

# The Formation Of Organizational Culture In The Aspect Of Lean Management Principles In The Energy Industry

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**Abstract.** Nowadays, the aspect of Lean Management is a very fashionable trend of reorganizing the work of production processes, but also in management processes. It affects the approach to work, its quality, cost-effectiveness and the organization itself. The classic understanding of Lean Management comes from Japan (Toyota Motor Corporation). The aim of Toyoda was to eliminate flaws and wastage in the production process [1]. Ohno, who identified seven types of muda (waste) [2] - widely described in the Lean literature - continued the elimination of waste in the processes. Analyzing the organization and its organizational culture it is clear that the enterprises of the energy sector in Poland are undergoing transformation. Organizational behaviour is increasingly observed to improve the external and internal image of the company. Guidelines and basic elements shaping the organizational culture more and more often for the managerial staff are a basic tool of work. It is important because that, the Liker [3] added the eighth type of *muda* - untapped creativity of employees, understood as the loss of time, ideas, skills, improvements and learning opportunities due to the fact that employees are not involved or do not listen to them. In the energy industry, which is highly specific in its functioning, the simple implementation of the principles and classical understanding of Lean may prove to be ineffective. Especially in the technical and technological aspects, where considering the long investment time, rigid modelling of processes, only few paths of process optimization, it is difficult to effectively change and modify Lean Management or Lean Manufacturing. However, it is not advisable to stop thinking about Lean in the energy industry. According to specialists[4], Lean methodologies and principles should be implemented, especially in the areas of maintenance, production and supervision, logistics, administration or sales and customer service. Transformation of the organizational culture to such a character that has Lean in its foundations needs number of actions. This article will present a concept designed to transform the organizational culture of energy companies in Poland.

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# 1 Introduction

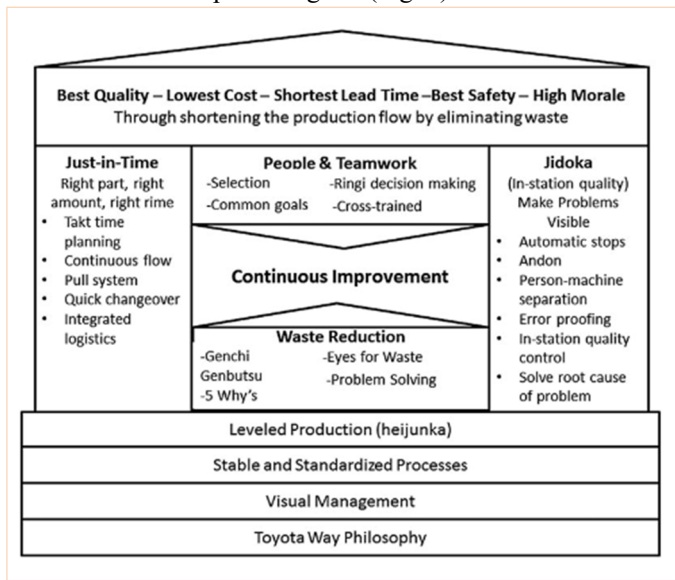
Contemporary enterprises display a steadily growing interest in modern management methods. It stems from being highly competitive and technical and technological progress. In order to prosper, companies are basically forced to perpetually modify their management strategies, and recently also to flexibly respond to the Lean Management tools when optimising the processes in their structures. Currently, the success of an enterprise to a large extent rests on its adaptability to constant changes in the environment. Today, there is no doubt that change is a must. Transformation is necessary in order to survive and be able to grow in a reality of constantly evolving market needs and conditions. Change is the foundation for the development of a modern enterprise. It is inevitable. [5] In the context of the increasingly vital role of organisational culture [6] in companies, change must not be implemented in isolation from basic principles and the specific nature of a given culture.

## 2 Lean management as a key trend in the sphere of management

Lean Management is currently very popular and widely used and discussed in many domains of industry [7].

One of the most important rules of Lean Management includes the slogan: practice is more important than theory. This is the basic principle of the Toyota Production System [8]. The production system (TPS) devised by Toyota Motor Corporation aimed at providing a top-quality product within the shortest time, while generating the lowest costs by eliminating waste.

The TPS is built on two primary principles: Just-in-Time production delivery and jidoka or automation with a human touch. This holistic set of production principles may be visualized by the TPS House conceptual diagram (Fig. 1).



**Fig. 1** Toyota house, Source [9]

The house model is used because a house represents a structural system; it is only strong if the roof, pillars, and the foundation are all strong. The roof represents the core goals of the TPS. The two outer pillars are Just-in-Time production, the most visible and publicized characteristic of TPS and jidoka, which is the practice of never letting a defect pass into the

next station. At the center of the house are people and company culture. The foundation elements include the need for standard, stable, and reliable processes. The idea of heijunka or leveling keeps the foundation of TPS stable and allows for minimum inventory. Every element of the TPS House is critical, but the importance is how each element reinforces the other.[ 9]

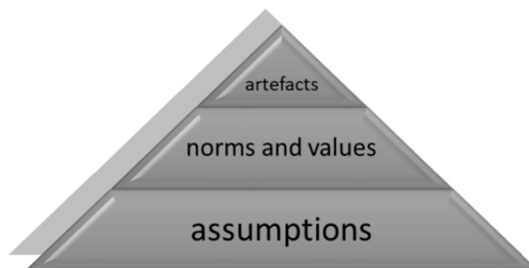
It can therefore be assumed that the Lean Management principles are such guidelines, according to which, enterprises reorganise their work methods and the way they manage their production processes and people. It is crucial to eliminate waste, as waste reduces company efficiency. The basic sources of waste include:

- Overprocessing
- Unnecessary traffic
- Unnecessary transport
- Waiting
- Overproduction
- Defects
- Inventories

Organisational culture lies in the centre of the Toyota Production System “House.” It can therefore be concluded that any change in management processes, be it production management or the holistic management of a company, influences the level and shape of organisational culture.

### **3 Organisational culture as a significant component of an organisation**

The components of organisational culture have been described by numerous scientists and scholars. One of the most popular models is the one originated by the Edgar H. Schein, an American psychologist, who divided culture into three levels. This division is presented in the Fig. 2.



**Fig. 2.** Diagram of organizational culture in the Schein model. Source: Own work based on [10]

The diagram below presents the features and factors affecting the formation of the company’s organisational culture.



**Fig. 3.** Elements which shape organisational culture. Source : Own work based on [11]

As shown above, organisational culture is influenced by a number of factors. The most important ones include national culture and organisational structure. As regards individual industries and the issues concerning the formation of corporate culture, the type of the organization seems to be quite a vital factor. The level and shape of the company's culture will vary depending on the industry in which the company operates and on the market conditions it is facing.

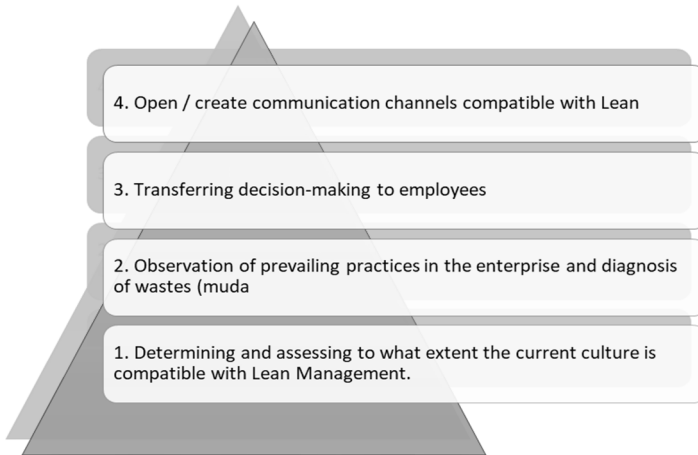
## **4 Shaping the organisational culture as part of lean management implementation**

Organisations that want to adapt and modify their culture to the principles of Lean Management are facing a considerable challenge, since the transformation of organisational culture by no means an easy task.

The mere implementation of Lean tools within the enterprise and its production and technological processes will not make the culture of this enterprise "Lean." The Lean culture should be implemented in all aspects of the company's operations, including the management team.

Many companies remain incognisant of the simple truth that organisational culture is shaped, above all, by managers. Once the management team is aware of this fact, the transformation can be relatively easy.

There are several stages of shaping organisational culture according to the principles of Lean Management (Fig. 4).



**Fig. 4.** The stages of organisational culture development in line with the principles of Lean Management. Source: Own work

The starting point in the transformation process involves the usual analysis of the state of the issue. This is also the case here, where one should start by looking at the current rules, values and beliefs in the company. Essentially, it is safe to say that the analysis according to the Schein model is the beginning. The diagnosed state should be measured against the Lean Management principles. The most crucial step involves the diagnosis of the management team – whether the basic Lean rules, i.e. continuous improvement and mutual respect, have been implemented in the management structures, habits and methods (management culture).

In the second stage, it is important to identify in which waste (muda) is observed. At this point, it would also be necessary to determine how deeply rooted these customs are and whether they persist only among blue-collar workers or also among managers.

The Lean culture involves the empowerment of employees, i.e. giving them authority to decide on the many matters pertaining to their work, which means making them bosses of sorts in their workplace. However, in order to do this, it is necessary to determine whether superiors treat their employees in this manner.

The final and most important thing is to clear or create the channels of communication with employees. Naturally, the underlying goal is to smoothly communicate with employees and ultimately apply the Lean solutions.

The implementation of the Lean culture is also associated with a number of barriers which can seriously hamper the transformation process. These include:

- current negative culture;
- deficiencies in vision-based leadership;
- lack of self-confidence in decision-making;
- focusing on solving the problems of “yesterday” rather than working towards the solutions of “tomorrow” [12].

As for the first impediment, it is clear that the success of the cultural transformation of an enterprise into a Lean culture can be significantly hampered by the manifestations of the existing corporate culture. A negative and unhealthy culture that is focused on conflicts rather than on company goals requires much more effort than a positive culture.

As mentioned in this article, the management team and its decisions are of salient importance. Managers’ leadership can substantially facilitate the process of transforming the culture of their organisation into a Lean one, and so can their confidence in themselves and their decisions.

However, what appears to be crucial is transforming the frame of mind from “yesterday-oriented” to “tomorrow-oriented”. If the prevailing corporate atmosphere is fixed on the past, it will be difficult to implement the visions of company growth and change. Such an attitude shift should occur in regular employees and, most importantly, in the management sphere.

## 5 The selected areas of organisational culture in the aspect of lean management in the energy industry

These days, Lean Management is being deployed in virtually every industry. Due to the specific nature of the energy industry, individual elements of production processes need to be treated in a very specific way during the implementation of Lean Management. The implementation must be paired with the modelling and optimisation of basic processes, due to a high production risk.

It seems that the traditional implementation of Lean Management has no effect in the energy industry. In the case of such specific and inflexible industries (like the mining, metallurgical and chemical industries), the implementation of Lean solutions should go hand in hand with the change in organisational culture. This is due to several aspects. First of all, the enterprises of these industries are large – there are many employees, and they are heavily dispersed across the organisation, plus the employment structure is very wide. Such employees are often specialised in their field, and it is not easy to replace them with someone taken straight from the labour market. There is no shortage of long-term employees with a well-established work culture. Without a complete, holistic and top-down change in the way of thinking about work and organisation, there is no chance that an individual will change their approach to how they complete tasks.

Another aspect indicating the need for comprehensive changes is the wide range of processes completed across an enterprise. Changes should be implemented at every level of the company’s operations, not only within its core business.

**Table 1.** An analysis of the differences in enterprises when implementing the Lean Management methodology

Aspect of business activity	Energy companies	“Traditional” company
Continuity of the technological process	Required	Not required
Stable working conditions	Not present	Present
Diversification of suppliers	Not present	Easy, dictated by the market
Need for specialised staff	Necessary	None
Connection with other entities	Close	None
Necessity to maintain a certain level of production	Required	None

Source: Own work

When analyzing the above differences, one can note that there are many more restrictions in the energy sector. These, in turn, will make the implementation of the Lean elements into organisational culture much more difficult.

There is one final aspect of the energy sector enterprises – changes in management and organisational culture development should be enriched with improving the organisation of the company’s operations, which may bring additional benefits resulting from the synergy effect. Therefore, the implementation of the lean management solutions in the energy industry should be coupled with [4]:

- research on the organisation of work, understood as and carried out via the techniques of observation and verification of the work methods with very low repeatability;
- analysis, verification, and optimisation of the lead time for tasks which are highly time-consuming or have very low or no repeatability;
- accurate and quick calculation of normative (scheduled) times of performing the recommended works (repair and maintenance services);
- introduction of KPIs for key processes and resources, and of Management by Objectives utilising these indicators.

The introduction of KPIs and the widespread use thereof at every level of activity in energy sector enterprises may significantly improve organisational culture, because, in principle, KPIs help companies attain their operational and strategic goals. KPIs are defined with organisational culture in mind, as they provide employees with objective feedback on their work or costs, and this coincides with the Lean Management tenets on smooth communication.

Introducing the principles of Lean Management and adjusting the organisational cultures of energy companies are long-term processes covering a wide range of business areas of such entities. Certain spheres may not be prone to adjustment “right away” and some may need a longer preparation time, if only due to the features from Table 1. However, there are areas where the Lean solutions can be implemented quickly and successfully, and these include: maintenance, production and supervision, logistics, administration, sales, and customer service.

## 6 Conclusions

The business operations of energy companies have a uniquely specific nature, from the core process itself to relationships with the environment. However, like any other “traditionally” operating enterprise, they want to make a profit and be effective. Nowadays, when the Lean Management enters virtually every element of management and constitutes the basis for activity in every area of an enterprise, energy companies also have to adapt to the Lean principles. The article demonstrates the differences to which companies should pay attention in this process, as well as the individual stages of introducing the change. Additionally, the paper focuses on organisational culture, which should be “renamed” to so-called “Lean Management culture.”

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