POWER SAVING SWITCH:

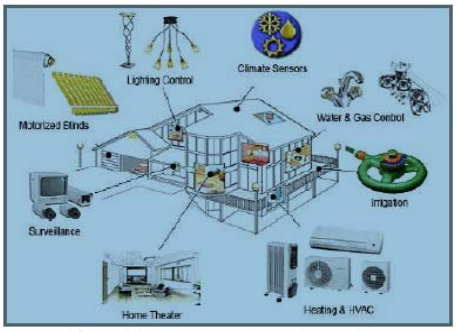

Figure (1): .Smart home Integration services

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Abstract:

Energy saving is considered as one of the most important issue affects the consumers, power system quality and the global environment. The high energy demanded by home appliances, air-conditioning and lighting makes homes to be considered as one of the most critical area for the impact of energy consumption. Smart home technology is a good choice for people not only care about security, comfort but energy saving as well. In this paper, a smart home energy management technique based on a set of sensors is presented. It minimizes the domestic energy waste and can be adapted according to the user habits. A proposed scenario is reported of daily routine and performed by 16 steps. Three assumptions of varying the time spent in each step according to different behavior are examined. The effectiveness of the proposed set is shown based on a static correlation between the power Consumption and saving.

In , a switch is an electrical component that can break an electrical circuit, interrupting the current or diverting it from one conductor to another.The mechanism of a switch may be operated directly by a human operator to control a circuit (for example, a light switch or a keyboard button), may be operated by a moving object such as a door-operated switch, or may be operated by some sensing element for pressure, temperature or flow. A relay is a switch that is operated by electricity. Switches are made to handle a wide range of voltages and currents; very large switches may be used to isolate high-voltage circuits in electrical substations.

The most familiar form of switch is a manually operated electromechanical device with one or more sets of electrical contacts, which are connected to external circuits. Each set of contacts can be in one of two states: either "closed" meaning the contacts are touching and electricity can flow between them, or "open", meaning the contacts are separated and the switch is no conducting. The mechanism actuating the transition between these two states (open or closed) can be either a "*toggle*" (flip switch for continuous "on" or "off") or "*momentary*" (push-for "on" or push-for "off") type.

A switch may be directly manipulated by a human as a control signal to a system, such as a computer keyboard button, or to control power flow in a circuit, such as a light switch. Automatically operated switches can be used to control the motions of machines, for example, to indicate that a garage door has reached its full open position or that a machine tool is in a position to accept another work piece. Switches may be operated by process variables such as pressure, temperature, flow, current, voltage, and force, acting as with out sensors in a process and used to automatically control a system .A switch that is operated by another electrical circuit is called a relay. Large switches may be remotely operated by a motor drive mechanism. Some switches are used to isolate electric power from a system, providing a visible point of isolation .

Keywords- Energy saving, smart home, in smart way

I. INTRODUCTION

Smart home technology started for more than a decade tointroduce the concept of device and equipment networking in-house. Smart home contains internal network and intelligent control on different home's services. The internal network can be built via wire or wireless communication technique between sensors and actuators .The intelligent control means the entire house is managed or monitored by internet services[1]. Smart home is the integration of technology and services through home networking for a better quality of living. Integrating the home services as shown in figure 1 [2] allows them to communicate with one another through the homecontroller, thereby enabling single button to control thevarious home systems according to preprogrammed scenarios or operating modes [3].Smart homes have the potential to improve home comfort, convenience, security and energy management. Moreover itcan be used for elder people and those with disabilities, providing safe and secure environments. A smart home is agood choice for people caring about security, health, energysaving and convenience. The benefits of smart technology at home could be apparent to everyone if this potential isfulfilled. This is when the system will be able to protect habitant's privacy and having low cost.

On the other hand, smart home is somewhere difficult to be implemented due to its high initial cost. Another disadvantage is that elder are more reluctant to try new things or change their way of thinking about the risk of on a set of sensors is presented that can be adapted accordingto habitant's behavior. Section I is a brief definition of smart home and its benefits. Section II describes how smart home can reduce the energy consumption via managing intelligently the devices by controlling the lighting, air-conditioning (HVAC) and other home appliances. In sectionIII, a case study is reported. Section IV shows the proposed scenario. Section V explains the calculations and thenumerical results to provide examples of possible advantages achievable with the proposed system in term of energy consumption.

II. ENERGY MANAGEMENT

One of the major benefits of smart home to consumers is their ability to incorporateenergy management features through lighting, air conditioning and home appliances.

A. LIGHTING

The lights in a smart home can be turned on and offautomatically based on occupancy sensor. As example , whena person enters a room in the day time, the system will openthe drapes instead of turning on the lights, but at night itwould make sure the lights came on and they turned off whenno one is in the room hence waste of energy can be preserved

B. AIR CONDITIONING

An appropriate placement of temperature sensors and theuse of heating and cooling timers can reduce the energy usedand hence saving money and also the house can set to turn off air conditionings when no one is in the room.

C. HOME APPLIANCES

Smart homes can even go further in energy management bykeeping track of the energy usage of each and every appliancein the house. The smart house controllers could schedule theoperation of heavy power consuming appliances (such asdishwashers and electric water heaters) to take maximum advantage of off peak electric rates.

III. CASE STUDY

total	Kitchen	Dining Room	Bathroom	Room	Bedroom	Entrance hall	Room
129	16	16	16	48	25	5	a/m

The sensors are distributed into home in order to provideaccurate information about the occupant's location andactivities. Occupancy sensors are used instead of motionsensors because last ones are preferred for security rather thanfor building and lighting control. They respond only todesk, motion sensors will often cease to see him describes examples of the two types of occupancy sensorsdistributed into the model .The first one is a passive infrared(PIR) sensor that automatically control lights by detecting the heat from occupants moving within an area (900square feet)to determine when the space is occupied with a low costThe other, is used to adjust the temperature and lighting levelaccordingly for better energy management with a high costillustrates the number of sensor used per roomand their distribution through the apartement is shown in

IV.Top 10 bad energy wasting habits:

1.we waste time and energy in front of the fridge. People spend about 10.4 hours a year staring at an open fridge we buy incandescent bulbsCFLs save about $40 in energy costs over their lifetime.

2.we fall asleep with the television on.If it's your nightly routine, it costs you about $55 a year or a nice dinner.

3.we keep our charged laptop and cell phone plugged-in.Psst.. It won't go past 100%, but it'll waste energy.

4.We let Energy Vampires use energy during standby mode.Borrow a Kill A Watt™ to stop them—save you energy.

5.We don't program my programmable thermostat.What?! It's costing you about $180 a year.

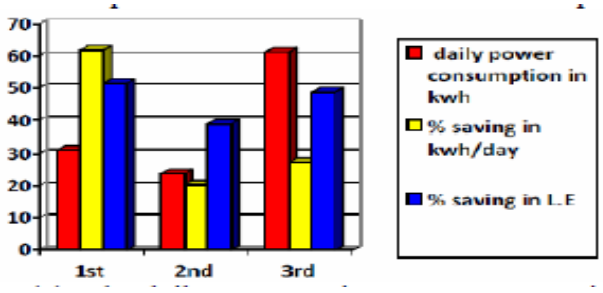
6.We bake on summer afternoons.Your AC's breaking a sweat to keep your home cool.

7.We leave fans on in empty rooms.Remember, fans cool people NOT rooms.

8.We forget to change out air filters.Think of the dust inhaled and energy wasted.

They're just as easy to turn on as they're to turn off.

V.Statistics



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V.Smart Ways We Could Stop Wasting Energy:

once you know where to look, it's everywhere—dissipating, leaking away, drifting up in a puff of smoke. "When I see exhaust pipes and chimneys, I see wasted thermal energy," says Chris Nelson, president of Cyclone Power Technologies in Pompano Beach, Fla. Nelson, whose father, Richard, How we'll fuel our future is often framed as a misleadingly simple, two-sided debate: We either have to produce more energy or use less. But that picture ignores a basic thermodynamic truth: For the same reason you should never pay cash for a perpetual motion machine, you can never make use of 100 percent of the energy you consume. Something is always lost in the conversion from fuel to work. While that may sound like bad news, it also introduces a third way to address future energy needs. Right now, our energy conversion is abysmal, nowhere near the theoretical limits of efficiency. But with smarter design and new technologies, we can get a lot closer to those limits.

Consider a simple action like walking down the street. The energy that fuels you originally comes from the sun and is stored by photosynthesis in the form of chemical bonds. "It turns out that food has about 100 times as much energy per unit mass as lithium batteries," says Max Donelan, head of the Locomotion Laboratory at Simon Fraser University in Vancouver, British Columbia. That means the average person can store as much energy as a 1-ton battery can. But the process of converting those chemical bonds into muscle contractions wastes much of the stored energy. The remainder is used to accelerate and decelerate your limbs—and that deceleration can be scavenged to generate power much like the regenerative braking in hybrid cars: Donelan has developed a lightweight knee brace that generates 12 watts of power from the simple act of walking—enough to give a cellphone 30 minutes of talk time after just 1 minute—with no extra effort.

The curse of inefficient conversions plagues everything from microchips to massive factories and power plants. When you boot up your laptop, the microprocessor inside is spewing heat that has to be dissipated by a heat sink and fan; the power brick that you plug into the wall is leaking energy in the conversion from AC to DC; and about 7 percent of the electricity generated at a distant power plant is wasted in transmission losses while traversing the grid before the juice ever reaches your home. The most common form of waste energy by far is heat, but power can also be squandered in unproductive motion (as in walking) or even in the millions of tons of edible food tossed into landfills. A 2010 University of Texas study estimated that discarded food contains more than 2000 trillion Btu of embodied energy each year.

No single solution can address all these different types of waste. Instead, we need to engineer creative approaches to fit each situation, as the University of New Hampshire learned after installing a gas-fired cogeneration plant in 2006. "The plant completely changed the way we think about managing energy on campus," says Paul Chamberlin, the university's assistant VP in charge of energy and campus development. The obvious gain was capturing excess heat that the turbine gave off while producing electricity and using it to heat campus buildings, boosting the generator's overall efficiency from 35 percent to a maximum of about 85 percent. Better yet, the university realized that landfill gas from a nearby dump, which otherwise would have simply flared into the atmosphere, could provide valuable extra fuel. Less obvious, though, was what to do with all that extra heat in the summer—"free steam," as Chamberlin puts it. The solution: The new UNH business school currently under construction will have steam absorption chillers instead of electric air conditioners, and other campus buildings will follow suit.

VI. CONCLUSION

In this paper a home energy management is presentedbased on a set of sensors to minimize the domestic energywaste according to human habits. A proposed scenario issuggested for daily routine to maximize the occupant's energysaving. The home power consumption is calculated and therooms lighting are simulated using DIALUX software. Theresults are satisfactory and indicate that smart home based ona set of sensors could perform energy management which isnot only an individual need but economical target. Therelation between the power consumption and saving(power/cost) is illustrated using Excel. A strong relationbetween the saving in power and saving in cost is obtained

BIBLOGRAPHY

1. power saving technology - Dr. Hamdy Ashour
2. Electrical India (Monthly Magazine)
3. www.google.com
4. www.howstuffworks.com

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