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Development of an Applied Model to implement Energy Management System in Dairy Products Industries

Alireza Mokhtar, Ahmadreza Bahmanpour Khalesi

***Abstract*— Ever increasing price of fossil fuels and their environmental impacts as well as water crises in many of the world's regions, have caused Energy Management become an effective solution to cut the production cost and reduce carbon emission. Recent efforts have been made to develop national and international standards in energy management systems. However, each industry needs to customize these solutions taking numerous business and technical considerations that specifically exist in the corresponding sector. In this article, an applied energy management model for dairy product industry is developed according to PDCA (Plan – Do – Check – Act) continuous improvement cycle. This model is tailored according to Dairy Corporation's organizational characteristic and is named as dairy energy management system (DEMS). DEMS is designed as a six-step model; each is clarified and presented appropriate tools in order to establish an energy management system (EnMS) in dairy production corporation and the attributed SBUs. This applied tools and procedures are designed to satisfy internal and external relationships of an EnMS in a dairy corporation. DEMS has considered an energy management system in a dairy corporation in managerial, technical and structural aspects.**

It helps Dairy products industries permanently integrate energy management into their business and manufacturing operations, leading to reduced costs and increased profitability

DEMS helps companies permanently embed energy management into four key areas of their operations which are distinguished as organizational structure, people, manufacturing systems, and measurement. This model follows the energy efficiency utilizing SMART objectives that are designed and aligned according to Corporation and SBUs strategies.

***Index Terms*— Energy management, Energy Improvement, Energy Management Systems, Energy in Dairy Production, Energy continues improvement Model**

I. Introduction and Problem Definition

Corporations seek for establishing and practicing improvements for sustaining their competencies. Either there is no exception for dairy products industry encountering tight competitive market with creative rivals who put their efforts to gain much more of the market share providing the best quality and the least cost. Thus, companies utilize strategic and tactical tools to maintain continuous and integrated improvement through all parts of their operation. PDCA (Plan-Do –Check – Act) cycle which proposed by Deming, 1950 is the basic framework of management improvement practices for gaining growth and positive synergy through the organization.

Manufacturing resources and the operations are basic parameters which can have meaningful influence on the organizational performance. Here, we consider energy as one of the inputs that each dairy product plant consumes as primary or secondary resources in dairy processing and are significant part of production cost. Stakeholders of a dairy production plant specifically government, customer and society have been insisting on their benefits in recent years by approving some acts to legal requirements globally or in country for preserving energy resources, and limiting environmental effects of energy consumption mainly greenhouse gas emission. Climate change and global warming for nations has become serious concerns that cause international act as Kyoto, Durban protocols for limiting negative effects of environmental effects of increasing energy consumption[1].On the other hand the limitation of energy resources and volatility in energy market price obliged governments and organizations to consider energy improvement programs in their productivity plans.

By establishing and practicing energy management programs in industry as the big energy consumers, beside household and transportation sectors, we aim to reduce energy consumption and negative environmental effects on climate globally, and on the other side of the coin by decreasing energy costs along with quality improvement programs, dairy production corporations improve their competencies and ensure their position promotion against their rivals. Moreover, customers attain to healthy products with the least negative effects on environment and welcome products which are produced according to corporate social responsibility (CSR) noted to environment management. Consumers are encouraged by society communities for purchasing green products to save the environment. Numerous national, regional and global standards have been proposed and utilized[2], [3], [4], [5]worldwide focusing on energy management systems and since 2011, the international standard of ISO 50001 is becoming more popular and dominant in many industrial and non-industrial sectors[6], [7].It relies on the concept of continuous improvement rather than implementation of energy retrofitting projects as was the core of energy audit programs. Focusing on energy policy, management commitment and macro/micro objectives are the highlights in the recently developed

Alireza Mokhtar, Assistant Prof.Faculty of Industrial Engineering, Shiraz University of Technology Modarres Blvd.,Shiraz,Fars,IRAN, Postal Code : 7 1 5 5 7 1 3 8 7 6, Tel:+98(71)37354500, (ext2638)
Ahmadreza Bahmanpour Khalesi, Planning & Development Manager, Zarrin Ghazal Dairy Company, Golestan town- Dehkhoda Blvd. - 12th Alley – No. 223, Postal Code: 7189916375, Tel:(+98)9171209053

standard. Nowadays, thousands of companies all across the world are trying to establish energy management system, EnMS, in line with the requirements of ISO 50001, to unceasingly maintain, monitor and decrease their energy and water consumptions[8], [9].Despite of noteworthy achievements of this standard and its capability to become applicable for all companies regardless of their size and production features, it overlooks the competitive atmosphere of the market as well as the corporate and business strategies of the associated organization. Involvement of energy senior and SBU managers in creation of the teams and energy strategies and later in development and sustaining the EnMS is not well addressed. Apart from these inadequacies, it is too general and all-purpose to deal with the market and business characteristics. Dairy industries mainly process the raw milk in order to produce such products as cheese, ice cream, yogurt and etc. so called dairy products. The production activities need for notable amount of gas, electricity and water for heating, cooling and freezing. Energy and water costs are remarkable portion of product cost portfolio [10], [11].

Regarding the numerous small and medium dairy factories in many countries and due to their highly competitive markets, it is recommended to customize an energy management system to take benefits of the current standards while taking their own requirements and business aspects into account.

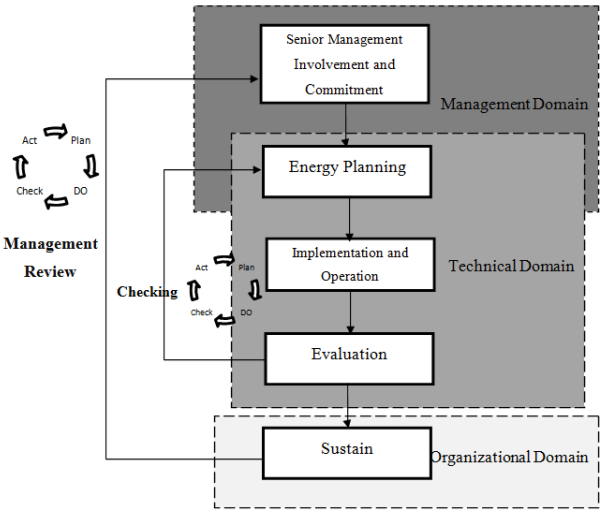


Figure 1: Energy management model for dairy products industry (DEMS)

The aim of the current research is to develop an applied energy management model for dairy product industry reviewing some energy management models and customize them according to dairy processing industry attributes. This model considers energy management system as a continuous system which institutionalizes a systemic, organization-wide approach to energy efficiency that enables manufacturers to manage energy as a controllable expense. It helps industrial facilities permanently integrate energy management into their business and manufacturing operations, leading to reduced costs and increased profitability. This framework assists dairy production companies adopt best practices in operational efficiency as well as energy management. It follows six main steps outlined below and illustrated in Figure 1.Step 1: Senior management involvement; Step 2: Senior management commitment; Step3: Energy strategy development; Step 4: Energy strategy implementation & operation; Step5: Evaluation; Step6: Sustain

This energy continuous improvement model is designed as a self-sustaining management system based on the well-established principles of process management and continuous improvement. This helps companies permanently embed energy management into the four key areas of their operations: organizational structure, people, manufacturing systems, and measurement (Figure 2). This energy management model for dairy product industry provides an applied methodology and related tools to support company in achieving energy management goals and objectives through progressive steps. Each of the steps in figure1is considered as modules that their associated tools will be introduced and discussed as guidelines, samples, templates, and/or spreadsheets.

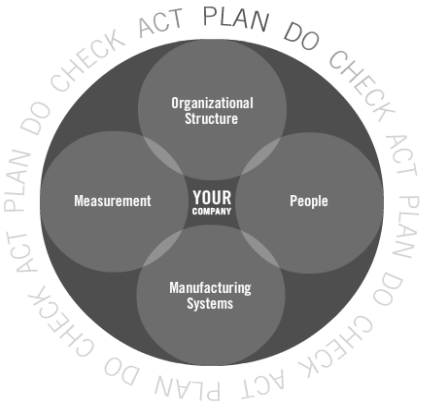


Figure 2: Four key areas for organization operations

II. The Proposed Energy Management Model

The model starts with involvement of management that is described below:

2.1 Senior management involvement

- **strategic involvement**

Integrity of different continuous improvement practices that brings concentration of resources and efforts toward desirable organizational goals can be achieved by their strategic alignment. There is no doubt that all activities within the organization boundaries must comply with organizational strategies.

To develop the model, dairy industry is considered as a big industry which is identified as a corporation with more than 500 staffs including at least 3 product families. For dairy production industry, since each product can be considered as a profit center typically each has its own discrete marketing plan, analysis of competition, and marketing campaign, it is usually simple and beneficial to consider products as profit centers and divide organization into different SBUs named fluid milk SBU, cheese production SBU and ice cream production SBU.

Energy management programs ought to be in complying with SBU strategy, for this reason, making energy policy alignment with SBU strategy is the key for making functional activities and action plans in accordance with SBU strategy. Figure 3 depicts how strategic layers encompass each other and make a unit. Senior management of SBU will involve in energy issue if energy performance improvement is considered in strategies.

No energy management program can be initiated unless top management is involved

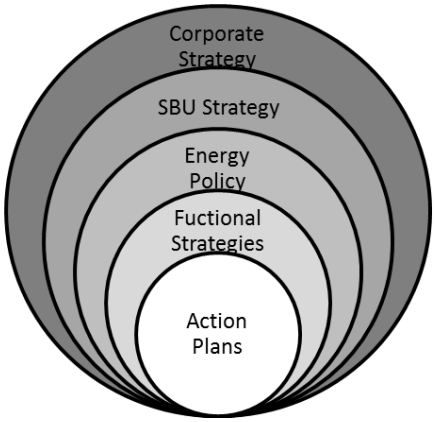


Figure 3: Energy policy and Organizational strategies

Legal requirements that shape corporation and SBU strategy should be considered. Governments might have regulations to oblige or encourage dairy producers for less energy consumption. Therefore, considering legal limitations and value of energy saving promotions for the corporation should be considered by top management.

2.2 Senior management commitment

A well-established program in energy management for dairy industry begins with a strong organizational commitment to continuous improvement of energy efficiency. This commitment includes assigning management duties to an energy director, fulfill initial energy management assessment and formulate energy policy as a guideline for energy strategy. Senior management shall demonstrate its commitment to support the energy management system and to continually improve its effectiveness by:

- ✓ Finalize and approve formally the energy policy draft prepared by energy director
- ✓ Appoint energy director and approve the formation of an energy management team;
- ✓ Provide resources needed to establish, implement, maintain and improve the energy management system (EnMS) and resulting energy performance. Resources include skills and technology, human resource and financial requirements.

Organizations consider energy management as a tool for performance improvement. For all dairy producers, the common element of successful energy management is organization commitment to allocate staff and funding to achieve continuous improvement in energy. In the very early stage, senior management commitment should be realized. If this commitment is established we can be hopeful that other parts of the organization be responsible and have enough commitment to the established energy program. Corporate topmanagers and SBU managers are considered as senior managers in dairy processing companies. It is required that they unambiguously understand the energy role in fulfilling their SBU strategies. Although energy cost and water consumption account for a significant part of production cost in some dairy companies in some cases,senior management mostly deal with it as an overall cost which is not tracked and monitored for each product and process. As long as the senior management would not be aware of energy management necessity, application and benefits in dairy production the least requirement for success is missed.On the other hand, senior management which is responsible for fulfilling SBU strategic plan may find energy management as one of the solutions of achieving to organizational set goals. As the following figure illustrates, senior management must be aware of complying all activities of business with strategic planning elements and believe that energy management can help the company to fulfill established strategies.

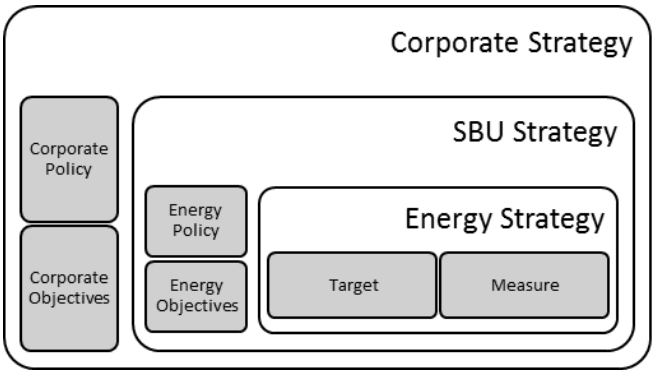


Figure 4: Policies and strategies level

High level of management commitment will provide management advocacy and ensuring the desired resource assignment. For initial energy assessment, management commitment should demonstrate its interest for distinguish energy performance situation in the company. An essential requirement for linking SBU strategy with functional strategies in SBU is assigning an energy director as the responsible for energy management program by senior management.

- **Assign energy director and his duties**

The first responsibility of energy director in a dairy corporation is to prepare a plan for initial energy management assessment. Utilizing any kind of project management system which is currently in use will assure energy director and senior management about the results of initial energy review. In some dairy plants, no project management system is in use; therefore, it is suggested to establish a standard like PMBOK for this purpose.

Here the term Energy Manager is considered as shorthand for the person responsible for implementing the dairy corporation energy program or strategy[12]

Energy Director as the most critical component of successful energy program helps the company to achieve its strategic and functional goals by establishing energy

performance as a core value. It is not essential to assign somebody as energy director with full expertise in energy or technical systems. But it is vital for a successful energy director to understand how energy management helps the dairy corporation achieves its financial and environmental goals and objectives. Energy director may be a current, new or contracted organization employee. Depending on the size of the corporation, the energy director role can be a full-time position or an addition to other responsibilities. The role of energy director should be clearly defined by senior management to fulfill energy strategy. Skills and competencies can be determined as to corporation size, culture, complexity, or legal requirements or other requirements.

It will be more applicable for dairy corporations to start from part time energy director to form DEMS and as the energy management issue gets bold in the corporation, changes in organizational structure happen and an independent department be established for energy management. However, in general, in a dairy corporation energy director irrespective of other responsibilities has some responsibilities and authorities including but not confined to:

- Establishing, coordinating and directing the overall energy management system.
- Ensuring continuous improvement in DEMS through PDCA cycle utilization.
- Contact point of senior management and corporation body as a management representative.
- Increasing visibility of energy management within the organization.
- Preparing energy policy draft.
- Arrange guidelines in energy for energy performance including energy efficiency, use, consumption, energy intensity.
- Measuring, tracking and evaluating practices and communicate the results.

The person has to be chosen by senior management of the company as management representative, which is responsible to fulfill the stages of energy management system consisting of planning, implementation and operation and also checking and management review base on model presented. In a dairy processing company it can be possible to choose more than one energy director depending on the geographical distribution of plants. The energy directors should directly work with the plant managers to have enough authority for handling the energy issues. For energy director, being subordinate of a person with lower rank than plant manager is not recommended since it decreases energy manager authority. It is crystal clear that one of the reasons for assigning a permanent energy director is to distinguish energy performance in a dairy plant as a strategic issue that have to be considered by all members of the plant from top management to shop floor workers and make energy management as a part of day to day activities. Energy director is the direct responsible for setting goals, tracking progress, and promoting the energy management programs. This job can be defined as a part time of full time job. Initially; it would be more beneficial for a dairy company to assign responsibility to one of the persons who is now responsible of activities like Planning, R&D, or Technical for each production plant. As energy management program gets mature and popular, a full time director with a dedicated team can be recognized. In the following steps, proper structure of energy management department for a dairy processing industry will be discussed.

For an energy director key duties in dairy production business, in addition to the general duties and responsibilities that mentioned above, the following items can be mentioned:

- ✓ General knowledge of dairy processing.
- ✓ Initiate energy assessment project.
- ✓ Assessing the potential value of improved energy management.
- ✓ Creating and leading the energy team in each SBU.
- ✓ Securing sufficient resources to implement strategic energy management
- ✓ Identifying opportunities for improvement and ensuring implementation (including staff training)
- ✓ Measuring, tracking, evaluating, and communicating results
- ✓ Considering dairy processing as a zero defect process that must be secure and safe for human health
- ✓ Considering environmental effects of dairy production processes
- ✓ Participation in corporate social responsibility (CSR) document.

• Initial energy management assessment

Before formally developing an energy management policy, it is essential to carry out an initial energy management assessment in order to find the overall situation of energy management practices in dairy product corporation. In this module energy director will try to identify and document current energy management practices situation with the help of other departments of the company. The purpose of this model is to recognize energy saving opportunities for dairy processes and prepare some information that is useful in strategy development step[13]. To identify, quantify and document some aspects of energy management practices in dairy product companies, energy self- assessment tool, presented by Carbon Trust organization in 2011, illustrates and demonstrates key indicators for energy director and senior management of Dairy Corporation as a quick view of current energy management position. There are several works addressing the energy efficiency measures applicable in dairy industry [14], [15], [16]. But before utilizing these tools, it is important to clarify scope of assessment by energy director and gain formal senior management approval. Some energy management assessment tools have been developed by organizations as ENERGY STAR agency with "ENERGY STAR energy management matrix, and Carbon Trust organization with "Energy management matrix" and also "Energy management assessment (EMA)[17].

It is more suitable to utilize Energy Management Assessment (EMA) tool for dairy corporations which provides a comprehensive self-assessment through scoring the following area and criteria:

Table 1: Energy management assessment areas and criteria

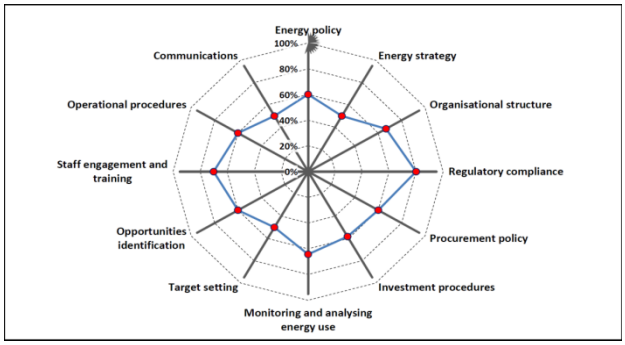
	Energy management area	Criteria
1	Management commitment	Energy policy
		Energy strategy
		Organizational structure
2	Regulatory compliance	
3	Procurement and investment	Procurement policy
		Investment procedures
4	Energyinfo.sys. &identifying opportunities	Monitoring and analyzing energy use
		Target setting
		Opportunities identification
5	Culture and communications	Staff engagement and training
		Operational procedures
		Communications

The proposed tool can be employed to identify areas for improvement and show how balanced your approach to energy management is. Revisiting the self-assessment periodically can help organizations measure their progress.

It is needless to mention that the introduced tool is subjective. For a dairy production corporation it is useful to prepare questionnaire for asking department managers opinions. The average score of manager's opinions can be considered as the energy management assessment actual inputs to review the current conditions.

• Energy Policy Development

Energy policy provides the foundation for setting performance goals and integrity. In this module, corporate and SBU energy policy is identified and documented to gain senior management approval. The reason for publishing a formal energy policy is to demonstrate corporation and SBU commitment to manage energy.



Characteristic	Score Actual	Score Max	% score
Management Commitment	19	32	59%
Energy policy	*6*	*10*	*60%*
Energy strategy	*5*	*10*	*50%*
Organisational structure	*8*	*12*	*67%*
Regulatory Compliance	8	10	80%
Regulatory compliance	*8*	*10*	*80%*
Procurement and Investment	13	22	59%
Procurement policy	*6*	*10*	*60%*
Investment procedures	*7*	*12*	*58%*
Energy information systems & identifying Opportunities	20	34	59%
Monitoring and analysing energy use	*9*	*14*	*64%*
Target setting	*5*	*10*	*50%*
Opportunities identification	*6*	*10*	*60%*
Culture & Communications	18	30	60%
Staff engagement and training	*7*	*10*	*70%*
Operational procedures	*6*	*10*	*60%*
Communications	*5*	*10*	*50%*
GRAND TOTAL	78	128	61%

Figure 5: Energy management assessment - example output

The expected result of policy formulation is to provide our corporation and SBUs with formalized, documented statement of energy policy that links senior management to energy management to improve performance and measurable success.

For a dairy production corporation energy policy must declare that the corporation is committed to continuously reducing energy costs by improving business performance. Through utilizing energy-efficient best practices which are cost-effective, and also commit to reduce corporation energy cost per raw milk intake to gain competitive advantages over other dairy producers in dairy industry. In the corporate energy policy, senior management formally describes that in order to achieve mentioned goals, the corporation will adopt the following best practices:

- ✓ Continuous energy improvement is in support of corporation overall goals, including production improvement, quality, environmental stewardship and safety practices
- ✓ The senior management declares that energy costs are in focus through SBUs lifecycle from very early design to the end.
- ✓ Staff accountability for all actions influencing energy consumption.
- ✓ Establishing required energy efficiency objectives and targets for measuring energy performance improvement
- ✓ Correct monitoring and reporting procedure to recognize corporation performance internally and to authorize external parties.
- ✓ Improving corporation energy performance, productivity and reduction of environmental negative impacts through regular reviews of energy management system.

To measure the results, corporation has to mention energy initial objectives in corporation energy policy. In this part, corporation announces the least overall expected percentage decrease for energy intensity through a specific period of time. It is recommended to use tons of raw milk intake for energy intensity calculation since in dairy production solid materials or other ingredients like sherbets would be added through

production cycle .Moreover dairy producers has different wastage percentage therefore considering production output would deviate our judgments. Senior management set some objectives for a specific duration to show supporting continuous energy improvement program. The corporation energy policy should be drafted by corporate energy director and approved by CEO of corporation. In comply with corporation energy policy, strategic business unit energy policy should be prepared for each SBU by energy director representative and gain the approval of SBU manager. For a dairy SBU energy policy at least following cases has to be mentioned or considered.

SBU management commitment to continuous improvement in performance by reducing costs including energy costs and considering energy performance improvement within SBU operations and work towards energy-efficient best practices declaration to gain competitive advantage over other SBUs in dairy industry. To achieve mentions goals, the SBU has to adopt following best practices:

- ✓ Maintain the strategic alignment of SBU to corporation strategy in energy policies.
- ✓ Utilizing continuous energy improvement program to support SBU goals, including production and safety practices.
- ✓ Ensure that for every decision made in SBU energy performance improvement is considered ,consistent with SBU strategy
- ✓ Assure that all staffs be aware of and accountable for actions influencing energy management in SBU
- ✓ Make sure to bring about energy procurement at the most effective cost and safe method to reduce energy costs, consistent with business goals.
- ✓ Establish energy performance improvement objectives and targets for SBU according the SBU energy policy.
- ✓ Ensure correct monitoring and reporting procedure to recognize SBU performance internally and to authorize external parties.
- ✓ Attempt to improve corporation energy performance, improve productivity and reduce environmental negative impacts through regular review of energy management system in SBU scope.
- ✓ Assess technical and energy practices to establish SBU goals and track progress trends.
- ✓ Provide appropriate suggestion system in SBU to receive ideas and encourage staffs to participate in continuous energy improvement.

To measure the results, each SBU has to mention energy initial objectives in energy policy document. In this part, SBU announces the least overall expected percentage decrease for energy consumption per tons of raw milk intake. Senior management set some objectives for a specific duration to show their support to continuous energy improvement program. Appropriate metric for SBU staff involvement in energy program with SMART characteristics should be established. The energy policy should be drafted by SBU energy director considering the corporate energy policy then it should be also approved by SBU manager. SBU director is responsible to aware all staffs about the energy policy.

2.3 Energy Strategy Development

The third step in the proposed model notifies a significant activity of developing energy strategy. The conventional standards such as ISO 5001 do not have strategic point of view to energy planning and therefore, the objectives and targets that are proposed in these protocols are mainly designed based on technical prospects and energy conservation opportunities rather than being in line with the organizational strategies.

- **Energy Management Team/Department Structure**

Energy management team performs energy management activities across different parts of the organization and ensures integration of best practices. Energy team try to facilitate collective effort of individuals with diverse specialization, knowledge and resources to achieve energy objectives. For successful energy management team role of each member should be clearly defined and everyone understands what is expected. The expected outcome for an energy management team establishment is to form a strong tactical link between senior management strategic guideline defined in energy policy and the body of the corporation.

Since everyday decisions made by people in company affect energy performance, therefore energy management should be integrated to different activities. A useful way to do so is establishing an energy management team or department which is responsible to assure this kind of integrity and consistency. The size of the team will vary depending on the size and geographical location of plants. The proposed structure for energy team and department for a dairy factory is illustrated by Figure 6.

- **Energy management teams: roles and responsibilities**

In this part, roles and responsibilities of all potential members of a dairy production corporation and SBU energy management teams will be discussed.

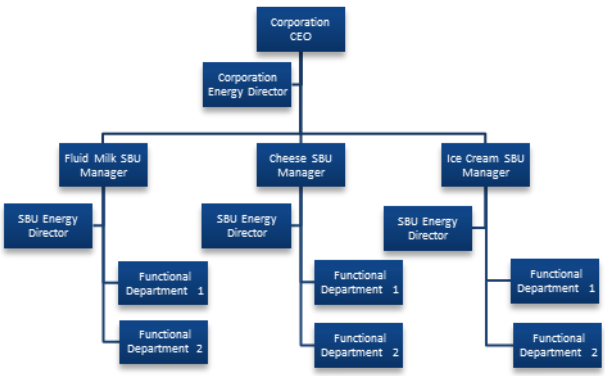


Figure 6: Energy management team, department structure

In dairy industry it would be recommended to consider following roles with related responsibilities as follow:

Corporate energy director: this director functions on a strategic level with the purpose of developing metrics for tracking corporation energy improvement, and build accountability for energy management. It is his responsibility to support and monitor initiatives of SBU energy management teams which are in the scope of energy management

SBU energy director: the SBU energy directors functions on a tactical level. They implement the strategies and metrics agreed upon by the corporate energy director and report progress and success on a regular basis. Where needed, SBU energy director can solicit support and approval for projects and initiatives from the corporate energy director and SBU manager.

- **Identify energy performance**

To identify energy performance in a dairy corporation it is needed to carry out energy analysis to find energy types, consumption, intensity and use in dairy processing activities in detail. This information can be easily gained for primary energy by doing energy bills review. Electricity, Gas, Gasoline are the main primary energy types consumed in dairy industry. To identify performance it would be beneficial to use Sankey charts or process chart along with some classic charts such as Pie & Bar charts. Pareto charts can also be useful. Some examples of charts that can demonstrate the energy profile of corporation are illustrated in Figure 7.

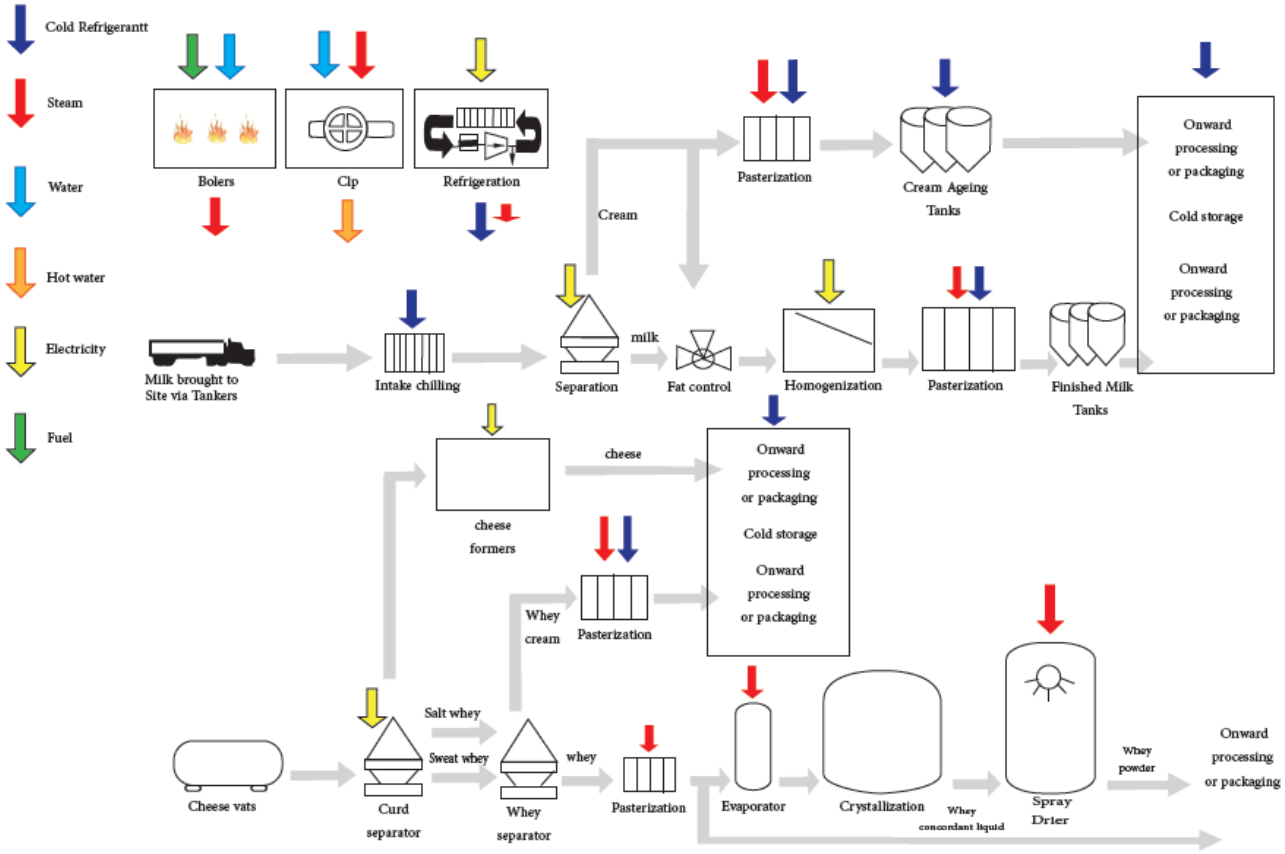


Figure 7: Energy flow diagram

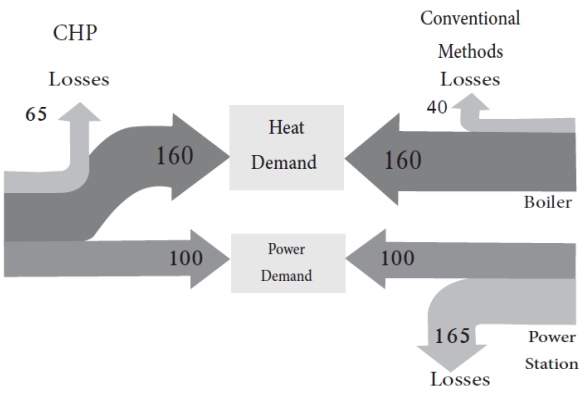


Figure 8: Sankey Chart

Table 2: Tracking Electric Energy Use

Month	KWh/ton of Cheese	Consumption (kWh)	Prod Units Tons Cheese	Billed Demand (kW)	Total Electric Cost
Jan	336	724,416	2156	1086	$43,465
Feb	328	693,064	2113	1086	$41,584
Mar	331	707,678	2138	1086	$42,461
Apr	321	663,507	2067	1086	$39,810
May	312	641,160	2055	1086	$38,470
Jun	317	669,187	2111	1052	$40,151
Jul	316	656,964	2079	1051	$39,418
Aug	312	655,512	2101	1037	$39,331
Sep	309	648,282	2098	1046	$38,897
Oct	311	638,483	2053	1046	$38,309
Nov	310	620,930	2003	1046	$37,256
Dec	307	621,982	2026	1046	$37,319
AVG	318			1063	
5% GOAL	313				-$23,823
TOTAL		7,941,165	25,000		$476,470

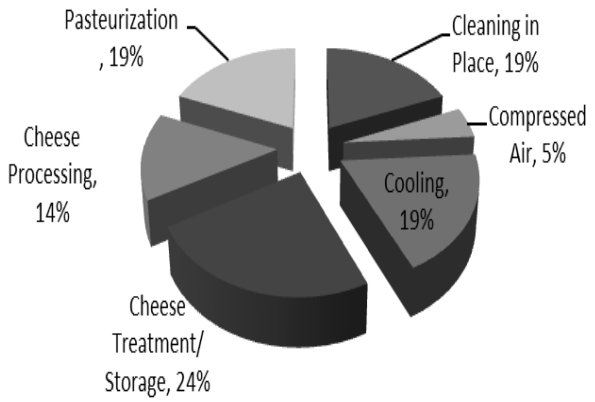


Figure 9: Energy Use Pie Chart

These tools are just some of the methods in order to identify energy performance in a corporation. This evaluation can help us to find the current situation of our corporation and SBUs. These charts can be drawn for each strategic unit (SBU) or product separately. Now it is time for baseline establishment. In this module we first find the energy drivers which effect on energy consumption. In dairy production some drivers which are usually in common between dairy producers are the amount of production, average temperature (technically HDD and CDD) or even quality of raw materials. To establish baseline, it is recommended to utilize regression method to find the best function which shows the relationship between energy consumption and the energy drivers. Figure 10 is a clear sample of regression use illustrating the relationship between electricity uses vs. tons of cheese production as an energy driver in this typical example.

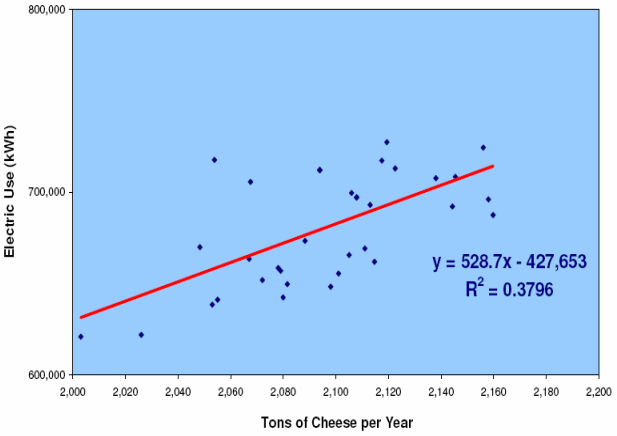


Figure 10: Regression between Electric Use and Cheese Production

The baseline facilitates energy type prediction which is influenced by energy driver. Benchmarking the energy consumption for different energy usages according to energy management handbooks provides the desirable value of energy performance indicators (EnPIs). In this stage, for each EnPI reasonable objectives and targets set and different solutions to reach each target and objective have to be evaluated. Engineering economics methods can be suitable for solution evaluation and choose the most efficient solution to get to the targets.

Selected solution is considered as an action plan that has to be defined as a project with SMART objectives with time table and resource estimation. In this way, energy director can ensure that the selected solution is well organized and achievement toward SBU and corporation goals is guaranteed.

2.4 Implementation, Evaluation and Sustain

In this stage awareness, training and staff motivation are concerned. Undoubtedly, no energy program would be effective if senior management and staffs do not care about involvement in a synergetic pattern.

Communication and documentation establishment are the other vital factors that affect meaningfully on implementation and operation of DEMS in a dairy corporation. Continuous energy performance measuring is in focus in this stage. Data gathered by monitoring systems such software or PLC which are exploited in the previous stage is used to monitor and evaluate the organization energy performance improvement. Besides this, management review and internal and also external audit are tools for evaluating the organization in energy program.

Eventually, sustaining the energy management system by enabling long-range energy planning and also considering organizational culture to institutionalize energy management in all parts of the corporation is the sustainment step for energy management model.

III. Conclusion

Different energy models and frameworks have been developed in recent years in order to help organizations in energy management system utilization. Energy Star, NEEA, DIN EN 16001:2009, Carbon Trust: 2013, I.S.393:2005, ISO 50001:2011 are some of the examples. The requirements of these standards are mainly continuous improvement of energy consumption. Nevertheless, they could barely be applied as a practical tool to comply with a dairy production since the competitive nature and strategic market In this industry imply a tailored model to benefit from the general principles of the current standards while using the strategic management and SBU oriented management in order to be applicable for such industry. In this paper, an applied energy model for dairy processing corporation was presented. The role of energy director and the structure of energy department as well as the duties and responsibilities of each manager in different organizational level have been redesigned considering the strategic units for each product. The continuous improvement framework known as PDCA was considered to develop the six-step model and the tools to measure and implement each step were described. The proposed model which is named Dairy Energy Management System (DEMS) has superiority to the current standards and protocol for a typical dairy factory. Interested researchers are called to develop the similar customized model for the other industries such as steel making, automotive and other key sectors.

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Alireza Mokhtar is currently assistant professor in industrial engineering department at Shiraz University of Technology. He finished his B.Sc, M.Sc. and PhD studies in industrial engineering at Sharif University of technology, Tehran, IR. He is teaching energy management for graduate program and doing research in the field of energy/water resource management. He had several publications in energy management. He is an international trainer of energy management systems certified by the United Nations Industrial Development Organization, UNIDO and have been lead expert and consultant in UNIDO project of energy efficiency in Iranian key sectors. He has implemented EnMS in some cement plants and has performed a project in a dairy production factory located in Shiraz, IR.

Ahmadreza Bahmanpour Khalesi is currently working at Zarrin Ghazal Company as Planning and development manager. He finished his B.Sc, in industrial engineering at Azad University, Shiraz, IR and MBA at Sharif University of technology, Tehran, IR. He is responsible to manage planning and development teams.He is doing research in the field of energy/water resource management in dairy industries. He is an energy management systems auditor accredited by Iran Power Ministry and Standard Organization for energy efficiency in Iranian milk and dairy sector. He is now implementing EnMS in some plants and DEMS in Zarrin Ghazal Company, Shiraz, IR.