century ROOM ENERGY MANAGEMENT

century CONTROL

ENERGY SAVING

A building's energy management and especially a hotel's facilities, is a primary objective of the management, the energy consumption is the main cost factor in any such business and affects significantly the final efficiency of the facility. Thus the use of systems that reduce the energy consumption is not only essential to reach the goal of cost reduction but also the most reliable. On the other hand, the control of energy consumption falls in a general framework for addressing problems of environment degradation and subject to the requirements of the SAVE Directive 93/76/EEC European Union.The hotel units according to studies carried out are among buildings some of the ones with the higher energy consumption, with an average consumption of about 273 kWh / m2, and this requires measures that all operating needs and other requirements, should be met in the most efficient manner.
Achieving the above will bring significant economical benefits.

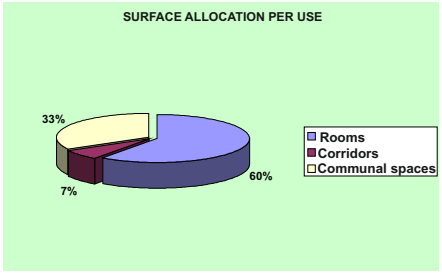
Also, the hotel facilities' special characteristics should be taken into serious consideration, such characteristics as:

1. In terms of population a hotel, compared to its size, serves much larger number of people per square meter. Especially large units, which are equivalent to villages, where hundreds of people are housed or employed.
2. Appropriate climatic conditions, are a prerequisite for the hotel's proper operation and have direct impact to the overall customer's satisfaction.
3. Lighting and air-conditioning systems operate 24 hours a day.
4. The hotel interior spaces' conditions must be ideal, much better than those of houses.
5. The recirculation of indoor air is limited, something that increases the cooling load.
6. Guests/clients don't, usually, care about how big energy consumption is.
On the contrary, guests/clients tend to overspend, on the logic that the energy costs are included in the room cost.

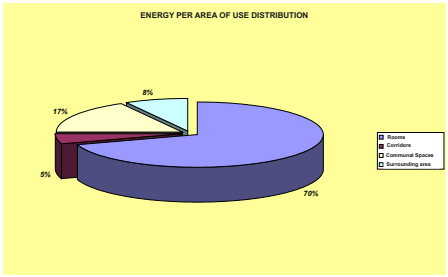
ENERGY SAVING

Based on the above power management should be approached integrally, taking into account all the parameters. Also the solutions, in order to be easily applicable, must cost as little as possible, provide automated functions independent of the behavior of customers and staff, recoup the investment costs in as little time as possible, not require time and cost of maintenance and finally improve the services provided and security to the client.

If we analyze the energy consumption we will see the following:



About 65% of total surface coverage is occupied by guest rooms.



About 70% of the total consumed energy is related with guest room's activities, 5% with corridors activities, 17% with communal areas activities (Reception, restaurant, bar, offices, etc.)
and 8% with surrounding areas.

It is obvious that the biggest amount of energy, is related with room activities and they should considered important without, of course, undermining the rest of the hotel areas' activities.

century lighting ROOM ENERGY MANAGEMENT

Century CONTROL

ENERGY SAVING

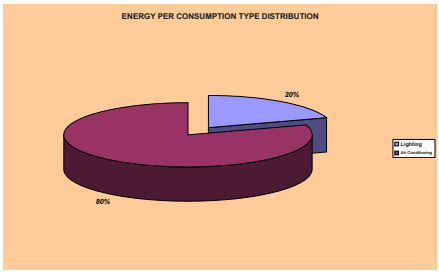
Room energy consumption analysis

Usually in a hotel room there are:
1. A luminary in the center of the room
2. Two fixtures in the left and right of the bed.
3. A fixture in the hallway entrance
4. A fixture in the bathroom.
5. A floor lamp or desk lamp.
6. A light above the room mirror console.

Assuming that **40 W** lamps are used, then the minimum consumption is **7x40W = 280 W**. In the above consumption, it should be added that the TV demands on power (**120W**) and consumption of other appliances such as hair dryers, kettles etc. So the minimum average consumption is **400W or 400Wh or 0.4 kWh per hour of operation.**

Air conditioning can be either central or individual per room. In both cases the energy consumption is about the same and for a place to be heated or cooled, you need a specific amount of energy (in kcal or BTU). Given that the minimum energy that you need to cool a room is **7000BTUs** and that every **1000BTUs** are equal to approximately **290W**, the minimum energy consumption per hour is **0,4 kWh + 2,03 kWh = 2,43 kWh**. Because air conditioning isn't used constantly, we round up the above consumption to 2 kWh. Given the above, the daily consumption of a room is **2x24 = 48 KWh** and if we assume that during sleep the consumption is decreased by half, **we reach the final conclusion that consumption at the best of cases can't be less than 35 kWh.**

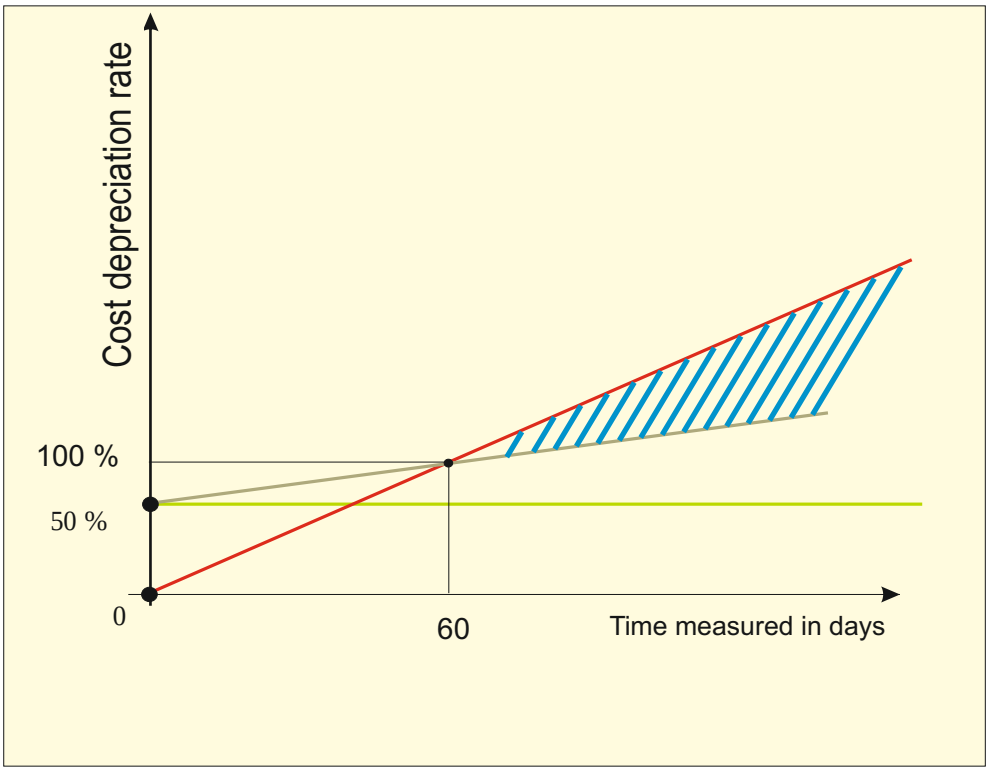
Given that the minimum **cost of KWh is about 0.078€**, the cost per day is **0.078 x 35 KWh = 2.73€** or for a season of approximately 150 days **150 x 2.73€ = 409.5€**. Given that the ratio between consumption of lighting and air conditioning is about 1 to 4, **the cost per room is 82€ for lighting and 328€ for air conditioning.**



It is obvious that the economic benefit that comes up from proper energy management is very important and affects the overall efficiency of the unit.

ENERGY SAVING

COST TO ROOM ENERGY DIAGRAM



From the above chart it is clear that investing in energy saving systems costs very little, it is depreciated rapidly, in less than one tourist season and gives long-term and stable profit in the tourist business.

ENERGY SAVING SYSTEM

ENERGY SAVING SYSTEMS

Energy saving systems are usually a combination of electronic and mechanical devices that meet the specific and special requirements of hotel units. They are flexible systems that, without altering the given services, manage to decrease energy consumption by almost 50-60%. On the other hand they are low cost devices that are easy to install without any need of specialized technicians, they don't need any maintenance and they tend to protect other devices such as air-conditioners. Also they increase the security of workplaces and through their functions they provide additional customer and hotel personnel, service capabilities.
Composed, usually, by energy savers/managers, input devices (card switches, magnetic switches etc) and peripheral control and indication devices like magnetic traps, status monitors etc. With the use of special input devices they can cooperate with other systems such as access control systems and also they can support other systems such as VRV, SPLIT, INVERTERS etc, because they provide the required low voltage and contact control system for the above devices.