DEVTECH M2M

Enabling Smart Cities

DEVTECH Mega Saver
Case Study

- Intelligent Solution for Energy Efficient Light

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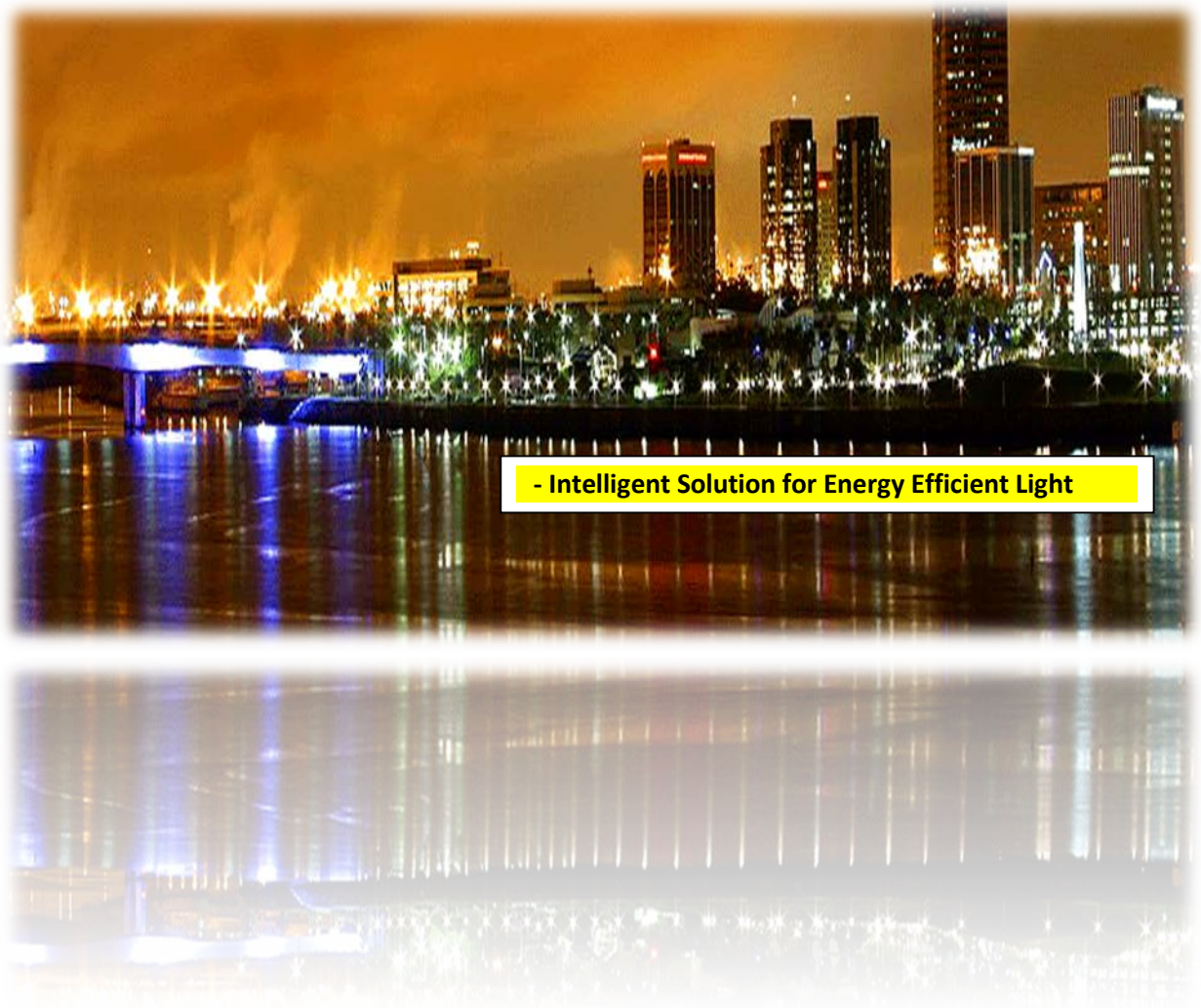
DEVTECH Mega Saver/Fugen
Report on Energy Savings and Lux Levels Test at oil and gas refineries

OIL AND GAS REFINERIES – Installation Site

Oil and gas refineries' installation was on 29/10/2013 to 05/11/2013

And the Installation Site is at **High Mast, Refinery.** Light Points was situated in all the High Mast – 21. OIL AND GAS REFINERIES HIGH MAST Setup was of 400W Magnetic Ballast – Bajaj and 400 HPSV Lamps – Bajaj.

DEVTECH M2M Proposed Solution Setup was of 320W Megaserver /Fagan with 320W MH Lamp Venture.

Energy Consumption and Lox Levels of OIL AND GAS REFINERIES setup and Devtech setup were monitored and recorded along with the electrical team of oil and gas refineries.

Details of Energy Consumption

400W Magnetic against 320W Electronic

Control Gear

S.No	Electrical Parameters	Magnetic 400W	Electronic 320W
1.	Voltage - V	246	246
2.	Current - A	40	32
3.	Active Power - kW	9.7	7.9
4.	Apparent Power - kVA	13.0	7.9
5.	Reactive Power - kVAR	8.4	0.1
6.	Power Factor – PF	0.74	1.0

Details of Lux Levels

400W Magnetic against 320W Electronic

Control Gear

S.No	Lux Levels Measured at	Magnetic 400W	Electronic 320W
1.	Bottom of the Mirror	23	23
2.	Corner of the Maintenance Shop	35	38
3.	Center of the Shutter in line with Vehicle Parking area	31	38
4.	Man Hole in front of the W/H Shutter	23	28
5.	Admin Building Entrance Area	25	21
6.	DGM car Park Drain area	34	44
7.	Near E&C Building front of Flower POT	07	05
8.	FCCU Step	16	12
9.	Left Support of Hydrant 154	31	23
	Average	25	25.7

ENERGY CONSUMPTION ANALYSIS

S.No	Details	High Mast 21 Nos	Single choke consumption In High Mast	Savings in Watts and % of Savings	Cost Savings Per Yr./point
1.	Energy Consumed by 400W Bajaj Magnetic Ballast	9.7 kW	462 W		
2.	Energy Consumed by 320W Devtech MegaSaver in Super Lumen Mode	7.9 kW	376 W	462-376= 86W 18 % Savings	Rs. 3,767
3.	Energy Consumed by 320W Devtech MegaSaver/FuGen at 100% Mode	7.0 kW	334 W	462-334=128W 28% Savings	Rs. 5,606
4.	Energy Consumed by 320W Devtech Fugen with Scheduling Mode*	5.25 kW	252 W	462-252=210W 45% Savings	Rs.9,198

Cost Savings = (watts savings * no. of Hrs(12) * Days/Yr(365)*Unit Rate(Rs.10)

Energy Consumption Analysis – Mega Lumen

- Energy consumption by 21 devices/hr (400W magnetic Ballast) is

  = 9.7 kW

- Energy Consumed by a single 400W Magnetic Ballast/hr is **= 462 W**
- Energy Consumption by 21devices/hr (320W Devtech Electronic Control Gear) is **= 7.9 kW**
- Energy Consumed by a single 320W Electronic Ballast/hr is **= 376 W**
- **Energy Saving per point in the High mast/hr = 462 W – 376 W = 86 W**
- **Energy Saved in 1 year = 86 W * 12 * 365 = 377 kW**
- **Savings in terms of cost = 377 * 10 = Rs. 3770**

NOTE:

The above values are taken from Energy Meter used at OIL AND GAS REFINERIES , The savings are direct savings without any scheduling or dimming of lamps.

Energy Consumption Analysis – 100% Mode

- Energy Consumption by 21devices/hr (400W magnetic Ballast) is= **9.7 kW**

- Energy Consumed by a single 400W Magnetic Ballast/hr is = **462 W**

- Energy Consumption by 21devices/hr(320W Devtech Electronic Control Gear) is = **7.0 kW**

- Energy Consumed by a single 320W Electronic Ballast/hr is = **334 W**

- **Energy Saving per point in the High mast/hr = 462 W – 334 W = 128 W**

- **Energy Saved in 1 year = 128 W * 12 * 365 = 561 kW**

- **Savings in terms of cost = 561 * 10 = Rs. 5610**

* The above values are taken through Devtech iStreet.network, with an data aggregator

Energy Consumption Details from iStreet.network – 100% Mode

From the DEVTECH Energy Monitoring Suite:

The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Energy Consumption Details from iStreet.network – 100% Mode

The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Energy Consumption Details from iStreet.network – 100% Mode

The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Energy Consumption Details from iStreet.network – 100% Mode

The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Name	Value		Value	Date
Energy (kwh)	19.4		330.0	2013-11-01 02:15:00
Running Hours (Hr)	66.0		330.0	2013-11-01 02:00:01
Supply Voltage (V)	249.0		330.0	2013-11-01 02:00:01
Power (W)	0.0		330.0	2013-11-01 01:45:00
Power Factor	0.0		330.0	2013-11-01 01:45:00
Lamp Current (mA)	0.0		333.0	2013-11-01 01:30:00
Lamp Voltage (v)	0.0		333.0	2013-11-01 01:30:00
Supply Current (mA)	0.0		331.0	2013-11-01 01:15:00
			331.0	2013-11-01 01:15:00
			334.0	2013-11-01 01:00:00
			334.0	2013-11-01 01:00:00
			332.0	2013-11-01 00:45:00
			332.0	2013-11-01 00:45:00
			331.0	2013-11-01 00:30:00
			331.0	2013-11-01 00:30:00

Energy Consumption Details from iStreet.network – 100% Mode

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The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Energy Consumption Details from iStreet.network – 100%Mode

The following is the energy consumption details from

6 PM 31/10/13 to 6 AM 01/11/13

Name	Value		Value	Date
Energy (kwh)	19.4		330.0	2013-11-01 06:00:00
Running Hours (Hr)	66.0		331.0	2013-11-01 05:45:00
Supply Voltage (V)	249.0		331.0	2013-11-01 05:45:00
Power (W)	0.0		332.0	2013-11-01 05:30:01
Power Factor	0.0		332.0	2013-11-01 05:30:01
Lamp Current (mA)	0.0		331.0	2013-11-01 05:15:00
Lamp Voltage (v)	0.0		331.0	2013-11-01 05:15:00
Supply Current (mA)	0.0		332.0	2013-11-01 05:00:00
			332.0	2013-11-01 05:00:00
			332.0	2013-11-01 04:45:00
			332.0	2013-11-01 04:45:00
			330.0	2013-11-01 04:30:01
			330.0	2013-11-01 04:30:01
			331.0	2013-11-01 04:15:00
			331.0	2013-11-01 04:15:00

Energy Consumption Analysis – Scheduling Mode

- Energy Consumption by 21devices (400W magnetic Ballast) is= 9.7 kW

- Energy Consumed by a single 400W Magnetic Ballast is = 462 W

- Energy Consumption by 21devices (320W DEVTECH Electronic Control Gear) is

- = 5.25 kW

- Energy Consumed by a single 320W Electronic Ballast is = 250 W

- **Energy Saving per point in the High mast = 462 W – 250 W = 210 W**

- **Energy Saved in 1 year = 210 W * 12 * 365 = 920 kW**

- **Savings in terms of cost = 377 * 10 = Rs. 9200**

   *N0te:

   The above values are taken through Devtech m2m energy monitoring suite iStreet.network, with an data aggregator placed in the feeder pillar with OIL AND GAS REFINERIES suggested scheduling.

Energy Consumption Details from iStreet.network Schedule Mode

From the DEVTECH iStreet.network

Energy Consumption Details from iStreet.network

Scheduling Mode

The following is the energy consumption details from

6 PM 01/11/13 to 6 AM 02/11/13:

01/11/13 6:00 PM to 7:30 PM – 70%

Energy Consumption Details from iStreet.network

Scheduling Mode

The following is the energy consumption details from

6 PM 01/11/13 to 6 AM 02/11/13

01/11/13 10:30 PM to 11:30 PM -100%

Name ⇕	Value ⇕
Energy (kwh)	19.4
Running Hours (Hr)	66.0
Supply Voltage (V)	249.0
Power (W)	0.0
Power Factor	0.0
Lamp Current (mA)	0.0
Lamp Voltage (v)	0.0
Supply Current (mA)	0.0

Value ⇕	Date ⇕
331.0	2013-11-01 23:15:00
335.0	2013-11-01 23:00:01
332.0	2013-11-01 22:45:00
241.0	2013-11-01 22:30:01
240.0	2013-11-01 22:15:00
238.0	2013-11-01 22:00:01
239.0	2013-11-01 21:45:00
240.0	2013-11-01 21:30:01
240.0	2013-11-01 21:15:00
241.0	2013-11-01 21:00:01
238.0	2013-11-01 20:45:00
331.0	2013-11-01 20:30:00
333.0	2013-11-01 20:15:00
333.0	2013-11-01 20:00:00
333.0	2013-11-01 19:45:00

Energy Consumption Details from iStreet.network

Scheduling Mode

The following is the energy consumption details from

6 PM 01/11/13 to 6 AM 02/11/13:

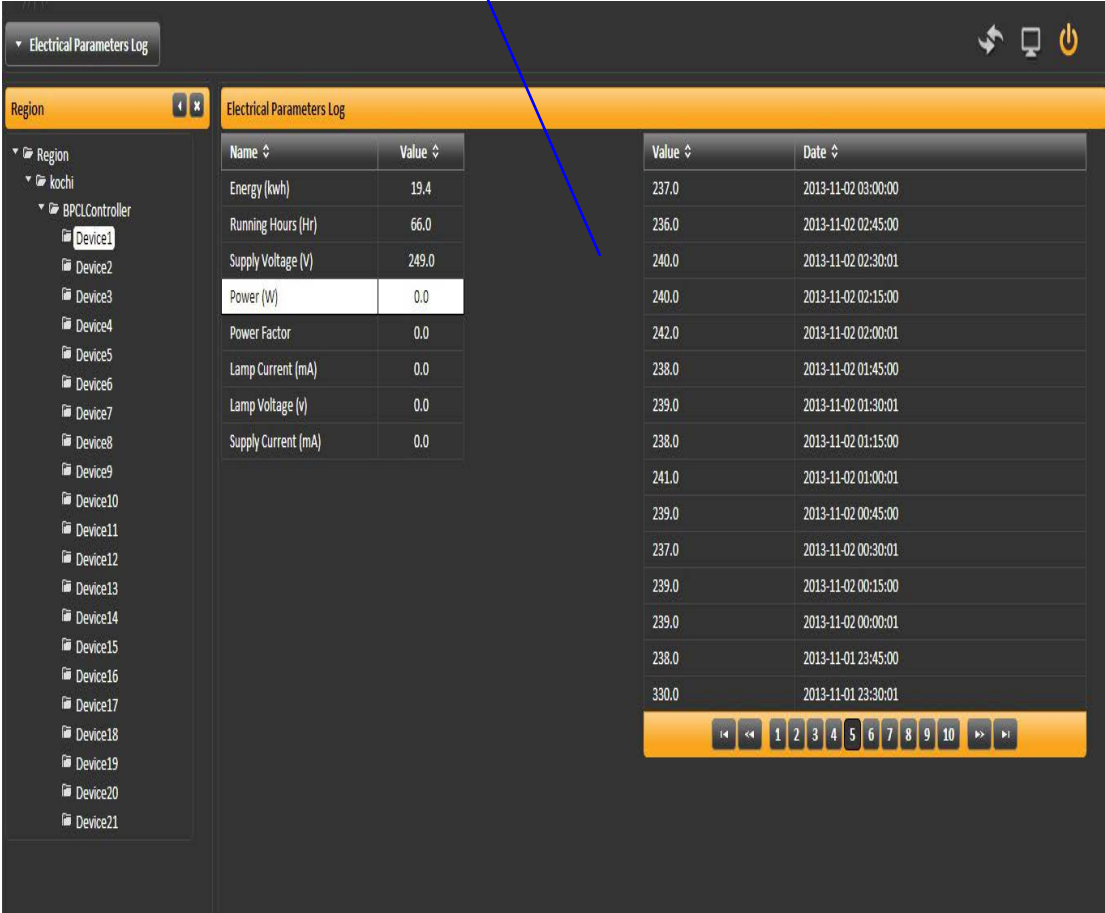**01/11/13 11:30 PM to 02/11/13 3:30 PM – 70%**

Energy Consumption Details from I Street. network – Scheduling Mode

The following is the energy consumption details from

6 PM 01/11/13 to 6 AM 02/11/13:

02/11/13 3:30 PM to 6:00 PM – 65%

Name ⇕	Value ⇕
Energy (kwh)	19.4
Running Hours (Hr)	66.0
Supply Voltage (V)	249.0
Power (W)	0.0
Power Factor	0.0
Lamp Current (mA)	0.0
Lamp Voltage (v)	0.0
Supply Current (mA)	0.0

Value ⇕	Date ⇕
239.0	2013-11-02 18:45:00
244.0	2013-11-02 18:30:01
239.0	2013-11-02 18:15:00
224.0	2013-11-02 06:00:01
225.0	2013-11-02 05:45:00
225.0	2013-11-02 05:30:00
227.0	2013-11-02 05:15:00
225.0	2013-11-02 05:00:01
226.0	2013-11-02 04:45:00
227.0	2013-11-02 04:30:01
225.0	2013-11-02 04:15:00
226.0	2013-11-02 04:00:01
226.0	2013-11-02 03:45:00
239.0	2013-11-02 03:30:01
239.0	2013-11-02 03:15:00

Region tree:
- Region
  - kochi
    - BPCLController
      - Device1
      - Device2
      - Device3
      - Device4
      - Device5
      - Device6
      - Device7
      - Device8
      - Device9
      - Device10
      - Device11
      - Device12
      - Device13
      - Device14
      - Device15
      - Device16
      - Device17
      - Device18
      - Device19
      - Device20
      - Device21

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