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Review Paper on Energy Management

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Abstract— *the fundamental goal of energy management is to engender goods and provide accommodations with the least cost and least environmental effect. The purport of energy management is to minimize energy and dihydrogen monoxide consumption and costs, while meeting all operational mission requisites and providing quality working and living conditions for personnel and family housing occupants. Energy management requires a meticulous balancing between efforts to utilize energy efficiently and meet the quality of life requisites, while insuring that primary mission requisites are met. Efficacious energy management strives to eschew conflicts between the two, while achieving substantial energy reductions and cost savings. To establish a prosperous energy program, the energy manager must have a good understanding of both the technical and managerial aspects of energy management. This report covers the rudiments of energy audit, and energy efficiency projects.*

Keywords— Energy Management Em, Commercial Management, Federal Energy Management Program (FEMP), ESCOs (Energy Accommodation Companies)

I. INTRODUCTION

The energy 'roller coaster' never ceases with incipient turns and spirals which make for a challenging ride." Those professionals who boarded the ride in the tardy 70's and stayed on board have experienced several ups and downs. First, being an energy manager was like being a mother, rahul, and a slice of apple pie all in one.

Everyone fortified the concept and prosperity was around every bend. Then, the mid-80's plunge in energy prices caused some to wonder "Do we authentically need to perpetuate energy management?" Sometime in the tardy 80's, the decision was made. Energy management is good business but it requires to be run by professionals. The Certified Energy Manager Program of the Sodality of Energy Engineers propagated and commenced a very steep magnification curve that is perpetuating today (January, 2000). AEE perpetuated to grow in membership and stature.

About the same time (tardy 80's), the impact of the Natural Gas Policy Act commenced to be felt. Now, energy managers found they could sometimes preserve consequential amplitudes of mazuma by buying "spot market" natural gas and arranging conveyance. About the only thing that could be done in purchasing electricity was to optate the opportune rate schedule and optimize parameters (power factor, demand, ratchet clauses, time of avail, etc.—see the chapter on energy rate schedules). Then, the Energy Policy Act of 1992 burst upon the scene. Now, some energy managers are able to purchase electricity from wherever the best deal can be found, and wheel the electric energy through the grid. At the time of this inditement, many states are pushing forward to consummate retail wheeling where the energy manager culls the source of electric puissance. Energy managers throughout the country and even the world are optically canvassing this with great anticipation and scarcely of apprehension as a incipient adeptness must be learned. However, EPACT's impact was further reaching. If utilities must compete with other engenderers of electricity, then they must be "lean and mean." As Mr. Thurman mentions in the Foreword, this denotes many of the Demand Side Management and other conservation activities of the utilities are being cut or eliminated. The roller coaster ride goes on energy management goals. The potential FEMP savings are mammoth and incipient professionals affiliated with Federal,

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as well as State and Local Regimes have joined the energy manager ranks. However, as Congre chages complexion the FEMP and even does it may face at best skeptical futures.the rolle coaster ride per pectua

FEMP efforts are exhibiting results.outlines the goals that have been established for FEMP and reports show that the savings are ostensibly on schedule to meet all these goals. As with all such programs, reporting and quantifying is arduous and critical. However, that energy and mazuma is being preserved is indisputable. More consequential, however, to most of this book's readers are the Technology Demonstration Programs and Technology Alerts being published by the Pacific Northwest Laboratories of Battelle in cooperation with the US DOE. Both of these programs are dramatically speeding the incorporation of incipient technology and the Alerts are a great source of information for all energy managers. (Information is available on the WEB). As utility DSM programs shrink, while private sector businesses and the Federal Regime expand their desiderata for energy management programs, the door is opening for the ESCOs (Energy Accommodation Companies), Shared Savings Providers, Performance Contractors, and other homogeneous organizations. These groups are providing the auditing, energy and economic analyses, capital and monitoring to avail other organizations abbreviate their energy consumption and abbreviate their expenditures for energy accommodations. By assuring and sharing the savings from amended energy efficiency and amended productivity, both groups benefit and prosper. Throughout it all, energy managers have proven time and time again, that energy management is cost efficacious. Furthermore, energy management is vital to our national security, environmental welfare, The Fairmont Press. nomic productivity. This will be discussed in the next section

II. THE VALUE OF ENERGY

Business, industry and regime organizations have all been under tremendous economic and environmental pressures in the last few years. Being economically competitive in the ecumenical rialto and meeting incrementing environmental standards to abbreviate air and dihydrogen monoxide pollution have been the major driving factors in most of the recent operational cost and capital cost investment decisions for all organizations. Energy management has been a paramount implement to avail organizations meet these critical objectives for their short term survival and long-term prosperity. The quandaries that organizations face from both their individual and national perspectives include: • Meetings more stringent environmental quality standards, primarily cognate to truncating ecumenical warming and abbreviating acid rain. Energy management avails improve environmental quality. the primary culprit in ecumenical warming is carbon dioxide, CO2 a balanced chemistry equation involving the combustion of methane (natural gas is mostly methane) pounds of carbon dioxide is engendered for every pound of methane combusted. Thus, energy management, by truncating the combustion of methane can dramatically truncate the amplitude of carbon dioxide in the atmosphere and avail truncate ecumenical warming. Commercial and industrial energy use accounts for about 45 percent of the carbon dioxide relinquished from the burning of renumabal, and about 69.90 percent of the sulfur dioxide emissions from stationary sources.

$CH4 + 2\ O2 = CO2 + 2\ H2O$

$(12 + 4*1) +2(2*16) = (12 + 2*16) + 2(2*1 +16)$

Thus, 16 pounds of methane engenders 44 pounds of carbon dioxide; or 2.75 pounds of carbon dioxide is engendered for each pound of methane burned. Energy management minimizes the load on power plants as fewer kilowatt hours of electricity are needed. If a plant burns coal or fuel oil, then a consequential quantity of acid rain is engendered from the sulphur dioxide emitted by the puissance plant. Acid rains fall then are abbreviated through energy management. Less energy consumption designates less petrol field development and subsequent on-site pollutant. Less energy consumption designates less thermal pollution at power plants and less cooling dihydrogen monoxide discharge. Minimized cooling requisites or more efficient gratification of those desiderata denotes less CFC utilization and minimized ozone depletion in the stratosphere. The list could go on virtually indefinitely, but the bottom line is that energy management avails ameliorate environmental quality.

III. THE ENERGY MANAGEMENT

Energy management skills are paramount to people in many organizations, and certainly to people who perform obligations such as energy auditing, facility or building management, energy and economic analysis, and maintenance. The number of companies

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employing professionally trained energy managers is immensely colossal and growing. A partial list of job denominations is given in Figure 1.2. Albeit this is only a partial list, the breadth shows the robustness of the vocation. For some of these people, energy management will be their primary obligation, and they will require to acquire indepth skills in energy analysis as well as erudition about subsisting and incipient energy utilizing equipment and technologies. For others—such as maintenance managers—energy management skills are simply one more area to cover in an already full plate of obligations and prospects. The authors are inscribing this Energy Management Handbook for both of these groups of readers and users. Fifteen years ago, few university faculty members would have verbalized their primary interest was energy management, yet today there are numerous faculty who prominently list energy management as their principal specialty. In 2000, there were 30 universities throughout the country listed by DOE as Industrial Assessment Centers or Energy Analysis and Diagnostic Centers. Other Universities offer coursework and/or do research in energy management but do not have one of the above centers. Determinately, several professional Journals and Magazines now publish exclusively for energy managers while we ken of none that subsisted 15 years ago. The Federal Energy Management Program (FEMP) commenced during the Bush Administration but it received a consequential boost on June 3, 1999 when President Clinton issued Executive Order program should dramatically abbreviate regime expenditures for energy and dihydrogen monoxide. Like energy management itself, utility DSM programs have had their ups and downs. DSM efforts peaked in the tardy 80s and early 90s, and have since retrenched significantly as utility deregulation and the kineticism to retail wheeling have caused utilities to abbreviate staff and cut costs as much as possible. This shortterm cost cutting is visually perceived by many utilities as their only way to become a competitive low-cost supplier of electric puissance. Once their sizably voluminous customers have the cull of their potency supplier, they optate to be able to prehend these customers by offering rates that are competitive with other engenderers around the country. In the meantime, the other energy accommodations provided by the utility are being truncated or eliminated in this corporate downsizing effort. This minimization in electric utility incentive and rebate programs, as well as the truncation in customer support, has engendered a gap in energy accommodation assistance that is being met by a growing sector of equipment supply companies and energy accommodation consulting firms that are willing and able to provide the technical and financial assistance that many organizations aforetime got from their local electric utility. Incipient business opportunities and many incipient jobs are being engendered in this shift away from utility support to energy accommodation company support. Energy management skills are astronomically paramount in this rapidly expanding field, and even critical to those companies that are in the business of identifying energy savings and providing an assurance of the savings results. Thus, the future for energy management is astronomically promising. It is cost efficacious, it ameliorates environmental quality, it avails minimize the trade deficit, and it avails truncate dependence on peregrine fuel supplies. Energy management will perpetuate to grow in size and paramountcy.

IV. CONCLUTION

Energy management can be considered the key to save energy in any building or institution. The interest in energy audit comes from the need to reduce energy consumption and reduce the burning of fossil fuels produced thereby improving environmental conditions. The continued burning of fossil fuels and the control of specific parties the oil and gas pricing made this issue a danger to all the governments of the world because of its impact on the national economic security of their countries. Reducing dependence on fossil fuels for energy production and developing legislation that sets pollution and emissions rates will need to begin with the concept of energy conservation in any management, building or home. The study showed that there are many methods to provide electricity consumption in the university's sports department, which is consumed for lighting, heating, cooling and electrical equipment.

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REFERENCES

[1] Prof. Dr. Mohamed EL-Shimy Mahmoud, "Fundamentals of Energy Management and Energy Managers", February 2018

[2] J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.

[3] I. S. Jacobs and C. P. Bean, "Fine particles, thin films and exchange anisotropy," in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.

[4] K. Elissa, "Title of paper if known," unpublished.

[5] R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press.

[6] wayne c. turner school of industrial engineering and management oklahoma state university" energy management handbook"\

[7] H. M. S.Al-Maamary, H. A.Kazem, M. T.Chaichan, "Changing the energy profile of the GCC States: A review," International Journal of Applied Engineering Research (IJAER), vol. 11, No. 3, pp. 1980-1988, 2016.

[8] H. M. S.Al-Maamary, H. A.Kazem, M. T.Chaichan, "Renewable energy and GCC States energy challenges in the 21st century: A review," International Journal of Computation and Applied Sciences IJOCAAS, vol.2, No. 1, pp. 11-18, 2017.

[9] H. M. S.Al-Maamary, H. A.Kazem, M. T.Chaichan, "Climate change: the game changer in the GCC region," Renewable and Sustainable Energy Reviews, vol. 76, pp. 555-576, 2017

[10] A. A.Al-Waeely, S. D.Salman, W. K.Abdol-Reza,M. T.Chaichan, H. A. Kazem, H. S. S.Al-Jibori, "Evaluation of the spatial distribution of shared electrical generators and their environmental effects at Al-Sader City-Baghdad-Iraq," International Journal of Engineering & Technology IJET-IJENS, vol. 14, No. 2, pp. 16-23, 2014.

[11] M. T.Chaichan, H. A.Kazem, T. A.Abid,"The environmental impact of transportation in Baghdad, Iraq," Environment, Development and Sustainability, 2016. DOI: 10.1007/s10668-016-9900-x.

[12] H. M. S.Al-Maamary, H. A.Kazem, M. T.Chaichan, "The impact of the oil price fluctuations on common renewable energies in GCC countries," Renewable and Sustainable Energy Reviews, vol. 75, pp. 989-1007, 2017.

[13] J.Up, P.Leslie, J. Pearce, R. Harrap, S. Daniel, "The application of smartphone technology to economic and environmental analysis of building energy conservation strategies," International Journal of Sustainable Energy, vol.31, No. 5, pp. 295-311, 2012.

[14] W. C.Turner, "Energy Management Handbook," 5th edition, Fairmont Press, Inc., India, 2004. [9] S. T.Ahmed, M. T.Chaichan, "A study of free convection in a solar chimney sample," Engineering and Technology J, vol. 29, No. 14, pp. 2986-2997, 2011.

[15] G.Kabir,A. I.Abubakar, U. A.El-Nafaty, "Energy audit and conservation opportunities for pyroprocessing unit of a typical dry process cement plant," Energy, vol. 35, No. 3, pp. 1237-1243, 2010.

[16] H. A.Kazem, H. S.Aljibori, F. N.Hasoon,M. T.Chaichan, "Design and testing of solar water heaters with its calculation of energy," Int. J. of Mechanical Computational and Manufacturing Research, vol. 1. No. 2, pp. 62-66, 2012.

[17] T.Fleiter, J.Schleich, P. Ravivanpong, "Adoption of energy-efficiency measures in SMEs—An empirical analysis based on energy audit data from Germany," Energy Policy, vol. 51, pp. 863-875, 2012.

[18] M. T.Chaichan, K. I. Abaas, H. A.Kazem, "The effect of variable designs of the central receiver to improve the solar tower efficiency," International J of Engineering and Science, vol. 1, No. 7, pp. 56-61, 2012.

[19] O. T.Masoso, L. J.Grobler, "The dark side of occupants' behaviour on building energy use," Energy and Buildings, vol. 42, No. 2, pp. 173- 177, 2010.