinet is designed to be mounted directly on the wall by means of mounting flanges.

Outdoor Installations.

For outdoor applications, the CDS unit must be installed inside a weather proof Feeder Pillar for highways, roadways and other outdoor lighting applications.

In such applications, provision and allocation of suitable mounting space must be made for the CDS unit prior to any installations.

All installations of CDS unit must be done with the approval and authorization of EITA Technologies (M) Sdn Bhd.

- 1) All installation of CDS unit will be carried out under the supervision and approval of EITA Technologies. All mounting of the CDS unit inside the Feeder Pillar must be done prior to delivery to the intended site.
 - 2) For outdoor application, mounting plates and prefabricated mounting holes must be provided by the Feeder Pillar makers. The drawings and dimension for the CDS unit can be requested from EITA Technologies.
 - 3) For proper connection of CDS unit to the incoming supply line and the lighting circuit, suitable rated terminal blocks are provided and should not be changed or replaced without prior consultation and approval from EITA Technologies.
 - 4) All terminations of wire from the CDS unit must be done with the approval of EITA Technologies.
 - 5) Commissioning and inspection of the CDS unit will be conducted by EITA Technologies prior to the operation of the lighting system.
- All inspection and commissioning of the CDS unit will be carried out at the site of installation.

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Calculation for determining system power requirements.

To determine the power rating of the CDS system needed for an installation, the following elements must be known:

1. Type of main supply ... Single phase (1Ø) or Three phase (3Ø)
2. Voltage rating of the supply... 220V/230V/... 400V/415V
3. The type of lamps used... Sodium, Mercury or Metal Halide
4. The ratings of the lamps used... 70W..150W..250W..400W..
5. The numbers of lighting points

The power requirement (P) per phase of the CDS system will be:

$P_{(RED\varnothing)}$ kVA = Number of lighting points X supply load current X supply voltage

$P_{(YELLOW\varnothing)}$ kVA = Number of lighting points X supply load current X supply voltage

$P_{(BLUE\varnothing)}$ kVA = Number of lighting points X supply load current X supply voltage

$P_{(total)}$ kVA = $P_{(RED\varnothing)} + P_{(YELLOW\varnothing)} + P_{(BLUE\varnothing)}$

Table for Lamp Load supply current

HPS Sodium Lamps					HPMV Mercury Lamps		
70W	150W	250W	400W	1000W	125W	250W	400W
0.70A	1.10A	1.60A	2.40A	6.40A	0.85A	1.70A	2.40A

Examples of calculation:

Installation with the following units of street lanterns;

1. Red Phase – 12 nos. of 400W SON lamps and 8 nos. of 250W SON lamps
2. Yellow Phase – 10 nos. of 400W SON lamps and 7 nos. of 250W SON lamps
3. Blue Phase – 10 nos. of 400W SON lamps and 7 nos. of 250W SON lamps

The calculations will be;

$$P_{(Red\varnothing)} = (12 \times 2.40 \times 240) + (8 \times 1.60 \times 240) = 9,984 \text{ VA}$$

$$P_{(Yellow\varnothing)} = (10 \times 2.40 \times 240) + (7 \times 1.60 \times 240) = 8,448 \text{ VA}$$

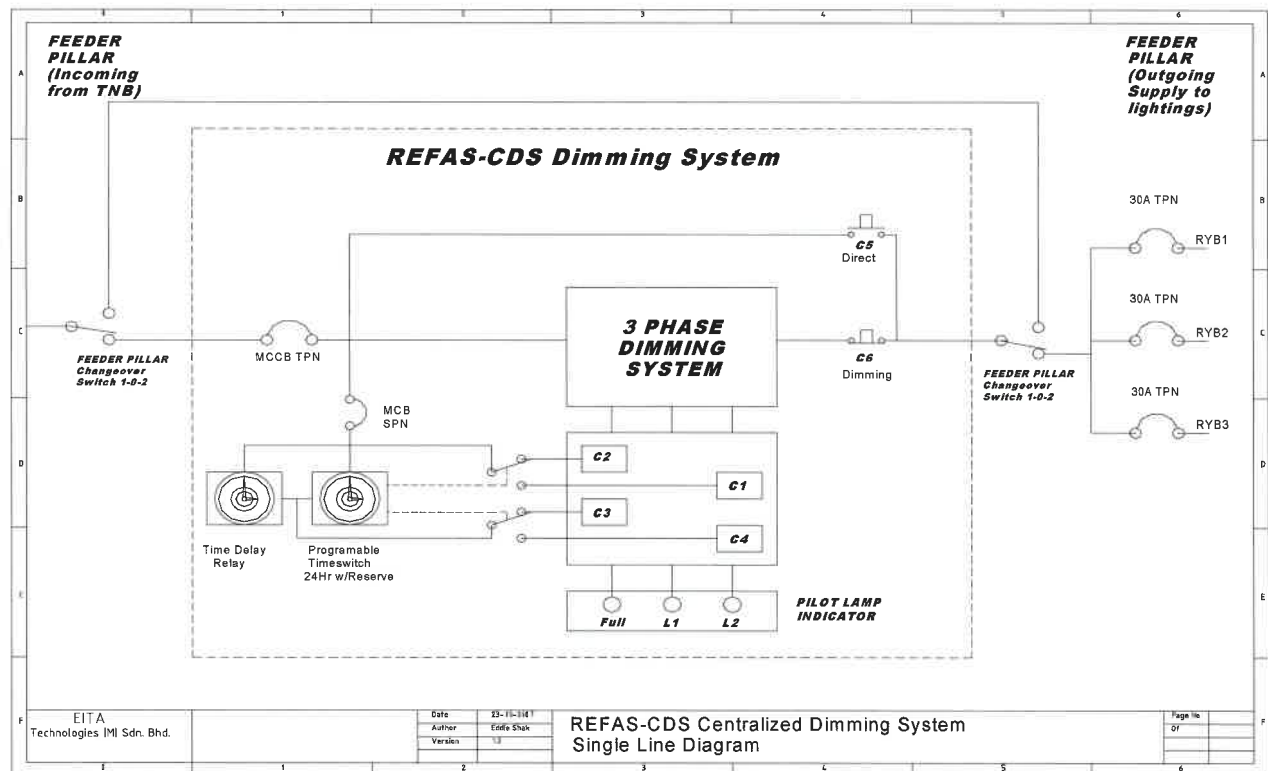
$$P_{(Blue\varnothing)} = (10 \times 2.40 \times 240) + (7 \times 1.60 \times 240) = 8,448 \text{ VA}$$

$$P_{(total)} = 9,984 + 8,448 + 8,448 = 26,880 \text{ VA}$$

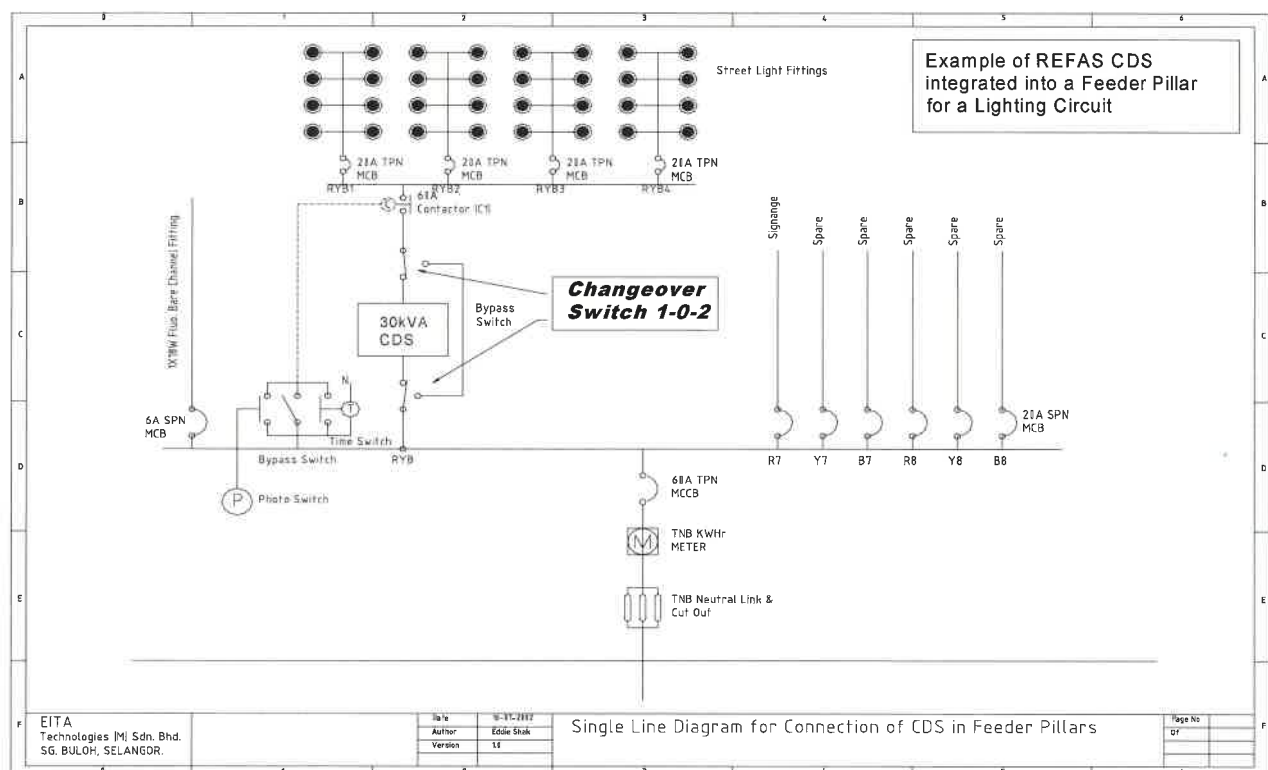
The nearest and higher rating range of CDS system shall then be use for the installation. In this case, a 30kVA 3Phase system will be the most suitable unit.

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A Single Line Diagram for a typical CDS unit.



Typical location of CDS unit in a Feeder Pillar



PROJECT REFERENCE

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Updated on 03/06/2020

No.	Project Name	Project Owner	Consultant	Customer	CDS kVA Ratings	Completion Year
1.	Cyberjaya – Recreation Parks			Circuitry Electircal	20kVA	2002
2.	KLIA – Indoor & Outdoor Car Park	Malaysia Airport Holdings Berhad		Siemen (OEM)	30kVA	2002
3.	Jalan Putra, Alor Setar	JKR Alor Setar	JKR Alor Setar	Tunjang Derima Engineering, Alor Setar	30kVA	2004
4.	Kajang SILK Highway	Sistem Lingkaran-Lebuhraya Kajang Sdn, Bhd. (SILK)	SMHB, ARUP	LFE Engineering	20kVA, 30kVA, 40kVA, 50kVA, 60kVA, 70kVA, 80kVA, 90kVA, 100kVA, 120kVA.	2004
5.	Alor Setar Airport	Malaysia Airport Holdings Berhad	J&A Associates	Sena Letrik	10kVA, 20kVA, 30kVA.	2006
6.	Sungai Buloh New Interchange of North-South Expressway (PLUS)	PLUS Expressway Berhad	Saga Jurutera	RCM	20kVA, 30kVA, 40kVA, 50kVA.	2006
7.	Gerbang Selatan Bersepadu Johor Bahru (CIQ)	Jabatan Imigresen Malaysia	SMHB	Seri Meraga Construction / ALM Engineering	20kVA, 30kVA, 40kVA, 50kVA.	2006
8.	Penang Bridge Toll Plaza Upgrading Works	Penang Bridge Sdn. Bhd.	HSSI	Evertronic	60kVA, 90kVA.	2006
9.	Cyberjaya Flagship Zone	Majlis Perbandaran Sepang	Noble Existence	YU Enterprise	10kVA, 15kVA, 20kVA, 40kVA.	2007
10.	North-South Expressway 3 rd Lane Widening between Seremban & Senawang	PLUS Expressway Berhad	Perunding Eagles	Misyaku Engineering / BGN Trading	20kVA, 30kVA.	2007
11.	KL-Putrajaya Dedicated Highway KL (Package 3)	Maju Expressway (MEX)	HSSI	Cableline	30kVA, 40kVA, 50kVA.	2007

No.	Project Name	Project Owner	Consultant	Customer	CDS kVA Ratings	Completion Year
12.	Puchong Gateway of LDP Highway	LITRAK (Lingkar Trans Kota Holding Berhad)	Perunding LMC	Cableline	20kVA	2007
13.	Jitra Interchange of North-South Expressway (PLUS)	PLUS Expressway Berhad	HSSI	Megalux Lightings	30kVA, 40kVA.	2007
14.	Penang Bridge 3 rd Lane Widening	Penang Bridge Sdn. Bhd.	Penang Bridge Sdn. Bhd.	Propel Berhad	20kVA, 30kVA, 40kVA.	2008
15.	CIQ JB, Phase II.	Jabatan Imigresen Malaysia	SMHB	SMB Brighten	10kVA, 20kVA, 30kVA.	2008
16.	KL-Putrajaya Dedicated Highway KL (Package 1,2,4&5)	Maju Expressway (MEX)	HSSI	YF Teras	30kVA, 40kVA.	2008
17.	North-South Expressway 3 rd Lane Widening between Nilai-Seremban	PLUS Expressway Berhad	RAZ Associates Sdn. Bhd.	ZETA Letrik / OR Letrik	30kVA	2008
18.	Putra Height Interchange of ELITE Expressway	PLUS Expressway Berhad	DPI Konsult	Sena Letrik	10kVA, 40kVA, 50kVA.	2009
19.	Jelapang New Tol Plaza (Package 5)	PLUS Expressway Berhad	HSSI	Kazakon Sdn. Bhd.	30kVA, 40kVA, 50kVA, 60kVA.	2009
20.	Lebuhraya Pantai Timur 2, Package 12.	JKR, Malaysia	JKR LPT 2	Zedcon Engineering Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2009
21.	CIQ JB	Jabatan Imigresen Malaysia	SMHB Sdn. Bhd.	SwoonHub, Brighten	20kVA	2009
22.	Lebuhraya Damansara Puchong (LDP 47)	LITRAK (Lingkar Trans Kota Holding Berhad)	LITRAK	ESS Engineering Sdn. Bhd.	70kVA	2009
23.	Lebuhraya Damansara Puchong (LDP)	LITRAK (Lingkar Trans Kota Holding Berhad)	LITRAK	ESS Engineering Sdn. Bhd.	70kVA	2009
24.	Lebuhraya Pantai Timur Fasa 2, Package 10.	Lembaga Lebuhraya Malaysia	Perunding Eagles	SEP Engineering	10kVA, 30kVA, 40kVA, 50kVA.	2010
25.	Lebuhraya Damansara Puchong (Sprint Highway-FP/A1, FP/A4)	LITRAK (Lingkar Trans Kota Holding Berhad)		PL Tenaga Sdn. Bhd.	20kVA, 40kVA, 50kVA.	2010

No.	Project Name	Project Owner	Consultant	Customer	CDS kVA Ratings	Completion Year
26.	The Supply, Delivery, Installation Testing and Commissioning of Street Lighting For 93 Bungalow Lots on Part of PTD 84132, Ladang Tebrau, Mukim Tebrau, Daerah Johor Bahru.	Nasa Land Sdn. Bhd.	Power Tech Engineering Sdn. Bhd.	Elson Electrical Engineering Sdn. Bhd.	30kVA	2010
27.	Lebuhraya Damansara Puchong (LDP-FP33)	LITRAK (Lingkar Trans Kota Holding Berhad)		PL Tenaga Sdn. Bhd.	20kVA	2010
28.	Lebuhraya Damansara Puchong (LDP-5A)	LITRAK (Lingkar Trans Kota Holding Berhad)		PL Tenaga Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2010
29.	Lebuhraya Pantai Timur Fasa 2, Package 9A2.	JKR, Malaysia	IKTISAS Ingenieur Sdn. Bhd.	SKYBO Resources Sdn. Bhd. / Mountain Lite Eng. Sdn. Bhd.	10kVA, 30kVA, 40kVA, 50kVA, 60kVA.	2011
30.	Lebuhraya Pantai Timur Fasa 2, Package 6.	JKR, Malaysia	Perunding Bersatu	FASA Tiga Engineering Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2011
31.	Lebuhraya Pantai Timur Fasa 2, AJIL Interchange.	JKR, Malaysia	Perunding Bersatu	Doyes Engineering Sdn. Bhd.	10kVA, 30kVA, 50kVA, 60kVA.	2011
32.	Lebuhraya Pantai Timur Fasa 2, Bukit Besi Interchange	JKR, Malaysia	Perunding Bersatu	Doyes Engineering Sdn. Bhd.	10kVA, 20kVA, 30kVA, 40kVA, 50kVA.	2011
33.	Lebuhraya Damansara Puchong (Sprint project- FPA5)	Lembaga Lebuhraya Malaysia		PL Tenaga Sdn. Bhd.	20kVA	2011
34.	Proposed Toll Lanes Extension At Simpang Pulai Toll Plaza, Ipoh.	Lembaga Lebuhraya Malaysia	Min Consult Sdn. Bhd.	Kin Keong Electric Engineering Sdn. Bhd.	40kVA	2011
35.	Lebuhraya Damansara Puchong (Sprint project- FP A1 & A6)	LITRAK (Lingkar Trans Kota Holding Berhad)	-	PL Tenaga Sdn. Bhd.	40kVA, 50kVA.	2011
36.	Lebuhraya Pantai Timur Fasa 2 , Package 5A.	JKR, Malaysia		Doyes Engineering Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA, 60kVA.	2011
37.	Lebuhraya Damansara Puchong (LDP 4 Project- FP 10A)	LITRAK (Lingkar Trans Kota Holding Berhad)	-	PL Tenaga Sdn. Bhd.	40kVA	2011

No.	Project Name	Project Owner	Consultant	Customer	CDS kVA Ratings	Completion Year
38.	Lebuhraya Damansara Puchong (LDP 5C1 Project)	LITRAK (Lingkaran Trans Kota Holding Berhad)	Perunding ZKR Sdn. Bhd.	PL Tenaga Sdn. Bhd.	20kVA, 30kVA, 40kVA.	2011/2012
39.	Bangi & Kajang Interchange & Toll Plaza Upgrading	PLUS Expressway Berhad	RAZ Associates Sdn. Bhd.	Kim Luen Trading	30kVA, 40kVA, 50kVA.	2011
40.	Upgrading of Existing Skudai-Senai Highway Wilayah Pembangunan Iskandar, Johor.	PLUS Expressway Berhad	Minconsult Sdn. Bhd.	Tulane Sdn. Bhd.	30kVA, 40kVA.	2012
41.	New KLIA LF05A Terminal Approach Road	Malaysia Airport Holdings Berhad	Mega Jati Consult Sdn. Bhd.	Doyes Engineering Sdn. Bhd.	10kVA, 20kVA, 30kVA.	2012
42.	Interchange at the Junction of Hicom-Puchong Road to Hypermarket (Peringkat Kedua) and New Interchange Layout	LITRAK (Lingkaran Trans Kota Holding Berhad)	-	MCT Construction Materials Sdn. Bhd.	30kVA	2012
43.	Pahlawan City, Johor.	Millennium PLUS Sdn. Bhd.	PKV Consulting Engineering	Hexatech Building Services Sdn. Bhd.	10kVA	2012
44.	Proposed Development of New LCC Terminal & Associated Works at KLIA Sepang, Selangor. (LF 06-Perimeter Road and Security Road & Fencing)	Malaysia Airport Holding Bhd.	Mega Jati Consult Sdn. Bhd.	Maxcom Electrical & Engineering / Suhati Sdn. Bhd.	10kVA	2012
45.	Lebuhraya Pantai Timur Fasa 2, Package 10.	JKR, Malaysia	Perunding Eagles Eng. Sdn. Bhd.	Norsham Industries Sdn. Bhd. / MTD Capital Bhd.	10kVA, 30kVA, 40kVA, 50kVA.	2013
46.	Cadangan Membina Sebuah Hotel 8 Tingkat Di atas Lot 264 & 268, Kawasan Bandar V III, Daerah Melaka Tengah, Melaka Bandaraya.	Tetuan Millenium PLUS Sdn. Bhd.	PKV Consulting Engineering Sdn. Bhd.	TBTC Construction & Eng. Sdn. Bhd. / Hexatech Building Services Sdn. Bhd.	20kVA	2013
47.	Sungai Buaya Interchange and Tol Plaza	PLUS Expressway Berhad	Sepakat Setia Perunding Sdn. Bhd.	Sena Letrik (M) Sdn. Bhd. /Iswarabena Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2013
48.	Besraya Eastern Extension Highway – Loke Yew Toll Plaza.	Besraya (M) Sdn. Bhd.	Perunding ATOZ	Cable Line Electrical & Engineering Sdn. Bhd.	30kVA, 50kVA.	2013

No.	Project Name	Project Owner	Consultant	Customer	CDS kVA Ratings	Completion Year
49.	Proposed Upgrading of Airside Security Road to Service Road and Associated Works Between KLIA and KLIA 2 at KLIA Sepang, Selangor.	Malaysia Airport Holdings Berhad	Mega Jati Consult Sdn. Bhd.	Maxcom Electrical & Engineering	10kVA, 20kVA.	2013
50.	Lebuhraya Pantai Timur Fasa 2 , Package 8.	JKR, Malaysia	NLS Powermath Engineering	YL Switchgear Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2013
51.	Lebuhraya Pantai Timur Fasa 2 , Package 2.	JKR, Malaysia	JKR, Malaysia	M.D Link Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA, 60kVA.	2013
52.	Pembangunan Wilayah Ekonomi Pantai Timur (ECER) Menggantikan Jambatan Bukit Kuang Di Jalan Persekutuan 3, Kemaman, Terengganu.	JKR, Malaysia	Minconsult Sdn. Bhd.	Cable Line Electrical & Engineering Sdn. Bhd. / Cergas Murni Sdn. Bhd.	20kVA, 30kVA, 40kVA.	2013
53.	Lebuhraya Pantai Timur Fasa 2, Package 3.	JKR, Malaysia	WNA Consultant Sdn. Bhd.	Doyes Engineering Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2013
54.	KLIA 2 Security Road to Service Road Upgrading	Malaysia Airport Holdings Berhad	Mega Jati Consult Sdn. Bhd.	Maxcom Electrical & Engineering	20kVA	2013
55.	North-South Expressway (PLUS) Proposed Fourth Lane Widening Between Nilai and Seremban, (Package E).	PLUS Expressway Berhad	HSS Integrated Sdn. Bhd.	Jengkal Semaju Sdn. Bhd.	20kVA, 30kVA, 50kVA.	2013
56.	Bukit Gambir Interchange- Kg. Parit Zing, 84800 Bukit Gambir Johor.	PLUS Expressway Berhad	Perunding Bakti Sdn. Bhd.	Generasi Nirwana Sdn. Bhd.	10kVA, 20kVA, 40kVA, 60kVA.	2014
57.	HAPSENG Puchong	Hap Seng Land Development Sdn. Bhd.	LMC Consult Sdn. Bhd.	RFS Components Supply Sdn. Bhd.	40kVA	2014
58.	SKVE-101 CITYMALL Interchange	Dream Development Sdn. Bhd.	ATOZ Ingenieur (M) Sdn. Bhd.	Cable Line Electrical & Engineering Sdn. Bhd.	20kVA	2014

No.	Project Name	Project Owner	Consultant	Customer	CDS KVA Ratings	Completion Year
59.	Lebuhraya Johor Bharu-Pasir Gudang	JKR	MMSB Consult Sdn. Bhd.	Starlite Electrical Industries Sdn. Bhd.	40kVA, 50kVA	2014
60.	KL ECO City Federal Highway Interchange	DBKL	MSS Integrated Sdn. Bhd.	Cable Line Electrical & Engineering Sdn. Bhd.	30kVA	2015
61.	Gopeng to Tapah for PLUS Highway	PLUS	RAZ Associates Sdn. Bhd.	Gumi Asli Electrical Sdn. Bhd.	40kVA	2015
62.	Pemasangan Sistem Elektrik Untuk Menaiktaraf Jalan Muar, Tangkak-Segamat, Johor. (Fasa 1:Segamat-Tangkak) Pakej 2.	JKR	Perunding EXEC	Gumi Asli Electrical Sdn. Bhd.	20kVA, 30kVA, 40kVA, 50kVA.	2015
63.	Sprint Highway	LITRAK	LI-Zainal Sdn. Bhd.	RFS Components Supply Sdn. Bhd.	30kVA	2015
64.	-	-	SRS Power Engineering Sdn. Bhd.	EITA Electric Sdn. Bhd.	40kVA	2015
65.	Cadangan Menaik Taraf Jalan Keluar Masuk Yang Sedia Ada Ke atas Tapas Cadangan Yang Terdiri Daripada: Di atas Sebahagian Lot PT 48734, Daerah Petaling, Selangor Darul Ehsan Untuk Tentuan Hap Seng Land Development Sdn. Bhd.	Hap Seng Land Development	LMC Consult Sdn. Bhd.	RFS Components Supply Sdn. Bhd.	40kVA	2016
66.	Pemasangan Sistem Elektrik Untuk Menaiktaraf Jalan Muar, Tangkak-Segamat, Johor. (Fasa 1:Segamat-Tangkak) Pakej 3.	JKR	Perunding EXEC	Kejuruteraan IKHLAS JAYA SDN BHD	30kVA	2019