POWER MANAGEMENT SYSTEMS LLC

US Exclusive Distributor

intelligent Demand Response- iDR

Facility upgrading solutions that improve the manufacturing environment by reducing costs

EU Power Management Systems LLC
Version 1.31 - 2014

WWW.EUPMS.COM

Who Are We - What We do

Headquartered in Atlanta-GA since 2004, EU Power Management Systems, LLC - **EUPMS** is the exclusive provider of the state-of-the-art TERAWATT electrical optimization technology in North America and Caribbean

iDR or intelligent Demand Response systems offer over **30** years of leading edge experience in designing fully automated tailored energy conservation solutions that reduce operating expenses, without affecting design intent, comfort , performance or technical reliability while provide valuable environmental benefits.

EUPMS is a trade ally of Duke Energy and Georgia Power / Southern Corporation and **iDR** technology can be considered for rebates under incentive programs.

iDR offers a **24/7** *proven* and *guaranteed* electricity cost-saving solution for most type of facilities. **A NO risk project!**

Why Choose iDR ?

The right way to elicit the right response is to manage the signal sent at the right time to the right place, therefore adjusting the electricity profile/usage to the real needs; only paying for what is required/used at all time and not paying all time for a few scarce load peaks or an unbalanced power demand.

- Over 30 years of Energy Conservation expertise with installations worldwide
- A tailored technology to fit any user requirements and characteritics
- Fully automated solution - 24/7 real-time, permanent power optimization
- Detailed performance results with monthly reporting on savings
- A zero discomfort solution guaranteeing continously energy efficiency
- High quality capital recovery, low investment, fast ROI (usually 1 year)

OPTIMIZATION or iDR

Why intelligent Demand Response in a facility ?

POWER OPTIMIZATION or iDR

A: Our Zero Complaint operation, detailed and comprehensive reports, customized energy profile to produce sustained savings while keeping untouched operational efficiency, design intent and reliability

A transparent solution that offers real-time results, allowing full monitoring at any time through an interactive colour touch screen or by remote TCP/IP protocol or modem.

i*DR* is one of the most cost effective proven products in the market with recognized and guaranteed results in several facilities in several areas of activity.

FREQUENTELY ASKED QUESTIONS ON OPTIMIZATION

Q: What are the main reasons that differentiate iDR from other solutions in the market ?

FREQUENTELY ASKED QUESTIONS ON OPTIMIZATION

A no risk on investment solution throughout full engineering assessment and a guaranteed contract on proposed savings.

Fast ROI – pay-back is usually one year.

A completely tailored solution, automated, synchronized with utilities, proven reliability, transparent performance and low investment cost.

Remote access and local real-time monitoring with secured access.

Monthly detailed reports with hourly performance results on savings

Guaranteed service, regular upgrades and a 24 hours technical support

Service Contract offered during ROI period with full coverage and reporting

No similar product in the US market

FREQUENTELY ASKED QUESTIONS ON OPTIMIZATION

Q: What kind of equipment is able to be connected to the optimization or iDR

Equipment that <u>can</u> be optimized ?

Cold process equipments :

Air Conditioning
Food processing, conservation and Distribution
Agro-alimentary

Equipments with Joule effect :

Kitchens and Pastries
Laundries
Heating – all kinds
Boilers
Induction ovens
Classic ovens
Surface treatment
Metallurgy
Galvanization
Plastic molds

Mechanical systems :

Air compressors
All speed variation systems
Water clearance stations
Air Handlers w/ VFD

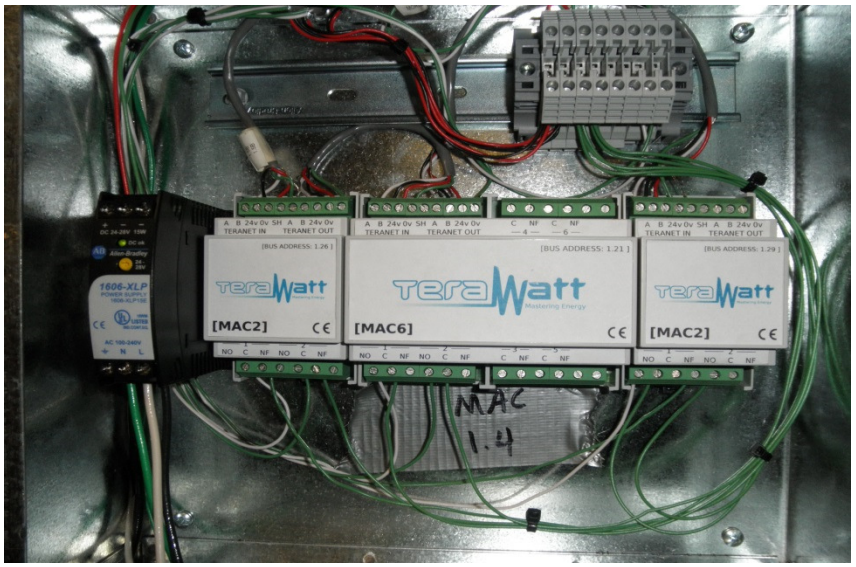
FREQUENTELY ASKED QUESTIONS ON OPTIMIZATION

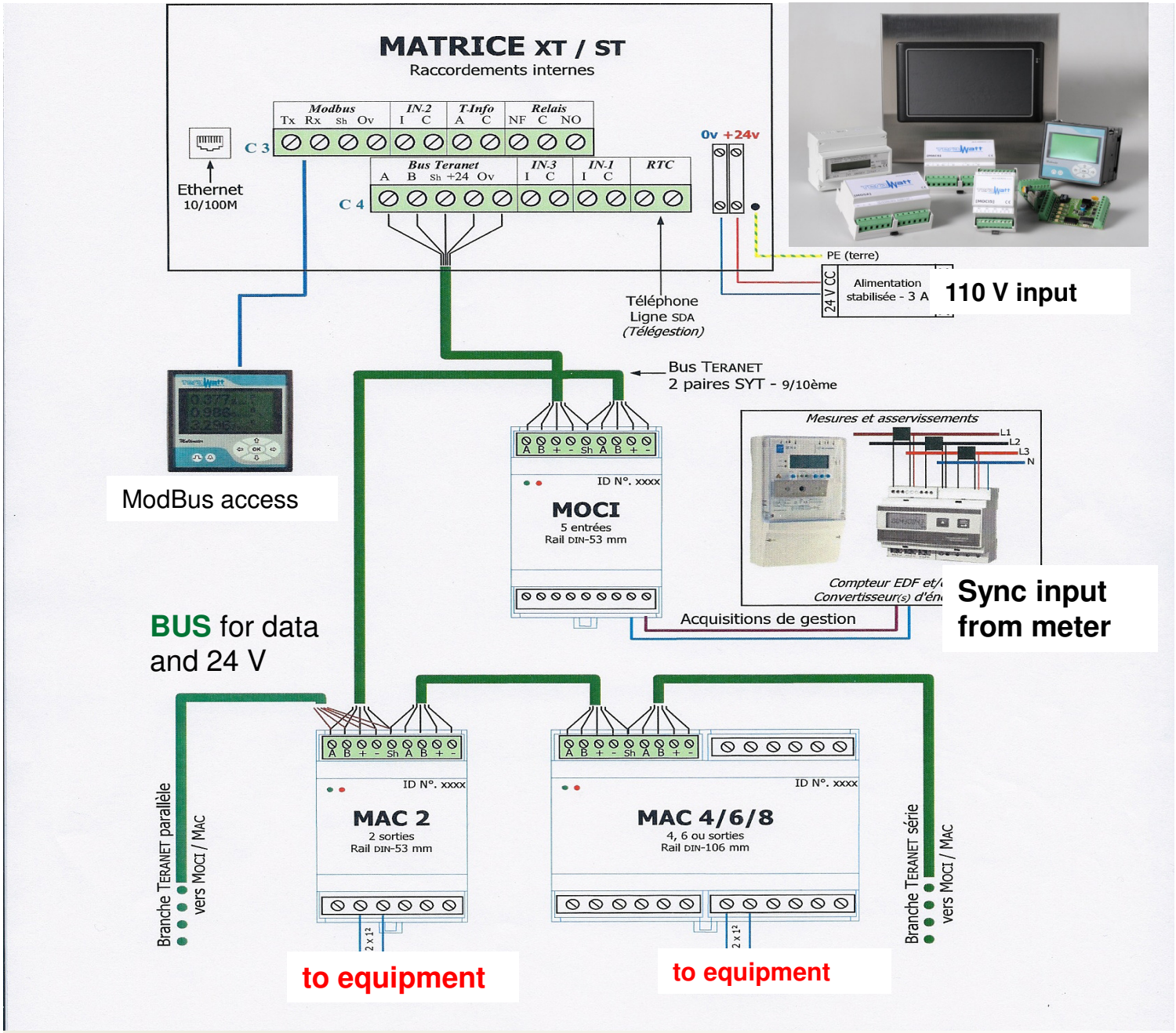
Q: What type of installation is required for the iDR - Optimizer

FRENQUENTELY ASKED QUESTIONS ON OPTIMIZATION

A: Terawatt Optimization systems require a simple shielded two pair 24 Volt wire (BUS) and several, serial connected, control Modules (MAC) that interface with the selected loads / equipment.

➢ There is no limit to the number of modules or equipments to optimize. The system can grow with the facility 'requirements.





Basic diagram of connections

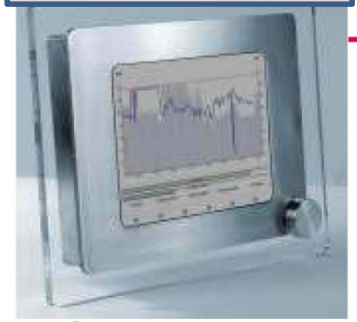
MATRICE
Main system (box)

MOCI module of conversion interface to all MAC/MOSA modules

MAC modules for data IN/OUT interface to equipment and optimize their operation

Basic installation

SYNAPSE Optimizer



Internet, Modem
or local connection

Main server /personal PC

Software:
EKHI – monitoring
Sorgin - manager

Desktop Unit – local or remote

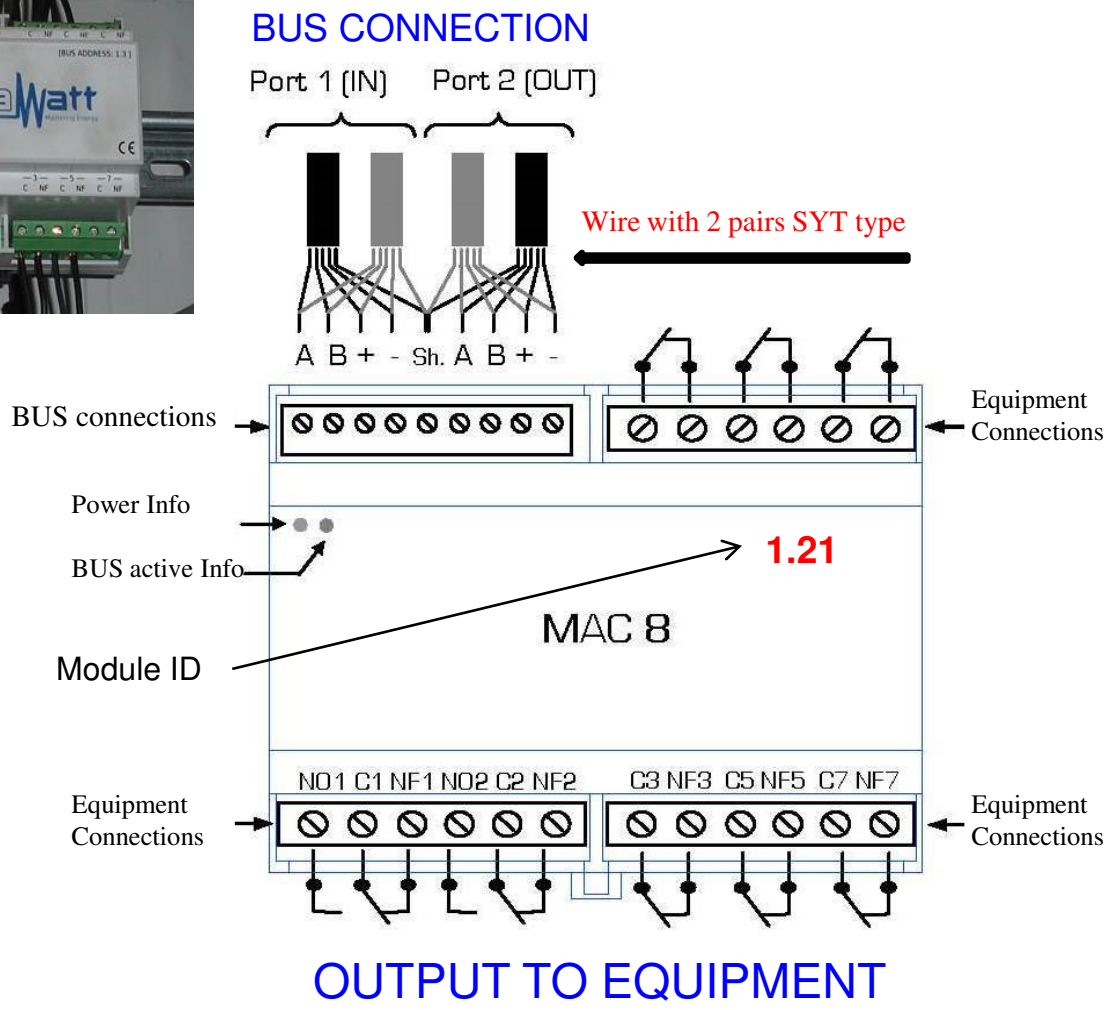
MAC modules
interface on
equipment

MOCI MODULE
Management of
energy readings

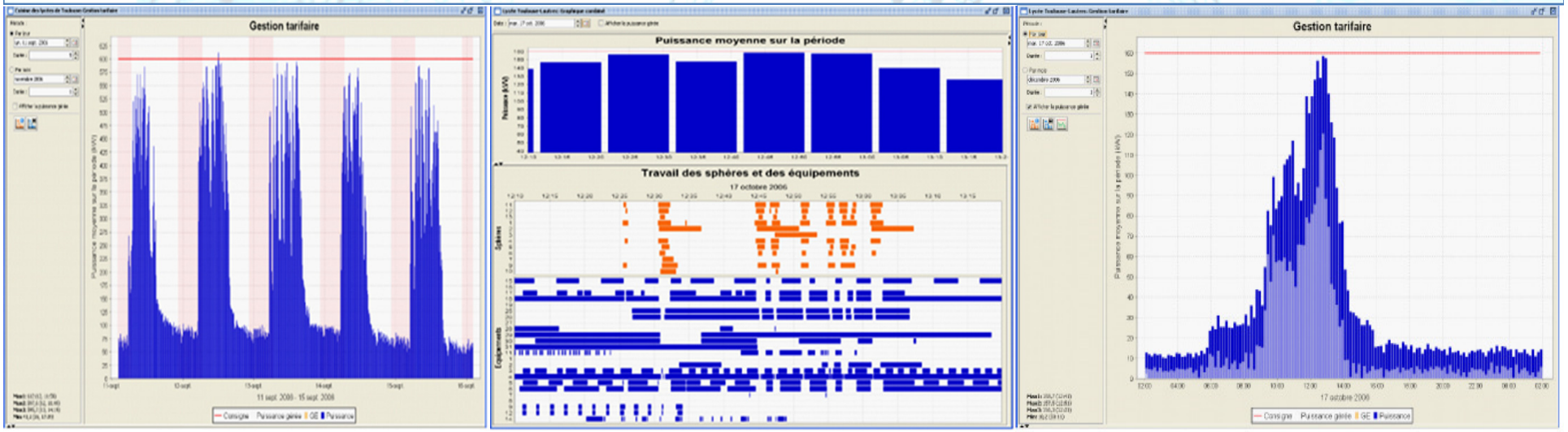
Other energy readings are
available for monitoring,
such as water, gaz, fluids,
tempratures, etc.

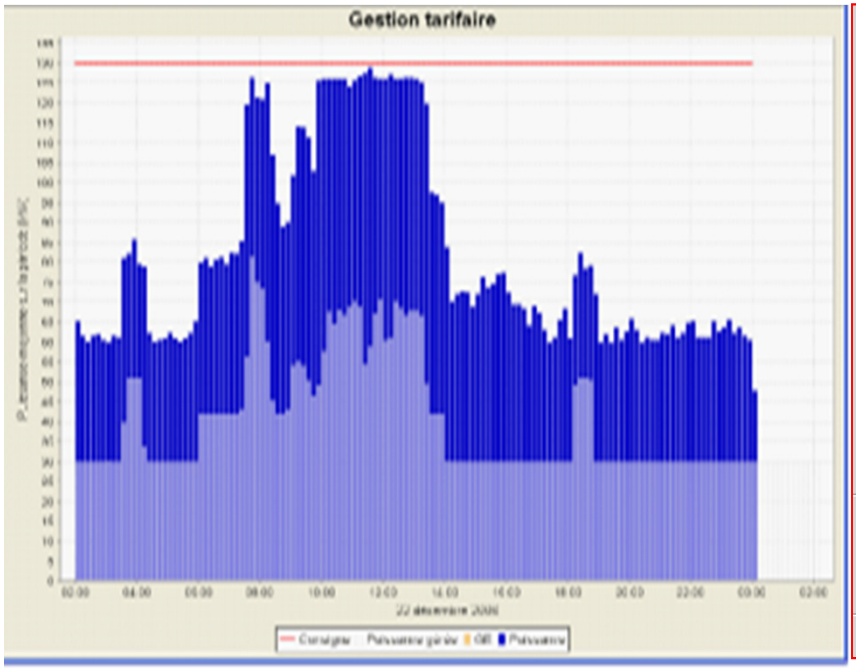
Smart Meter

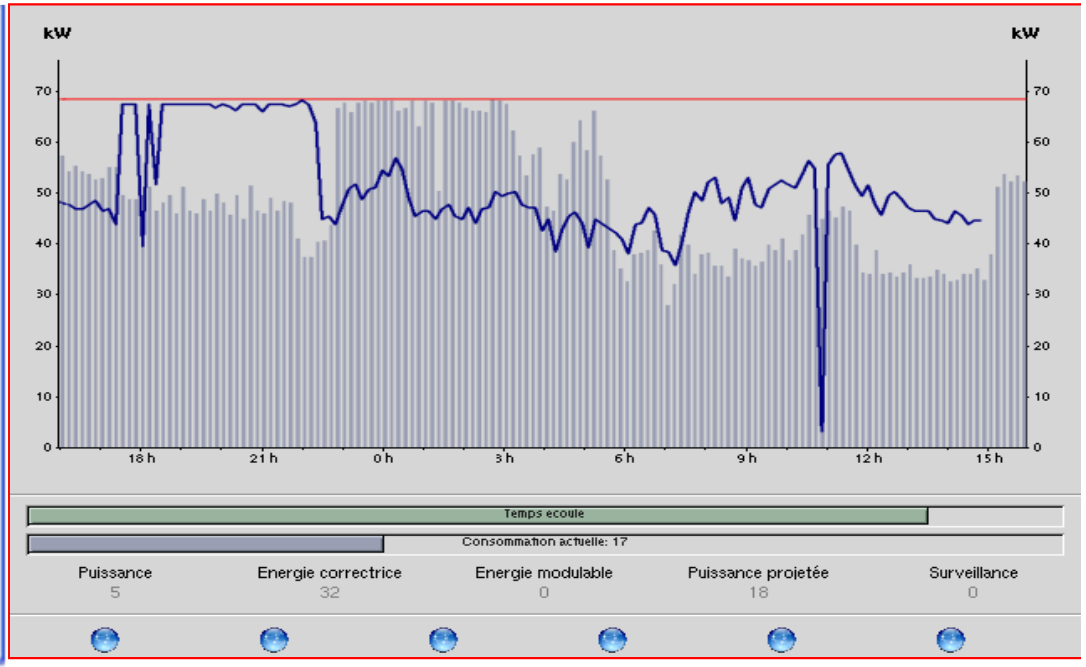
Typical installation details – Proprietary Hardware / Technology



Typical installation details – Proprietary Software



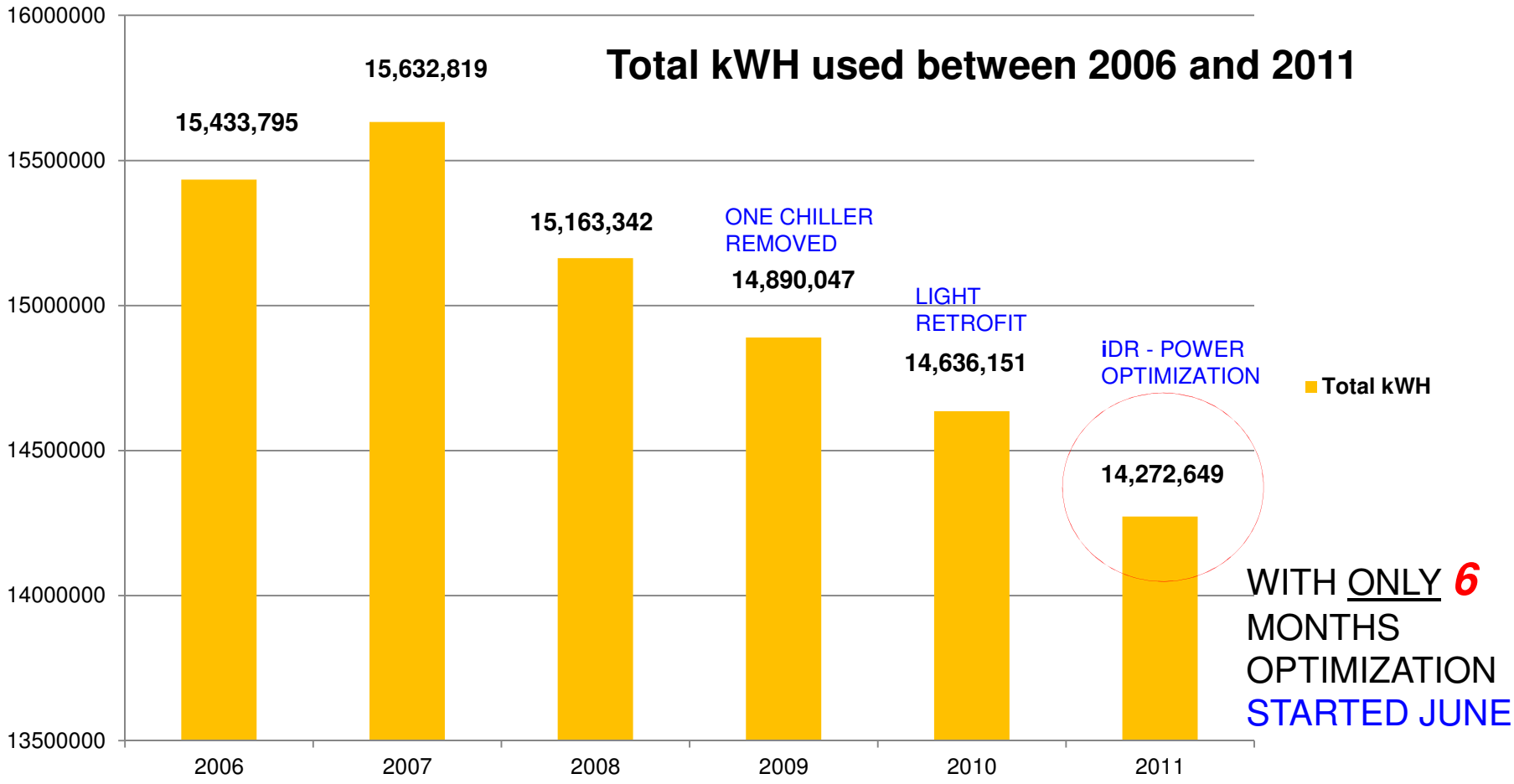




POWER OPTIMIZATION CASE STUDY

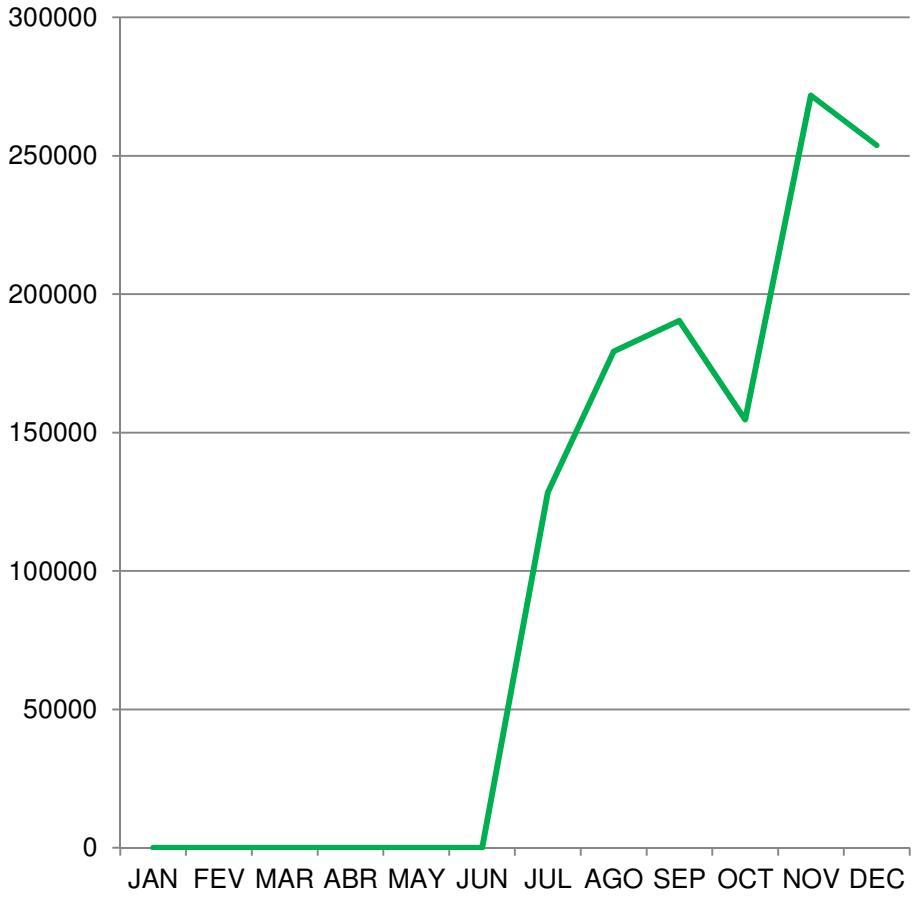
A Case Study

A case study – Total use of electricity in last 6 years

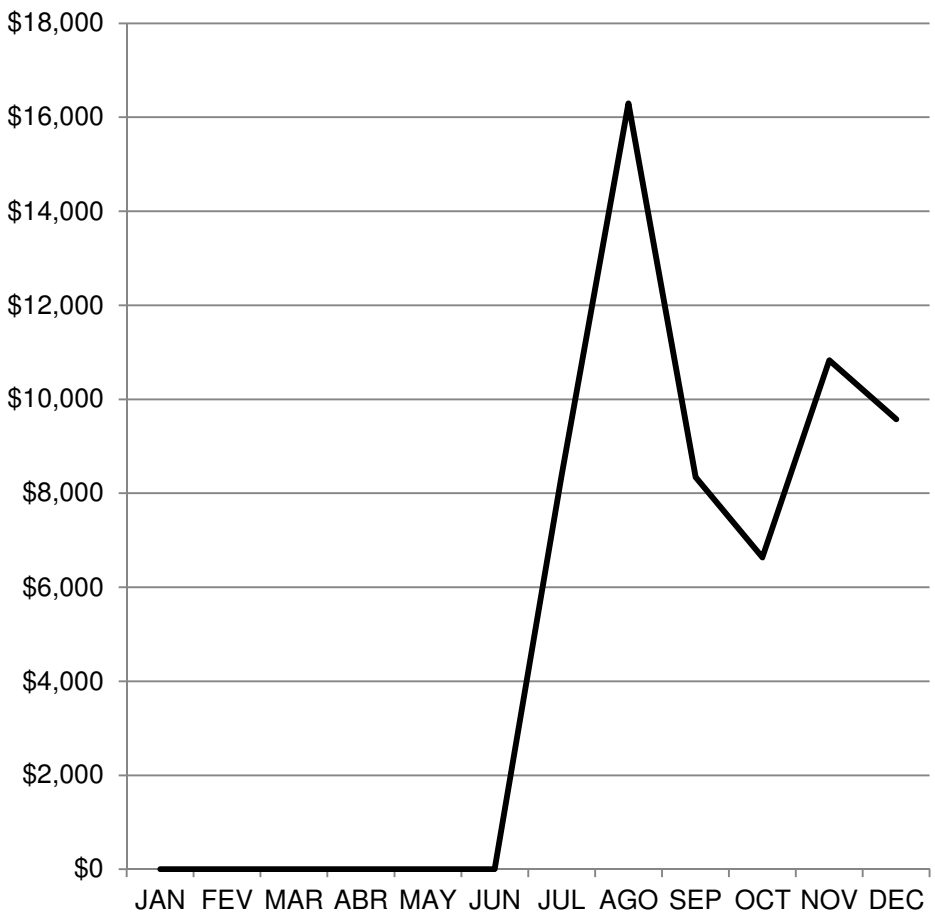


A case study –Optimization savings in 6 months

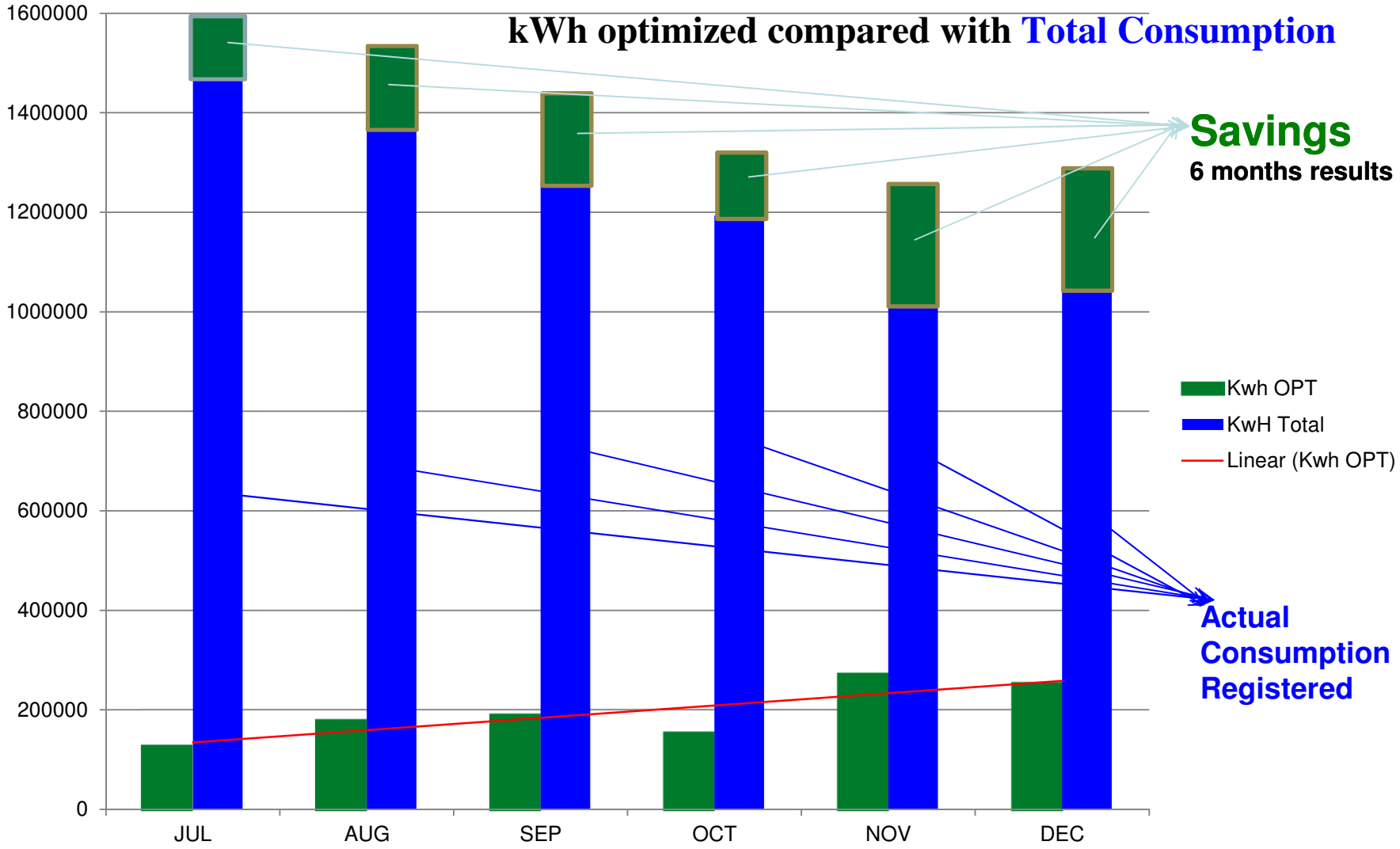
1,178,104 kWh saved



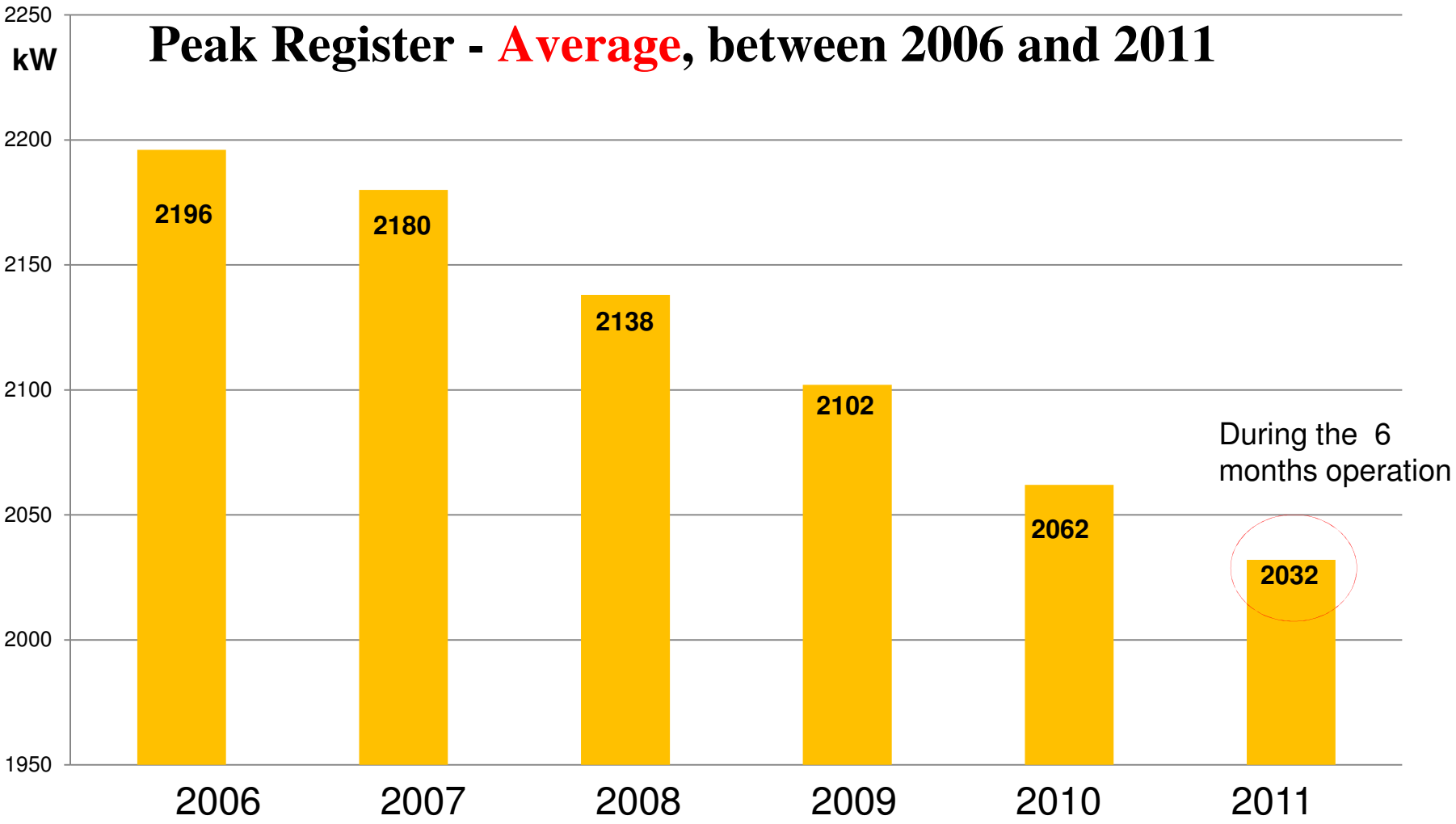
$62,881 USD saved



A case study – kWh savings compared with total usage



A case study – Average Peak Register last 6 years



A case study – Proven results of optimization

- **Total kWh saved in 6 months: 1,178,104**
- **Total savings in 6 months: $62, 881.00**
- **Total kWh saved in 1 year: 2,300,000**
- **Total savings in 1 year: $110,000.00**
- ***ROI* less than one year**

Optimization Performance Detail –5 August 11

Performance report

Best optimisation performances and contract savings on periods.

Site:

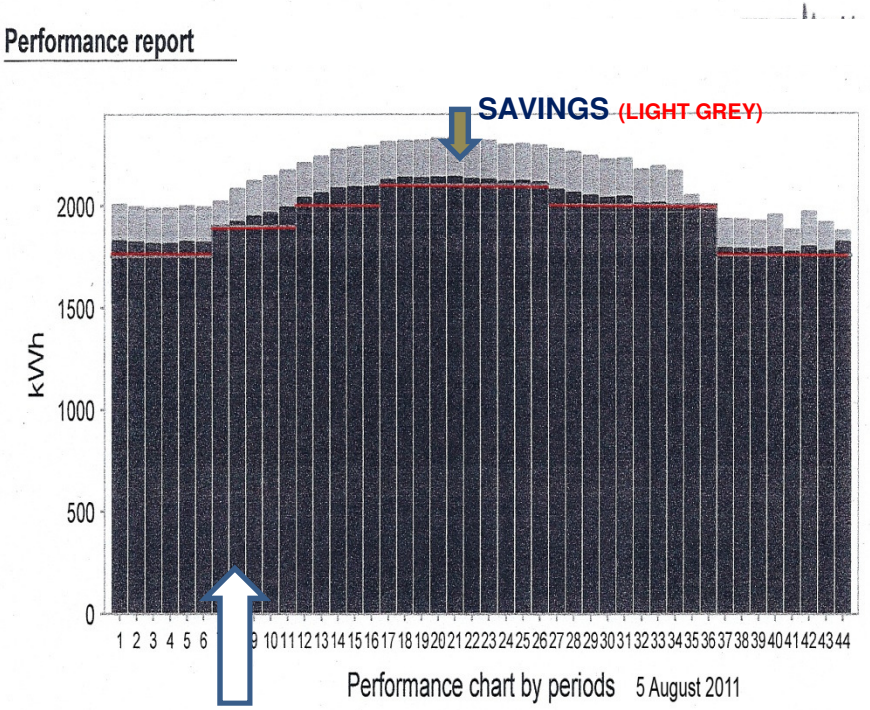
Period: 05 August 2011

PERFORMANCE REPORT – DAY 5

Unit: kWh

	Day	Period	Measured	Set point	Without optim.	Performance
1	05 August 2011	02:02:48 - 02:32:48	1,826	1,750	2,006	180.0
2	05 August 2011	02:32:48 - 03:02:48	1,820	1,750	1,993	172.8
3	05 August 2011	03:02:48 - 03:32:48	1,812	1,750	1,985	172.8
4	05 August 2011	03:32:48 - 04:02:48	1,812	1,750	1,985	172.8
5	05 August 2011	04:02:48 - 04:32:48	1,822	1,750	1,996	174.3
6	05 August 2011	04:32:48 - 05:02:48	1,818	1,750	1,989	171.4
7	05 August 2011	05:02:48 - 05:32:48	1,888	1,900	2,020	131.9
8	05 August 2011	05:32:48 - 06:02:48	1,918	1,900	2,080	162.3
9	05 August 2011	06:02:48 - 06:32:48	1,946	1,900	2,119	173.3
10	05 August 2011	06:32:48 - 07:02:48	1,962	1,900	2,144	181.6
11	05 August 2011	07:02:48 - 07:32:48	1,988	1,900	2,172	183.6
12	05 August 2011	07:32:48 - 08:02:48	2,038	2,000	2,207	168.7
13	05 August 2011	08:02:48 - 08:32:48	2,060	2,000	2,238	177.7
14	05 August 2011	08:32:48 - 09:02:48	2,084	2,000	2,274	190.1
15	05 August 2011	09:02:48 - 09:32:48	2,088	2,000	2,284	196.3
16	05 August 2011	09:32:48 - 10:02:48	2,090	2,000	2,289	198.5
17	05 August 2011	10:02:48 - 10:32:48	2,124	2,100	2,308	184.3
18	05 August 2011	10:32:48 - 11:02:48	2,136	2,100	2,315	179.4
19	05 August 2011	11:02:48 - 11:32:48	2,132	2,100	2,317	184.7
20	05 August 2011	11:32:48 - 12:02:48	2,136	2,100	2,324	188.1
21	05 August 2011	12:02:48 - 12:32:48	2,138	2,100	2,328	190.0
22	05 August 2011	12:32:48 - 13:02:48	2,128	2,100	2,315	187.5
23	05 August 2011	13:02:48 - 13:32:48	2,124	2,100	2,315	191.1
24	05 August 2011	13:32:48 - 14:02:48	2,114	2,100	2,295	181.5
25	05 August 2011	14:02:48 - 14:32:48	2,118	2,100	2,299	180.6
26	05 August 2011	14:32:48 - 15:02:48	2,110	2,100	2,291	180.9
27	05 August 2011	15:02:48 - 15:32:48	2,074	2,000	2,272	198.4
28	05 August 2011	15:32:48 - 16:02:48	2,060	2,000	2,260	200.2
29	05 August 2011	16:02:48 - 16:32:48	2,046	2,000	2,239	193.5
30	05 August 2011	16:32:48 - 17:02:48	2,034	2,000	2,221	187.3
31	05 August 2011	17:02:48 - 17:32:48	2,040	2,000	2,226	186.4
32	05 August 2011	17:32:48 - 18:02:48	2,006	2,000	2,171	165.0
33	05 August 2011	18:02:48 - 18:32:48	2,010	2,000	2,188	178.4
34	05 August 2011	18:32:48 - 19:02:48	2,000	2,000	2,165	165.1
35	05 August 2011	19:02:48 - 19:32:48	1,980	2,000	2,046	65.9
36	05 August 2011	19:32:48 - 20:02:48	1,974	2,000	1,998	23.7
37	05 August 2011	22:32:48 - 23:02:48	1,786	1,750	1,928	141.8
38	05 August 2011	23:02:48 - 23:32:48	1,782	1,750	1,926	144.2
39	05 August 2011	23:32:48 - 00:02:48	1,778	1,750	1,920	141.8
40	06 August 2011	00:02:48 - 00:32:48	1,788	1,750	1,949	160.7
41	06 August 2011	00:32:48 - 01:02:48	1,766	1,750	1,873	107.1
42	06 August 2011	01:02:48 - 01:32:48	1,792	1,750	1,965	172.7
43	06 August 2011	01:32:48 - 02:02:48	1,770	1,750	1,912	141.5

SAVINGS



Load diagram – effective consumption

Optimization Performance Detail – Rates on kWh saved

kWh SAVINGS CONVERTED IN $USD USING RTPDA RATES

Georgia Power Tariffs - 5 August 2011

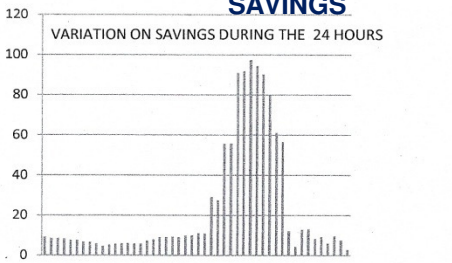
Optimization savings kWh / day converted in $USD using RTP Day Ahead Tariffs

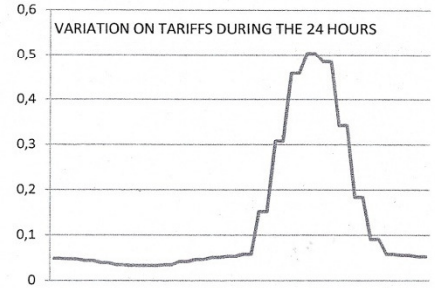
Day-average: $0,135433

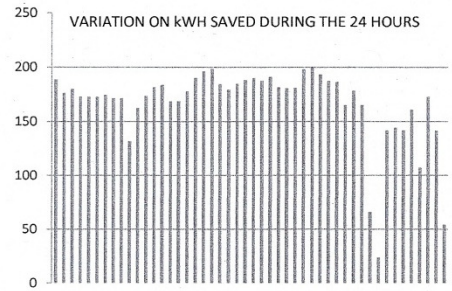
HOUR	tariffs	Day 5 - kWh	savings
00:00	0,04841	188,8	9,139808
	0,04841	176,4	8,539524
01.00	0,047191	180	8,49438
	0,047191	172,8	8,154605
02.00	0,044033	172,8	7,608902
	0,044033	172,8	7,608902
03.00	0,038476	174,3	6,706367
	0,038476	171,4	6,594786
04.00	0,034132	171,4	5,850225
	0,034132	131,9	4,502011
05.00	0,032788	162,3	5,321492
	0,032788	173,3	5,68216
06.00	0,032732	181,6	5,944131
	0,032732	183,6	6,009595
07.00	0,034494	168,7	5,819138
	0,034494	168,7	5,819138
08.00	0,041361	177,7	7,34985
	0,041361	190,1	7,862726
09.00	0,046349	196,3	9,098309
	0,046349	198,5	9,200277
10.00	0,05052	184,3	9,310836
	0,05052	179,4	9,063288
11.00	0,052988	184,7	9,786884
	0,052988	188,1	9,967043
12.00	0,05796	190	11,0124
	0,05796	187,5	10,8675
13.00	0,152045	191,1	29,0558
	0,152045	181,5	27,59617
14.00	0,308177	180,6	55,65677
	0,308177	180,9	55,74922
15.00	0,458508	198,4	90,96799
	0,458508	200,2	91,7933
16.00	0,503495	193,5	97,42628
	0,503495	187,3	94,30461
17.00	0,484069	186,4	90,23046
	0,484069	165	79,87139
18.00	0,342461	178,4	61,09504
	0,342461	165,1	56,54031
19.00	0,183809	65,9	12,11301
	0,183809	23,7	4,356273
20.00	0,090814	141,8	12,87743
	0,090814	144,2	13,09538
21.00	0,057607	141,8	8,168673
	0,057607	160,7	9,257445
22.00	0,055471	107,1	5,940944
	0,055471	172,7	9,579842
00:00	0,052508	141,5	7,429882
	0,052508	54	2,835432
TOTALS		7989,2	1117,256

Total of kWh saved:	7989
Total of savings USD:	1117

DAILY SAVINGS







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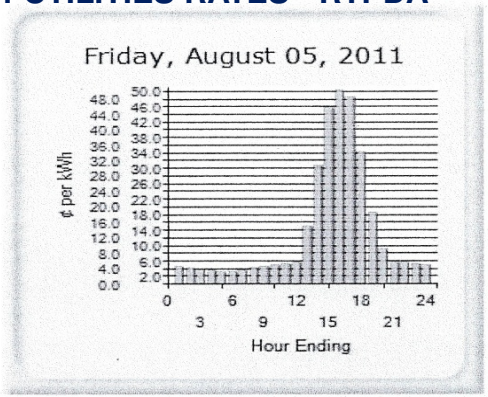
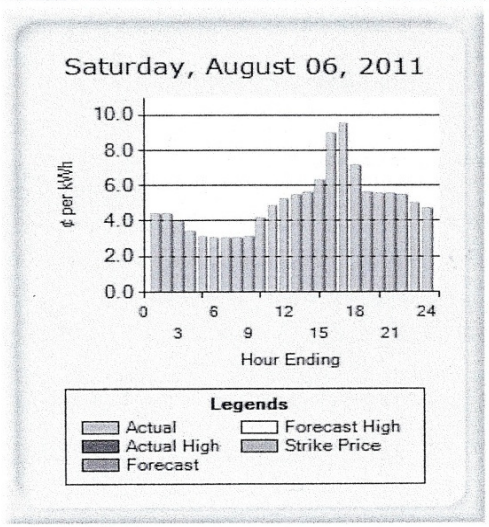
Electrical Use Summary
Account, RTP Price Summary
Meter:

8/5/2011 UTILITIES RATES - RTPDA

GPC RTP Day Ahead

Hour Ending	¢ per kWh	Status
01:00	4.7191	Actual
02:00	4.4033	Actual
03:00	3.8476	Actual
04:00	3.4132	Actual
05:00	3.2788	Actual
06:00	3.2732	Actual
07:00	3.4494	Actual
08:00	4.1361	Actual
09:00	4.6349	Actual
10:00	5.0520	Actual
11:00	5.2988	Actual
12:00	5.7960	Actual
13:00	15.2045	Actual
14:00	30.8177	Actual
15:00	45.8508	Actual
16:00	50.3495	Actual
17:00	48.4069	Actual
18:00	34.2461	Actual
19:00	18.3809	Actual
20:00	9.0814	Actual
21:00	5.7607	Actual
22:00	5.5471	Actual
23:00	5.2508	Actual
24:00	4.8410	Actual





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GEORGIA POWER

Optimization Performance Detail – August report

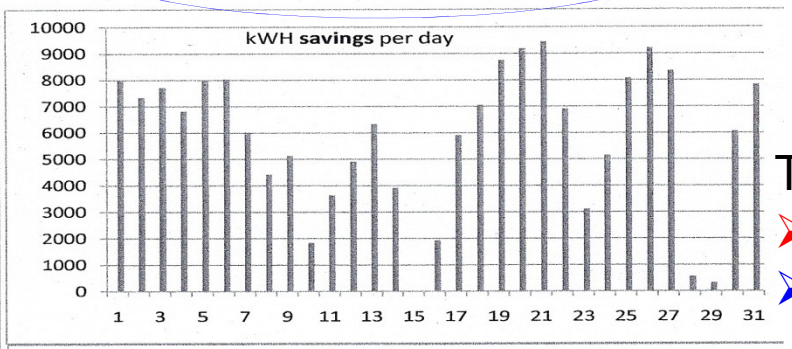
Global results of Optimization - AUGUST 2011

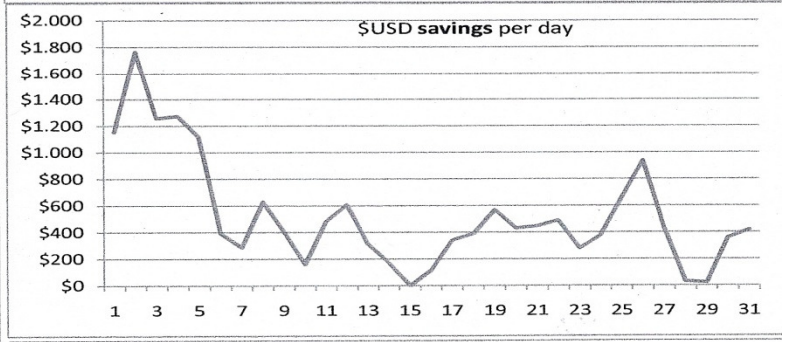
Average cost kWh for the month:	$0,079757

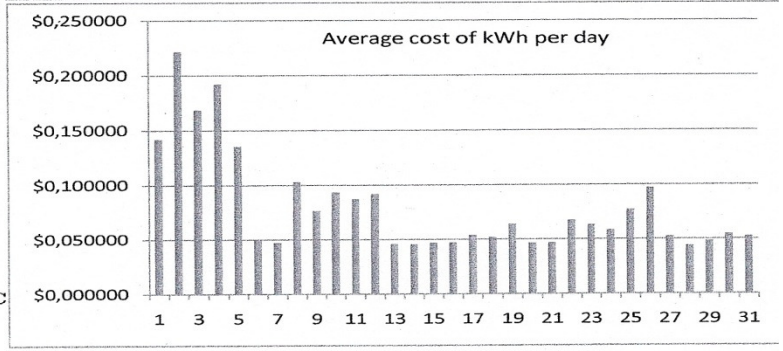
Total savings:	$ 16292	179840 kWH

Monthly savings

Total savings - kWh/day & $USD			Average
Day	kWh	$USD	$/kWh
1	7974	$1.153	$0,142120
2	7343	$1.764	$0,221918
3	7715	$1.256	$0,168677
4	6816	$1.273	$0,192261
5	7989	$1.117	$0,135433
6	8031	$392	$0,050533
7	6014	$285	$0,046920
8	4418	$631	$0,103140
9	5126	$402	$0,076271
10	1835	$159	$0,093519
11	3634	$479	$0,087058
12	4905	$608	$0,091812
13	6334	$312	$0,045712
14	3908	$166	$0,045399
15	0	$0	$0,046722
16	1925	$115	$0,046970
17	5909	$340	$0,053982
18	7051	$390	$0,051787
19	8741	$568	$0,063795
20	9185	$431	$0,046399
21	9441	$446	$0,046887
22	6906	$489	$0,067517
23	3109	$280	$0,063269
24	5144	$375	$0,058213
25	8068	$660	$0,077046
26	9203	$937	$0,097154
27	8349	$436	$0,052477
28	558	$31	$0,043985
29	312	$23	$0,048167
30	6065	$357	$0,054684
31	7830	$419	$0,052630
Total	179840	16292 USD	







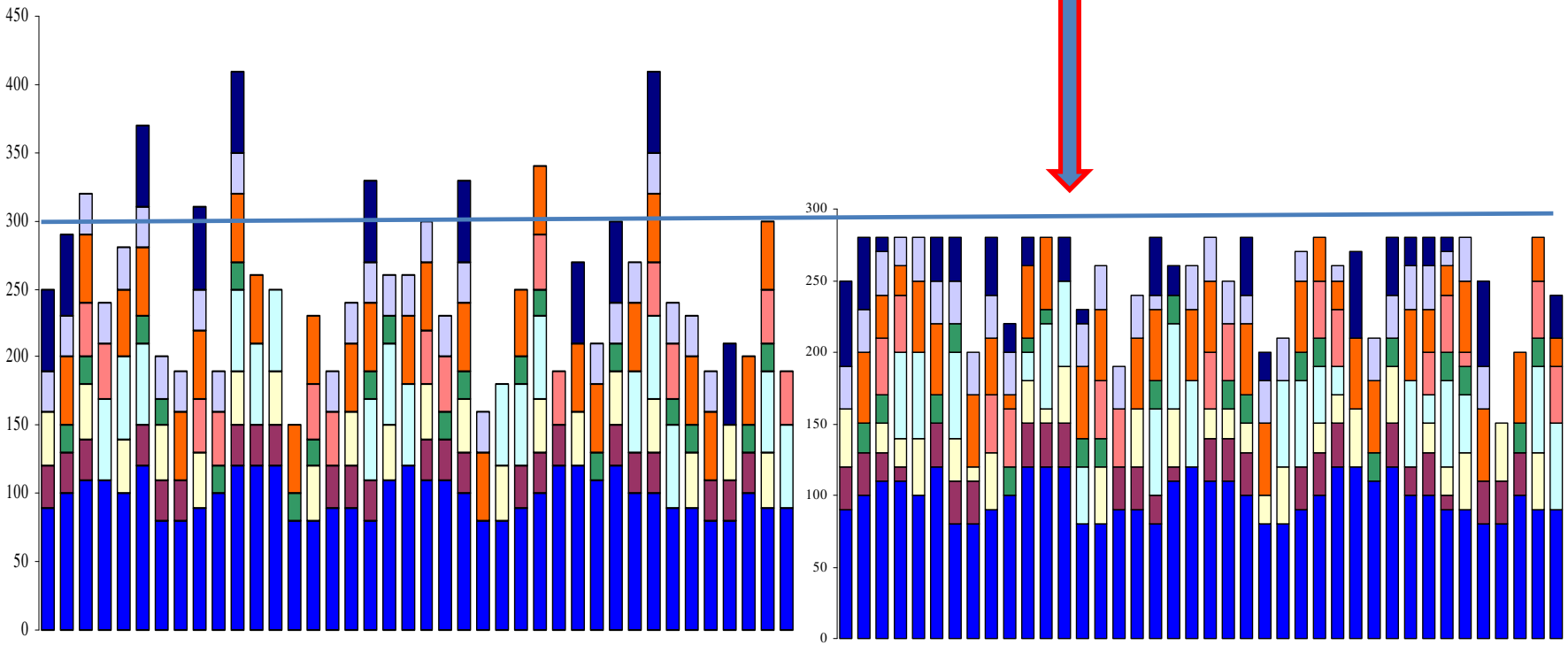
POWER MANAGEMENT SYSTEMS LLC

Total savings for August:

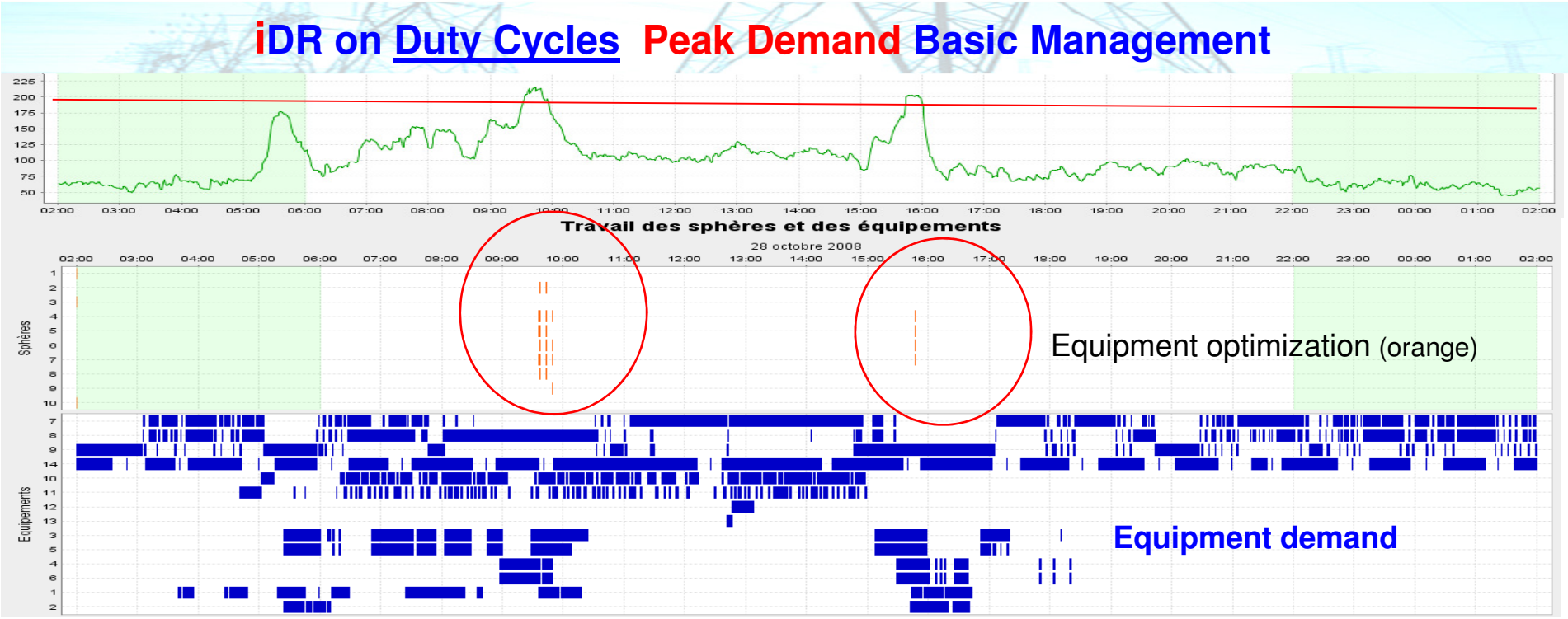
- **$16, 292.00**
- **1,798,840 kWh**

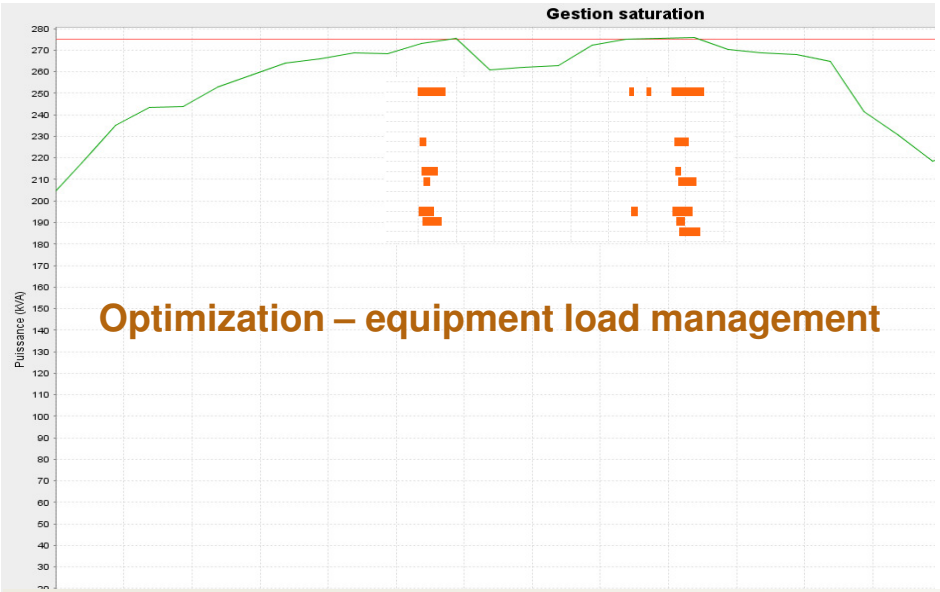
intelligent Demand Response- iDR

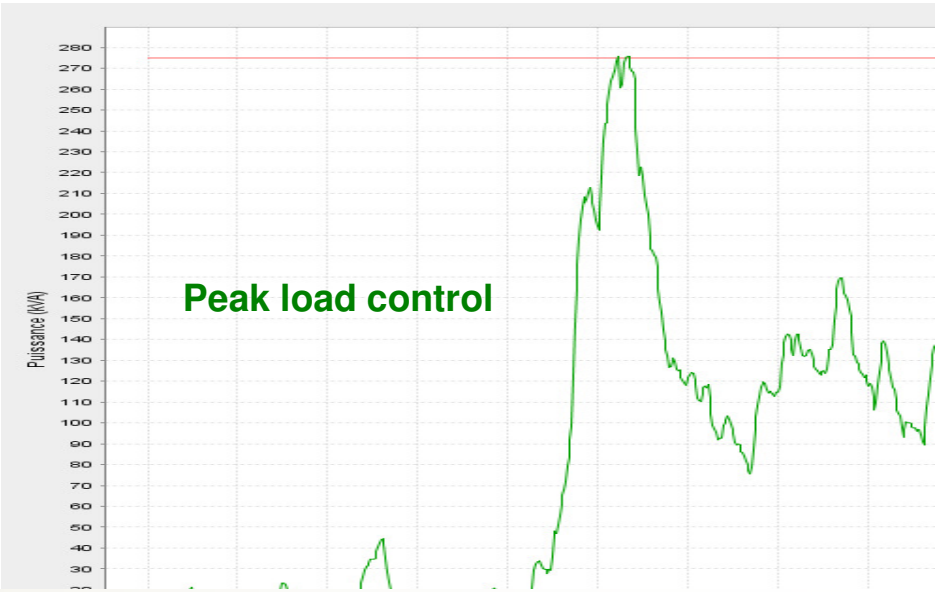
- Optimization of the simultaneity coefficient of equipment electrical demand



iDR on Duty Cycles Peak Demand Basic Management

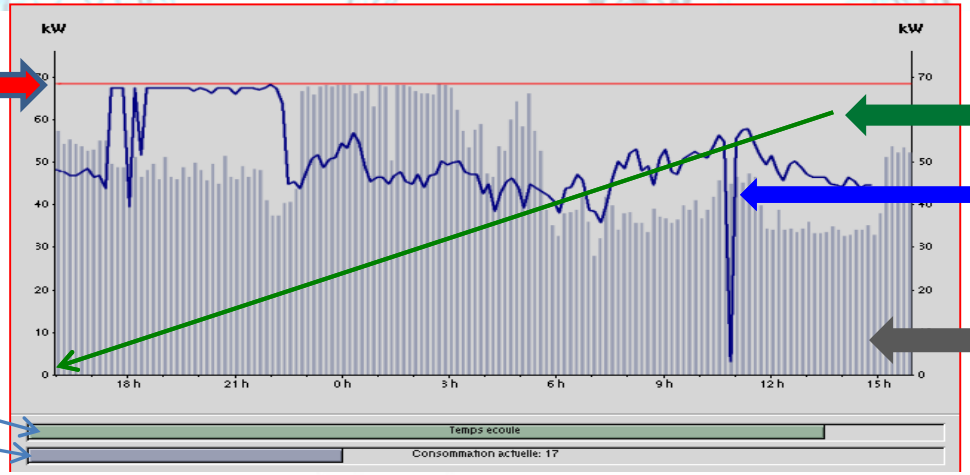






iDR - the NEW maximum

Pre-set Load Profile



PROJECTION OF INTEGRATION - **kW**

INSTANT POWER, meter sychronized

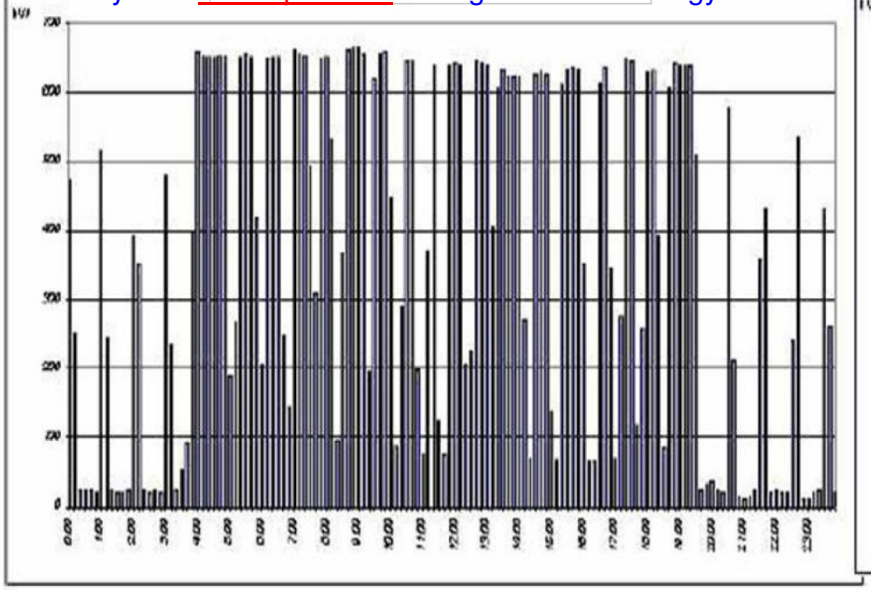
Time

Load

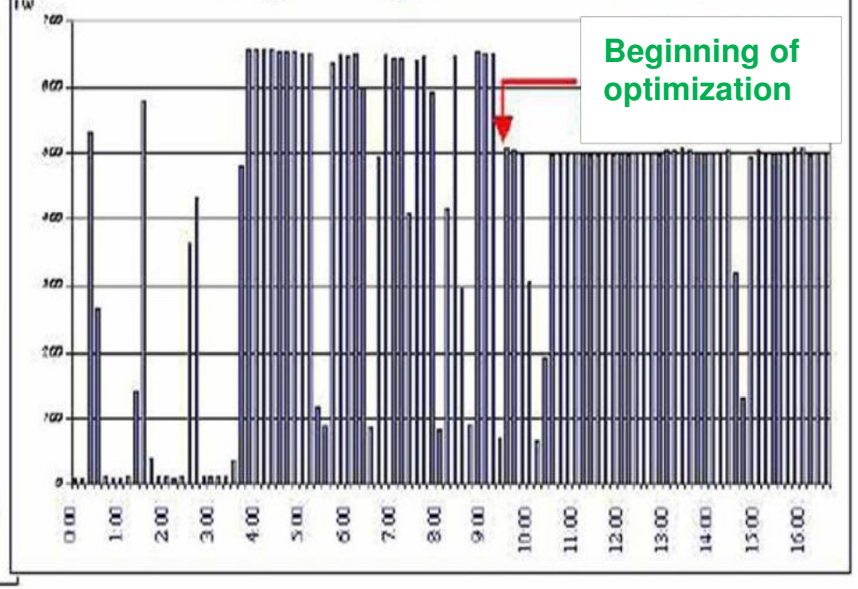
LOAD each integration interval

kWh

System ***NOT*** *optimized* – irregular use of energy



kWh



Performance Based Solutions

Beginning of the iDR optimization instant power monitoring changes from blue to red during utilities integration cycle (can be 5, 10, 15 or 30 minute)