Energy Management
Hotel Sector

Training Workshop on Energy Management Guidances

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Workshop Energy Management in Hotels

- Agenda
- 10:00 Welcome – Address
- 10.05 Horizontal Energy Management Guidance ('mini' EnMS)
- 10:30 EnMS- Implementation Tool
- 11:00 EnMS)– Self Assessment Tool as internal Audit
- (Save costs and external administrative efforts)
- 11:30 Break
- 12:00 Vertical Guidance on the Hotel Sector (Practical Example)
- 12:45 Interactive Application on Hotels and Discussion
- 13:15 Final Discussion and Conclusions
- 13:45 Conclusion
- 14:15 End of the Workshop

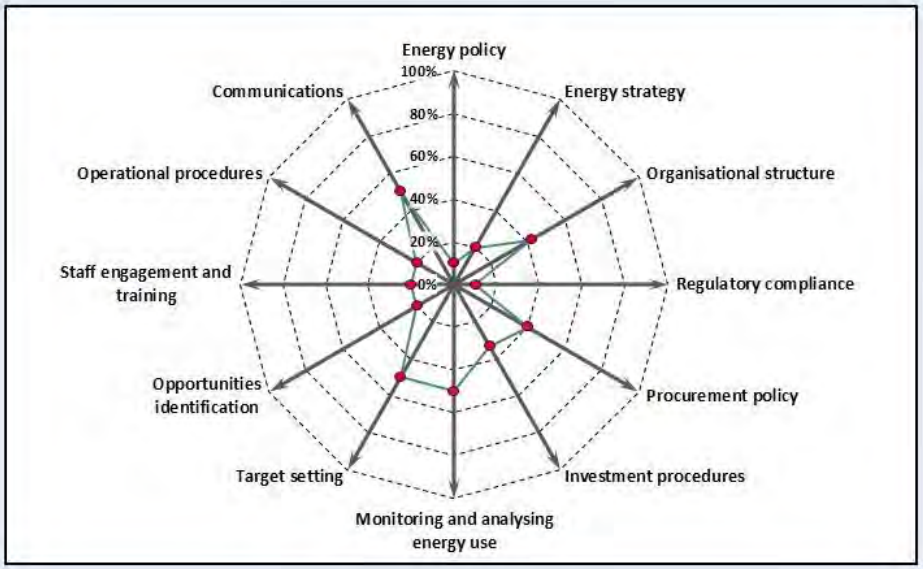
Example – Grand Hotel

Status before Implementing

Level	Energy Policy	Organising	Training	Performance Measurement	Communication	Investment
4	Energy Policy, Action Plan and regular reviews have active commitment of top management	Fully integrated into senior management structure with clear accountability for energy consumption	Appropriate and comprehensive staff training tailored to identified needs, with evaluation	Comprehensive performance measurement against targets with effective management reporting	Extensive communication of energy issues within and outside of organisation	Resources routinely committed to energy efficiency in support of organisational objectives
3	Formal policy but no active commitment from top management	Clear line management accountability for consumption and responsibility for improvement	Energy training targeted at major users following training needs analysis	Weekly performance measurement for each process, unit, or building	Regular staff briefings, performance reporting and energy promotion	Same appraisal criteria used for energy efficiency as for other cost reduction projects
2	Un-adopted policy	Some delegation of responsibility but line management and authority unclear	Ad-hoc internal training for selected people as required	Monthly monitoring by fuel type	Some use of organisational communication mechanisms to promote energy efficiency	Low or medium cost measures considered if short payback period
1	An unwritten set of guidelines	**Informal, mostly focused on energy supply**	**Technical staff occasionally attend specialist courses**	**Invoice checking only**	Ad-hoc informal contacts used to promote energy efficiency	Only low or no cost measures taken
0	**No explicit energy policy**	**No delegation of responsibility for managing energy**	**No energy related staff training provided**	No measurement of energy costs or consumptions	**No communication or promotion of energy issues**	**No investment in improving energy efficiency**
Input Score	0	0/1	0/1	1	0	0

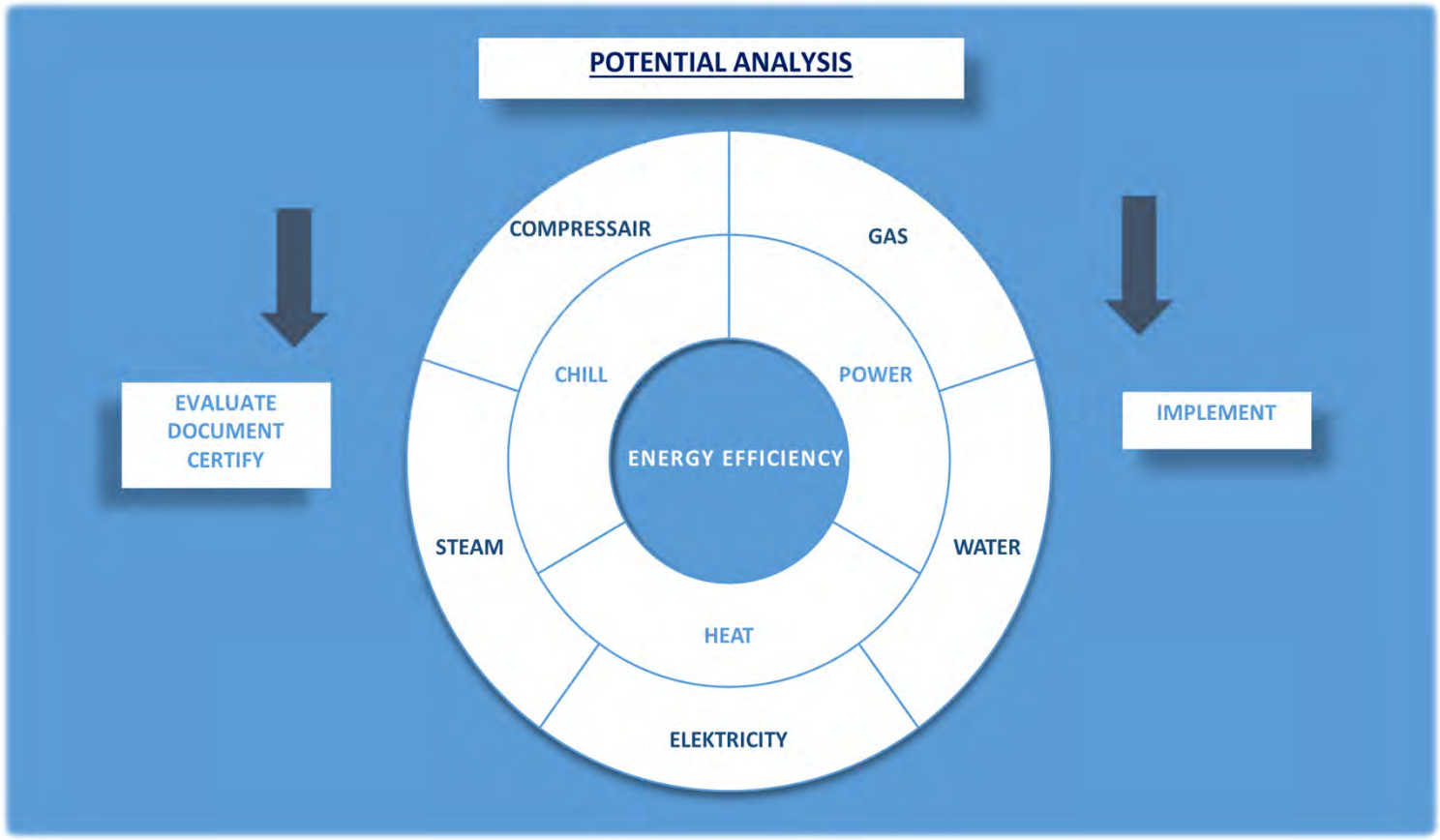
System before implemening

Characteristic	Score Actual	Max	% score
Management Commitment	8	32	25%
Energy policy	*1*	*10*	*10%*
Energy strategy	*2*	*10*	*20%*
Organisational structure	*5*	*12*	*42%*
Regulatory Compliance	1	10	10%
Regulatory compliance	*1*	*10*	*10%*
Procurement and Investment	8	22	36%
Procurement policy	*4*	*10*	*40%*
Investment procedures	*4*	*12*	*33%*
Energy Information Systems & Identifying Opportunities	14	34	41%
Monitoring and analysing energy use	*7*	*14*	*50%*
Target setting	*5*	*10*	*50%*
Opportunities identification	*2*	*10*	*20%*
Culture & Communications	9	30	30%
Staff engagement and training	*2*	*10*	*20%*
Operational procedures	*2*	*10*	*20%*
Communications	*5*	*10*	*50%*
GRAND TOTAL	40	128	31%

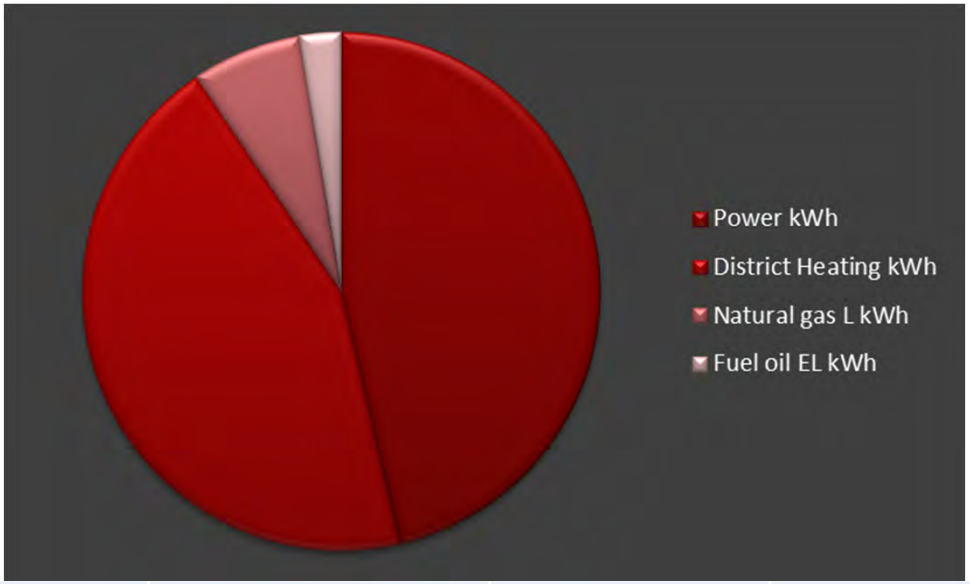


Organisation:	GRAND HOTEL (EXAMPLE)
Date completed:	Samstag, 28. Juni 2014
By:	

The potential analysis process in a Mini - EnMS



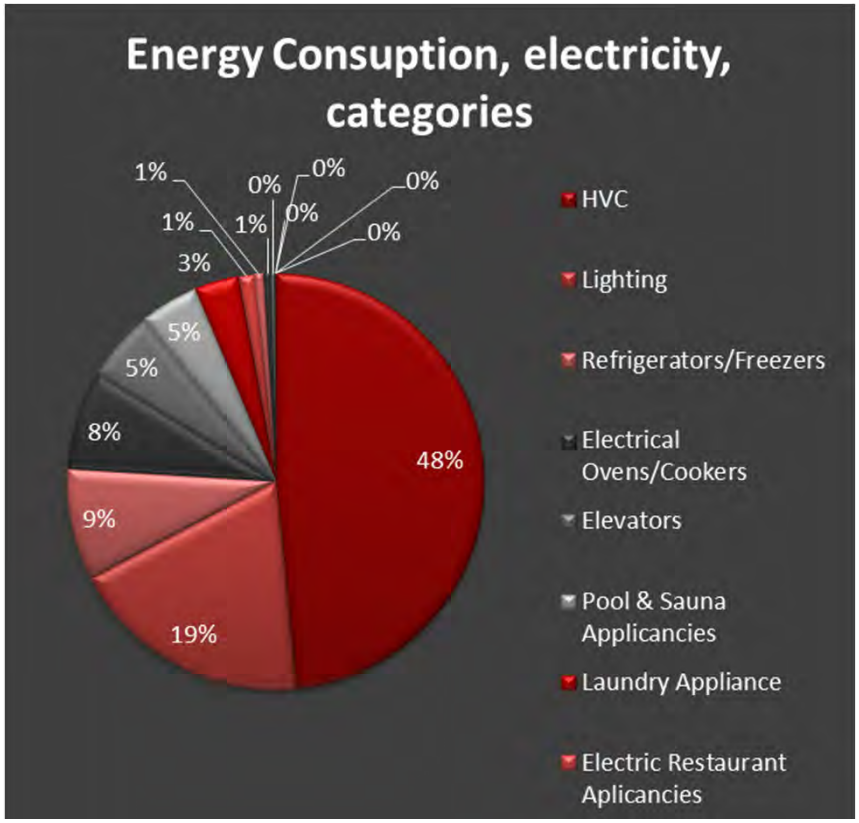
Power and district Heating are main energy sources



Fuel	Unit	Anual consumption	Anual energy consumption according to inventary	Parity
Power	kWh	3.100.010	3.087.841	100%
District Heating	kWh	2.957.630	2.950.826	100%
Natural gas L	kWh	457.301	433.914	105%
Fuel oil EL	kWh	174.026	178.764	97%

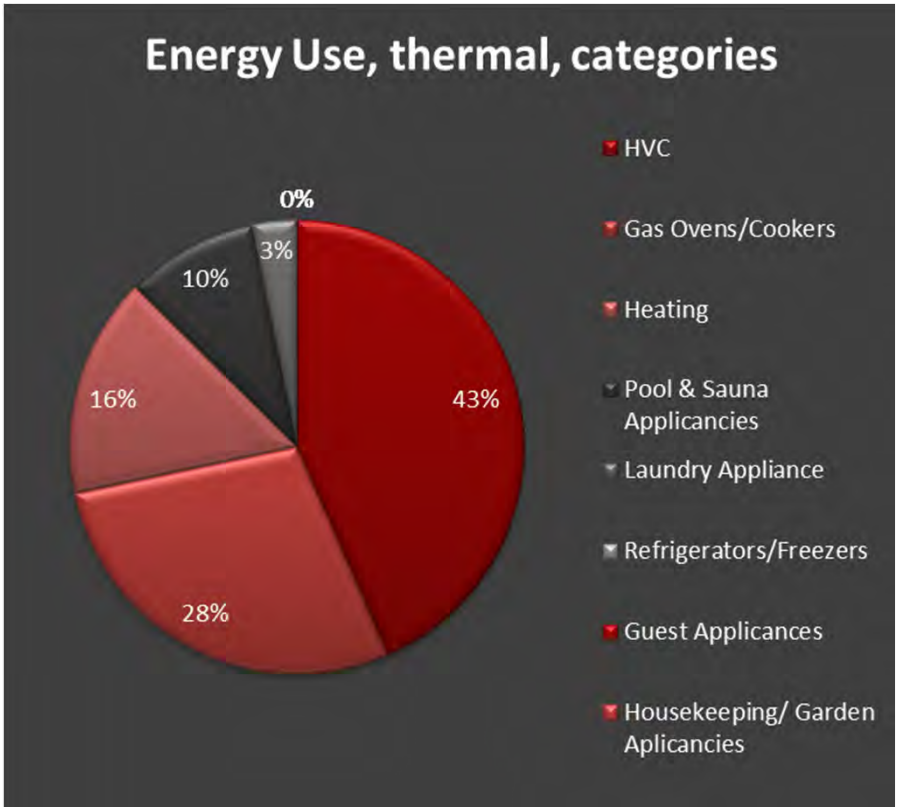
HVC is the largest consumer of electicity

Energy use by Categories		
Electrcity Consumption		
	Energy Usage kWh_el/a	Installed Power kW_el
HVC	1.495.597	440
Lighting	582.744	161
Refrigerators/Freezers	267.218	145
Electrical Ovens/Cookers	239.133	65
Elevators	167.731	96
Pool & Sauna Applicancies	141.129	46
Laundry Appliance	105.081	78
Electric Restaurant Aplicancies	39.287	40
Gas Ovens/Cookers	22.031	7
IT	15.501	8
Housekeeping/ Garden Aplicancies	8.886	90
Maintainance / Garage Aplicancies	3.259	5
Compressors	128	1
Guest Applicances	69	123
Heating	44	2
Total	3.087.841	1.306



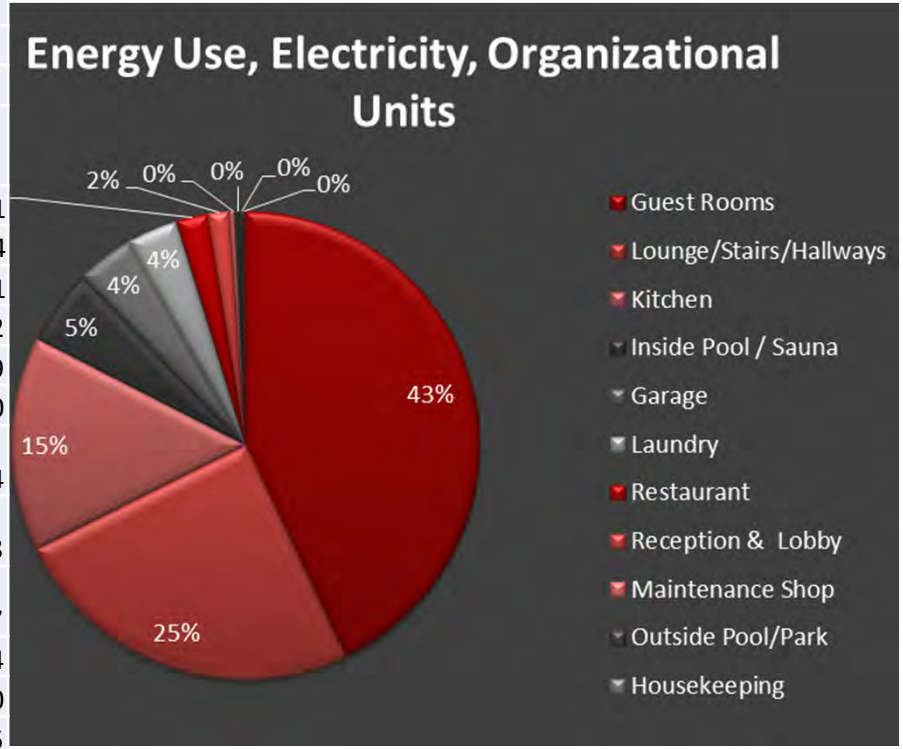
and thermal Energy

Thermal Usage		
	Installed Power kWh_th	Energy Usage kWh_th
HVC	69	2.976.683
Gas Ovens/Cookers	45	426.858
Heating	25	55.500
Pool & Sauna Applicancies	15	98.611
Laundry Appliance	5	7.056
Refrigerators/Freezers	-	-
Guest Applicances	-	-
Housekeeping/ Garden Aplicancies	-	-
Elevators	-	-
IT	-	-
Compressors	-	-
Maintainance / Garage Aplicancies	-	-
Lighting	-	-
Electric Restaurant Aplicancies	-	-
Electrical Ovens/Cookers	-	-
Total	159	3.564.708



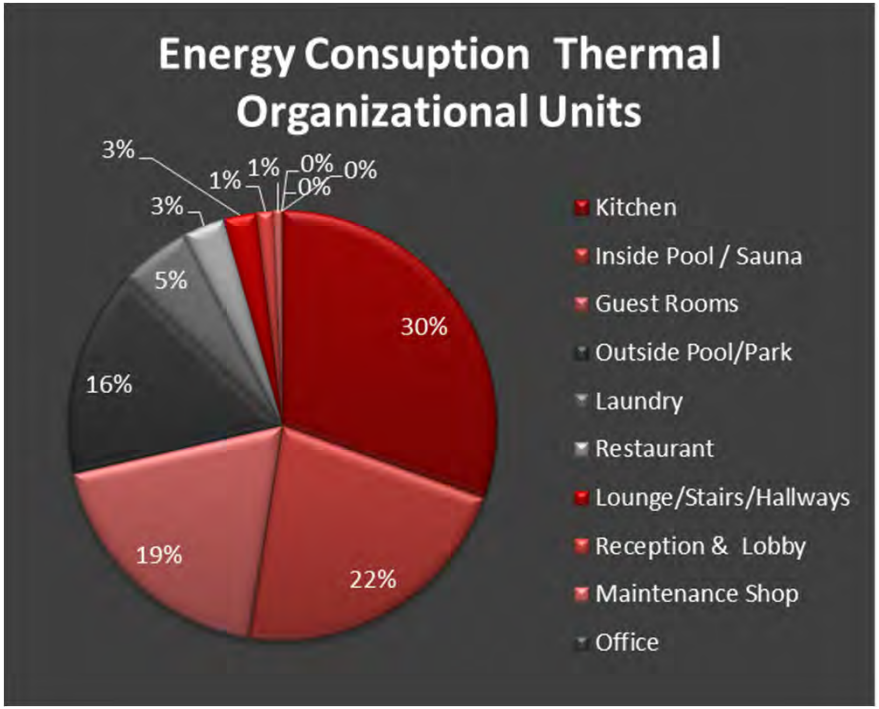
Guest Rooms are the largest users of electrical Energy

Energy use by units		
Organizational Units		
	Energy Usage kWh_el/a	Installed Power KW_el
Guest Rooms	1.326.194	591
Lounge/Stairs/Hallways	762.828	204
Kitchen	458.670	171
Inside Pool / Sauna	163.480	52
Garage	122.611	29
Laundry	106.652	80
Restaurant	68.357	44
Reception & Lobby	45.916	8
Maintenance Shop	11.219	7
Outside Pool/Park	9.355	74
Housekeeping	7.510	40
Office	5.049	6
Total	3.087.841	1.306



and thermal Energy

Organizational Units		
	Installed Power kW_th	Energy Consumption kWh_th/a
Kitchen	49	426.969
Inside Pool / Sauna	35	123.264
Guest Rooms	30	2.935.296
Outside Pool/Park	25	55.500
Laundry	9	8.705
Restaurant	5	6.344
Lounge/Stairs/Hallways	4	6.989
Reception & Lobby	2	437
Maintenance Shop	1	-
Office	-	-
Garage	-	1.205
Housekeeping	-	-
Total	159	3.564.708



Panning investments to save energy

	General				Interest	Amortisation	Plan-ned
No	Action / Investment	Invest-ment	Saving	Technical usage	Return of investment	Cash return	Priority
			per a	a	%/a	a	
1	Run potential analysis	1000	1200	3	120%	0,8	B
2	Change behavior of staff	12000	14000	3	117%	0,9	A
3	Implement Guestroom Heating control	25000	8500	5	34%	2,9	C
4	Coolers and Heaters (Maintainance)	15000	4000	4	27%	3,8	C
5	Change oil heating to gas	9000	1000	10	11%	9,0	D

Status after implementation

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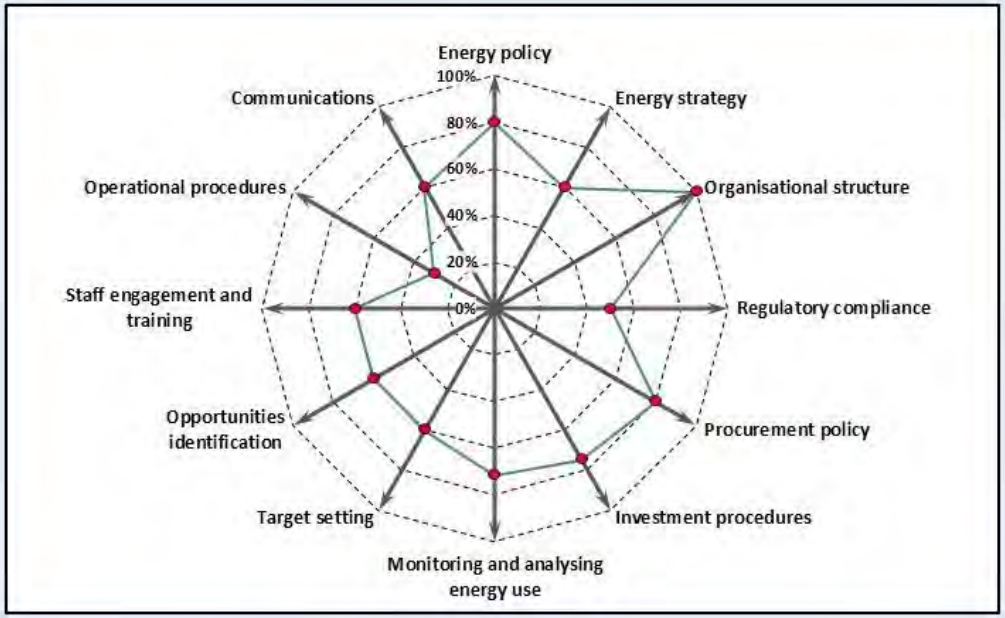
Input Score	4	3	3	2	3	2

EnMS after implementing

Characteristic	Score Actual	Score Max	% score
Management Commitment	26	32	81%
Energy policy	*8*	*10*	*80%*
Energy strategy	*6*	*10*	*60%*
Organisational structure	*12*	*12*	*100%*
Regulatory Compliance	5	10	50%
Regulatory compliance	*5*	*10*	*50%*
Procurement and Investment	17	22	77%
Procurement policy	*8*	*10*	*80%*
Investment procedures	*9*	*12*	*75%*
Energy information systems & identifying Opportunities	22	34	65%
Monitoring and analysing energy use	*10*	*14*	*71%*
Target setting	*6*	*10*	*60%*
Opportunities identification	*6*	*10*	*60%*
Culture & Communications	15	30	50%
Staff engagement and training	*6*	*10*	*60%*
Operational procedures	*3*	*10*	*30%*
Communications	*6*	*10*	*60%*
GRAND TOTAL	85	128	66%



Organisation:	GRAND HOTEL (EXAMPLE)
Date completed:	Dienstag, 7. Februar 2017
By:	

Priotorize

- Priority A: Significant energy use – important cost savings – ROI < 1 year
- Priority B: significant cost savings – ROI < 1 year
- Priority C: Significant energy use – important cost savings – ROI < 3 year
- Priority D Significant energy use – expected cost savings that improve cash flow

To check your model – do the parity check!

Fuel	Unit	Anual consumption	Anual energy consumption according to inventary	Parity
Power	kWh	3.100.010	3.087.841	**100%**
District Heating	kWh	2.957.630	2.950.826	**100%**
Natural gas L	kWh	457.301	433.914	**105%**
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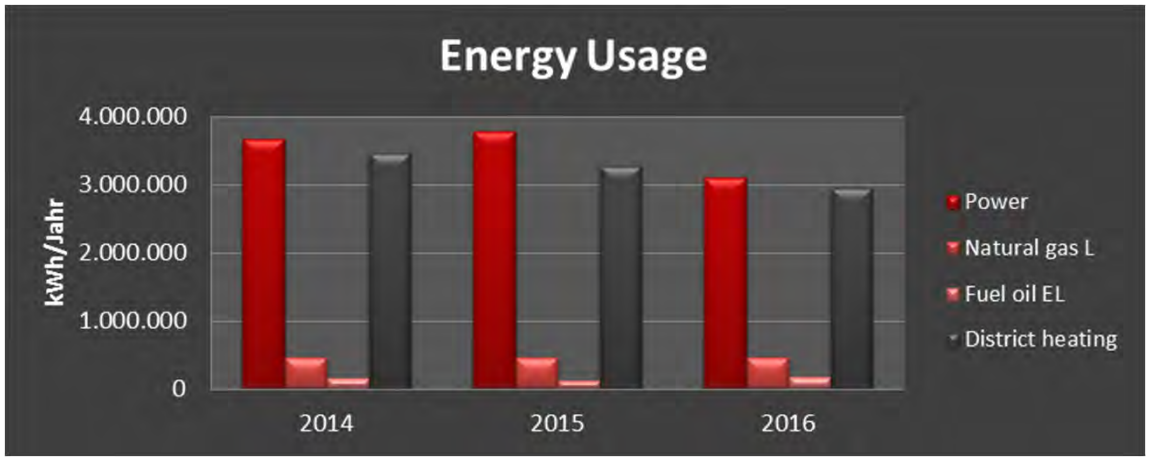
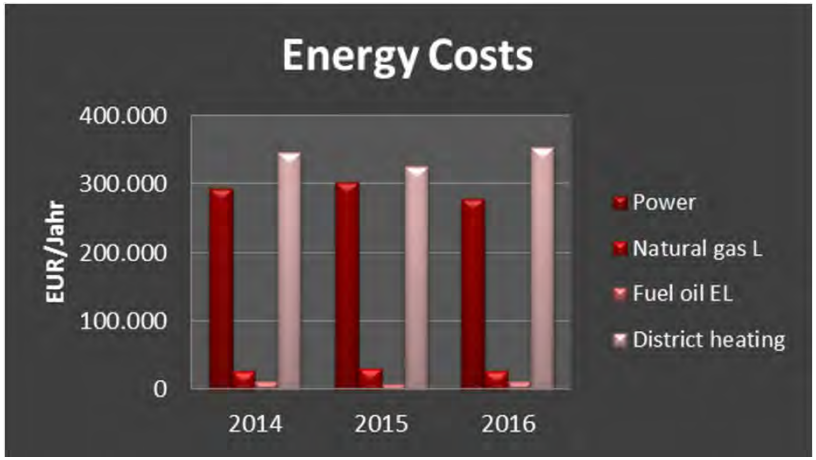
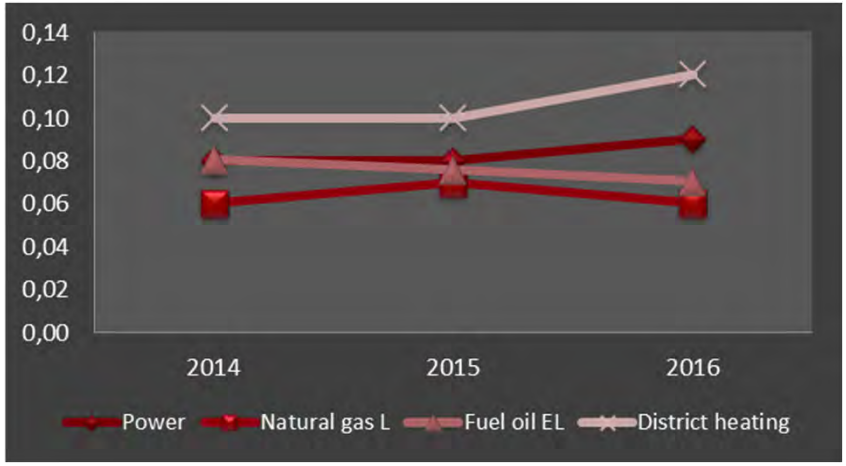
The result Energy consumption – Energy cost – specific Cost

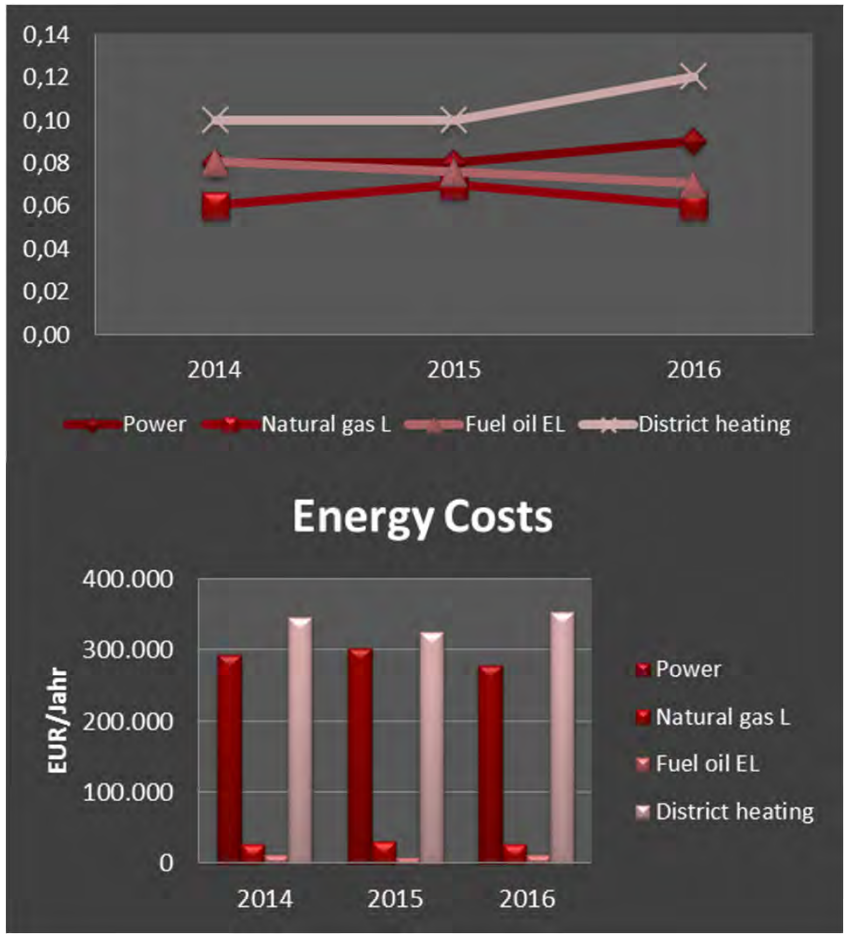


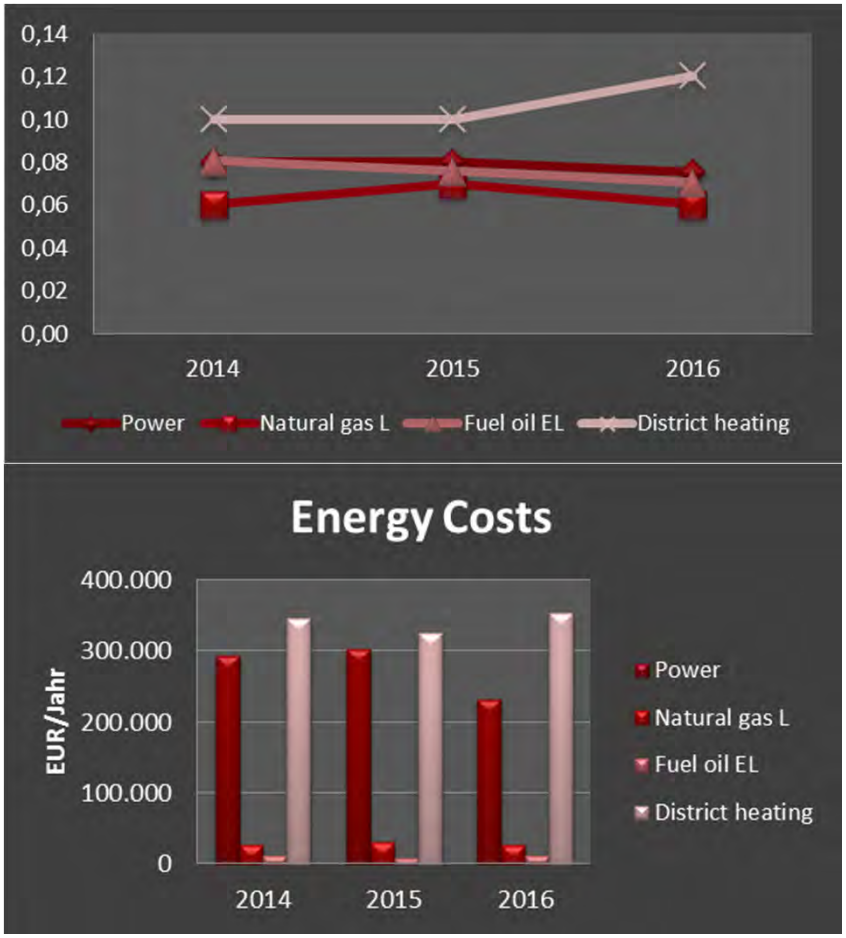




Finally – using regenerative power (e.g. from solar panels) directly reduces your energy cost

E.g. 10% Energy from solar





Conclusion

- The mini Energy Management helps Hotels to reduce costs
- It helps to implement energy efficiency measures
- It is the basics for an energy audit (EN 16247)
- And can be expanded to an EnMS according to ISO 50001
- However for many organization a mini EnMS will be sufficient