HOW TO IDENTIFY ENERGY CONSERVATION OPPORTUNITIES ?

TROUGH METERING AND ANALYSIS

METHODOLOGY AND EXAMPLES BY DELTA DORE

Example of a small-scale project for supermarkets :

The project's purpose is to control and manage local equipment to obtain energy savings through automated control. We also guarantee a constant temperature of 24ºC in the retails. The objectives was to identify energy savings opportunities and calculate ROI with real data from a 'mock-up project'

Martin Ruby – General Manager Delta Dore Inc

DELTA DORE

Smart controls for a better world

1. Study and ocular audit
2. Metering of real consumptions
3. Management and monitoring of main equipment
4 . Analysis

1. Study and ocular audit

- List and equipment and characteristics
- Sequence description of chilled water production and of each AHU
- Ventilation system design layout
- And more…

2. Metering of real consumptions

Delta Dore EnergyBox® PLC (for Programmable Logical Controller) has been installed onsite to control and record consumptions through Modbus meters.

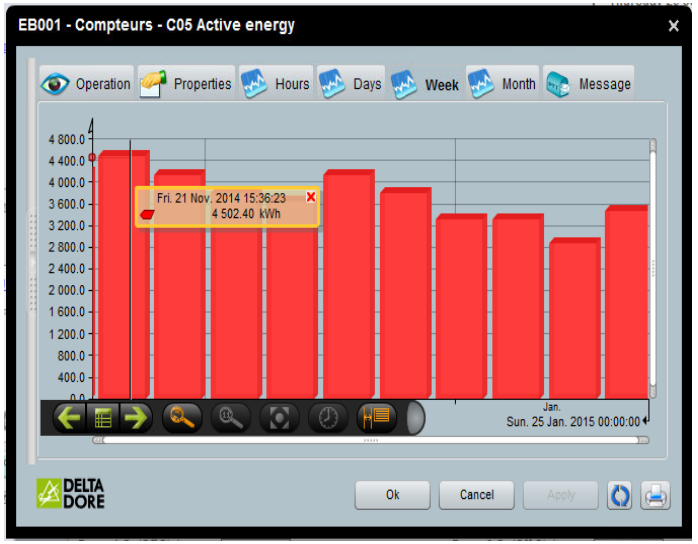
The EnergyBox is managing:

Air Handling Units dedicated to the sales area	Upright chiller meat & Showcase chiller
Pumps	Lighting circuits
Chillers	Data meters (Chiller/AHU/LP-A/LP-SL/EDPS)
Air Cooled Condensing Unit	Enocean wireless Temperature sensors

All equipment connected to the EnergyBox® PLC is managed during the day to provide comfort for the customers in the sales area. This PLC is also directly connected to the wireless temperature sensors to adapt the management of those equipments during de day. During the night each equipment is turned OFF by the EMS according to the operation hours

Air Handling Units Consumptions, Week N°48, 2014 to Week N°4, 2015

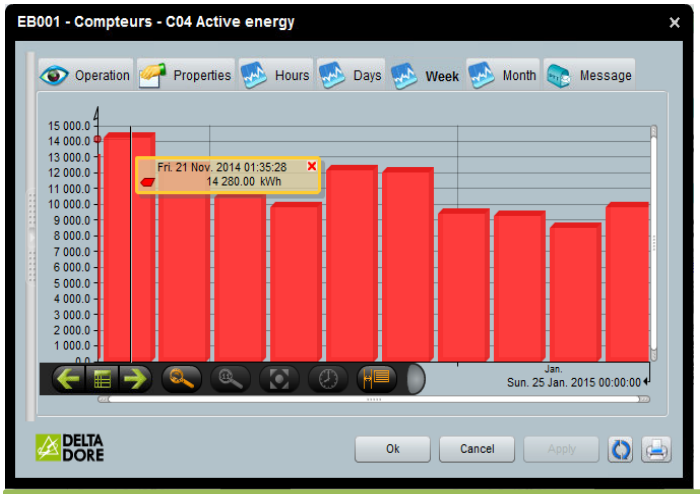
Air Handling units consumptions				
		Week N°	Kwh	
2014		38	3767,1	
		39	4 019	
		40	4 561	
		41	4 057	
		42	4 513	
		43	4 506	
		44	4 467	
		45	4 174	
		46	4 174	
		47	4 502	
			4 274	Average consumptions (Week N°38 to N°47)
	Delta Dore Managment	48	4 146	
		49	3 819	
		50	3 661	
		51	4 132	
		52	3 808	
2015		1	3 317	
		2	3 324	
		3	2 891	
		4	3 484	
			3 620	Average consumptions (Week N° 48 to N°4 "2015")



654 kWh savings per week equivalent to – 15.30%.

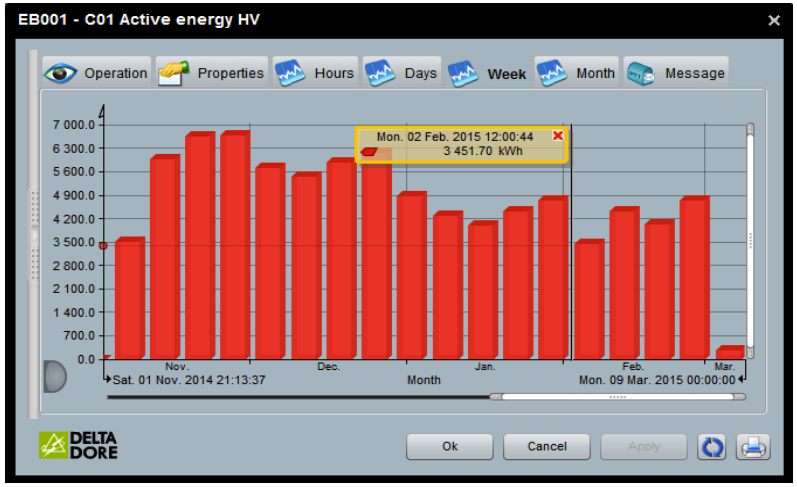
Chillers Consumptions, Week N°48, 2014 to Week N°4, 2015

Chillers consumptions				
		Week N°	Kwh	
2014		38	13 110	
		39	13 997	
		40	14 220	
		41	12 942	
		42	14 236	
		43	13 939	
		44	13 731	
		45	12 850	
		46	12 854	
		47	14 280	
			13 616	Average consumptions (Week N°38 to N°47)
	Delta Dore Managment	48	12 385	
		49	10 446	
		50	9 844	
		51	12 174	
		52	12 047	
2015		1	9 402	
		2	9 266	
		3	8 515	
		4	9 833	
			10 435	Average consumptions (Week N° 48 to N°4 "2015")



3,181 kWh savings per week equivalent to – 23.36%.

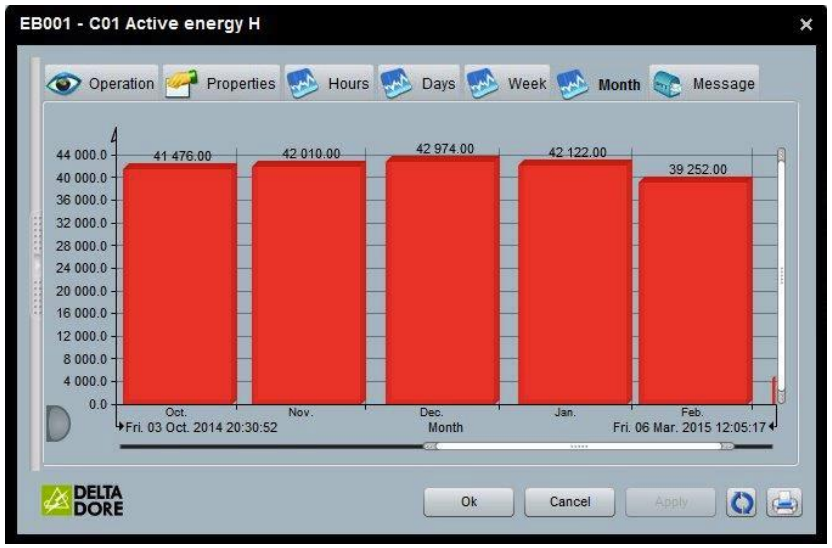
HVAC Electrical Consumption Weekly



	HVAC Consumption		
	Month	Kwh	
2014	November	23044	
	December	25296	
		24170	Average Consumption (2014)
2015	January	19704	
	february	16502	
		18103	Average Consumption (2015)

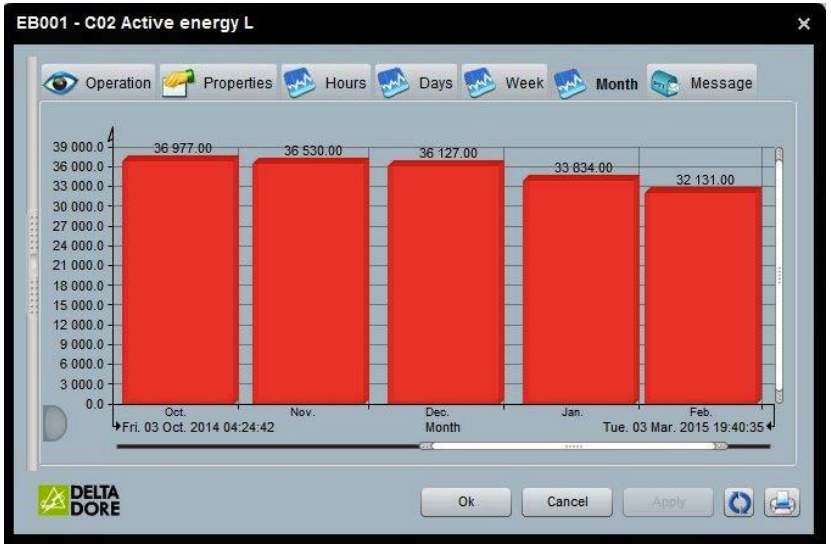
6067 kWh savings per month to -25.1%.

Aircon Electrical Consumption Monthly



1486 kWh savings per month to -3.5%

Lighting Electrical Consumption Monthly



3667 kWh savings per month to -10%