

## **QM SYSTEM supporting organizational energy- the case of CCE Ltd.**

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### **Abstract**

Upon the case of CCE, an engineering firm (currently 26 employees), an original approach for further development of Quality Management is presented. Engineers of CCE are recognized as “internal customers” of QMS.

The vision to develop our CCE’ QMS is to develop it into a tool for managing Organizational Energy of CCE. The first goal of QMS development is to support creative work environment. Current situation in CCE was measured on objective and subjective manner. Two questioners were designed and applied.

Strategy for realization of the vision was designed in the base of four aspects: 1 Why to change? Opportunities and threats? 2. What are teh solutions? 3. How to implement these solutions? 4. Who has different interest about these changes?

Conclusion is, that the decisive will be the ability to support systematic development of employees and their mutual relations. This is the mission of the servant leader. And! The existence of differently engaged employees is not a pathology, but a big challenge for different approaches.

### **Keywords**

quality management; work environment; organizational energy

## CCE Ltd.

CCE is an engineering firm (currently 26 employees) which provides consulting and commissioning services world-wide. CCE specializes in protection, control and SCADA systems used in generation, transmission and distribution of electricity (figure 1).

CCE's mission is to provide technical requirements for quality and reliable power supply. By supplying sophisticated secondary systems that allow optimal control, safe protection and effective communication, CCE has successfully attained this mission (figure 2).

**Figure 1 Secondary systems made by CCE**



Source: CCE

**Figure 2 CCE projects worldwide**



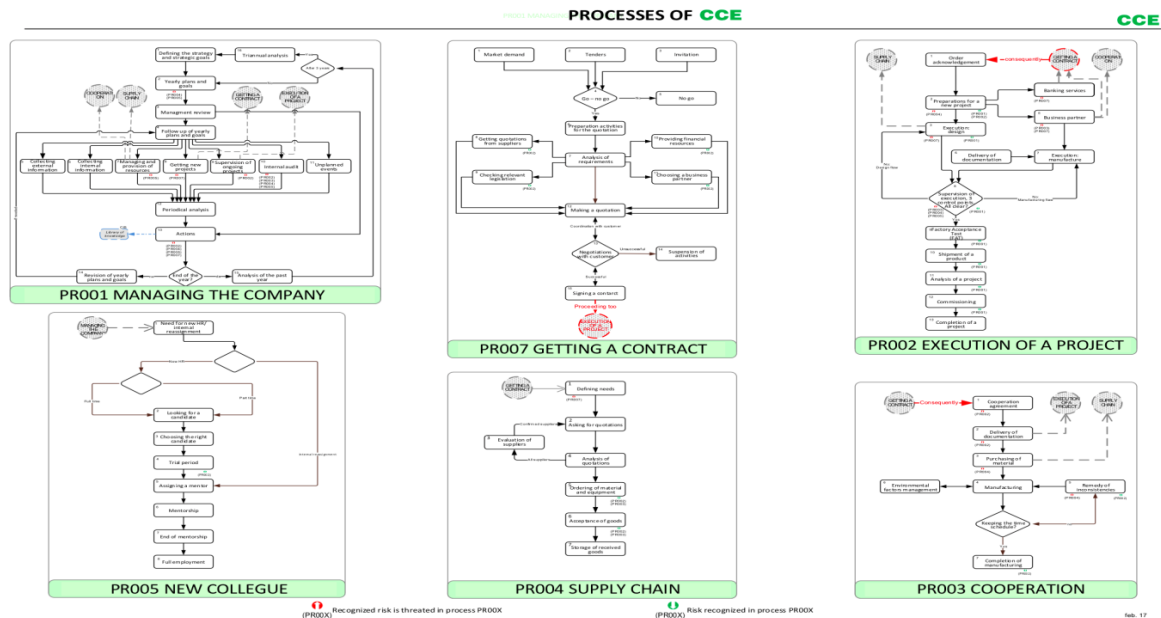
Source: CCE

CCE’s vision is to consolidate its position as one of the leading integrators of secondary systems in the world. CCE will achieve this by strengthening its business connections and partnerships and professional execution of its services.

### The VISION of CCE’s QMS development

We recognized CCE’s engineers as “internal customers” of QMS. Last year we made a picture of CCE’s QMS as a technical drawing representing the network of six interrelated processes: Managing the company, Getting a contract, Execution of project, Cooperation, Supply chain and New colleague. And, we named this picture System of managing the organizational energy of CCE (figure 3). This we find appropriate, because CCE’s engineers build for customers technical systems for managing electrical energy - Control systems for power plant management.

Figure 3 Processes of CCE - System of managing the organizational energy of CCE



I. Rahelić, 2017

Source: CCE

### 2.1. Organizational Energy Quality Management System - OEQMS

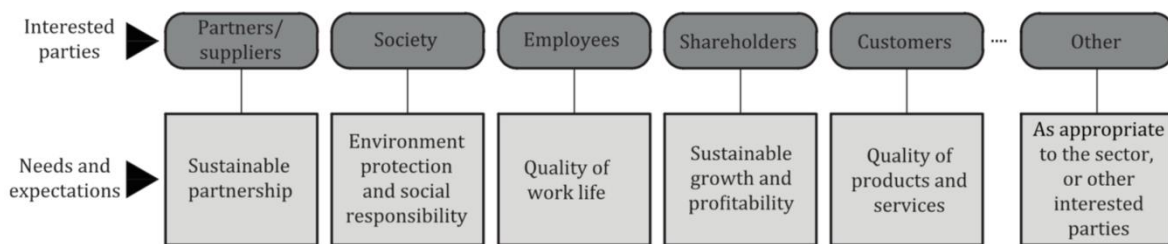
In Verona, last year, we presented the vision to develop QMS of CCE into a tool for managing *Organizational Energy – OE*. Now we call it an *Organizational Energy Quality Management System - OEQMS*.

Let us compare our vision with the development of the idea of QMS in the last decades. This development was supported by the development of ISO 9000 family. To assure not only quality of products and services, but also a sustained success, QMS scope in the last decades expanded

from quality of activities, to quality of processes and finally to quality of organization. ISO 9004:2018 introduces a new concept – Quality of an organization, defined as a degree to which the inherent characteristics of the organization fulfil the needs and expectations of its customers and other relevant interested parties, in order to achieve sustained success.

In figure 4 examples of interested parties and their needs and expectations are presented (ISO 9004:2018). From that we took our focus of needs and expectations of employees, which are here defined as quality of work life.

**Figure 4 Examples of interested parties and their needs and expectations (ISO 9004:2018)**



Source: ISO 9004:2018

## 2.2. Our FIRST GOAL: Creative Work Environment – WE

The first interested party relevant to our vision is the employees and their needs and expectations, which are on figure 4 defined as “Quality of work life”. So, our first goal is to develop our OEQMS as a system supporting work environment for safe and efficient work in which our employees are growing professionally and personally. Let us call it Creative Work Environment - **CWE**.

**OUR FIRST GOAL:**

To develop *Creative Work Environment - CWE*  
which is a function of  
*Organizational Energy Quality Management System – OEQMS*.

Or expressed in formula:

$$\text{CWE} = \mathbf{f}(\text{OEQMS})$$

Let us see, what standard (ISO 9004: 2018) in chapter 9.5.3 says about work environment: “The organization's work environment should encourage productivity, creativity and well-being for the people working in or visiting its premises (e.g. customers, external providers, partners). In addition, depending on its nature, the organization should verify that its work environment

complies with applicable requirements and addresses applicable standards (such as those for environmental and occupancy health and safety management).“

### 2.3. *Work Environment - WE versus Organizational Energy - OE*

We can say, that the direct “product” of management is “Work environment”. That means that, for each employee, management first creates his work position, tasks and conditions needed. But the most important result of management is not a sum of work positions and tasks but the most important result is creation of work environment which enables and supports dynamical interactivity of employees in a culture of “mutual trust and respect”. This dynamic is the essence of organizational energy. On that conclusion, we accepted QM for work environment as our first goal in the direction of organizational energy management.

Changing work environment of a company must become a constant process which is emended into company’s culture. Aside from employment itself work environment represents everything that forms employees’ involvement with work itself. It comprises communication, focus on training and development, work-life balance, recognition of completed work, strong team spirit etc. Those can be seen as building blocks of empowering employees’ experience with current position and/or with current company.

Development of new technologies and globalization itself are driving the amount of changes higher and higher. Shortening distances between people and business as well as the amount of shared information require faster adaptation to new trends. Even if new projections of Moore’s Law forecast the near future saturation of speed at which processing power is doubled (Wiki, 2018), the sheer amount of already developed applications and yet to be delivered breakthroughs in technology will push the amount of changes higher for at least next couple of years. Which calls for constant adaptation to changes.

Due to managerial approach to strategic planning this can be seen as separation of working time into ‘normal time’ when company processes run in ‘normal way’ and extraordinary time when change needs to be carried out (e.g. threatening embargo on dealings with Iran disables collaboration between e European company and an Iranian client so new markets need to be found.)

Hence the work environment splits into normal and abnormal mode when certain techniques to manage change have to take action. On the short run this can be seen as beneficial if skilled management can carry a change smoothly and quickly yet on the long run some employees might start to recognize the abnormal mode of working time and develop an apathy towards it. To worsen things this could render usual change management techniques unsatisfying to deliver the needed change leading into inefficient time consumption and a decrease in competitive advantage of the company. By ignoring the threat of losing employee engagement, we see a huge threat to the level of organizational energy which will be explained in the following chapters.

CCE is a company working across the globe. For a company situated in international environment a fast adaptation to everyday rhythm and needs of global environment provides competitive advantage. By losing the ability to adapt the level of success can be lost. Adizes developed formula to measure success (Adizes, 2014). The formula can be interpreted that adaptation is equal to success.

$$\text{Success} = f(\text{external integration} / \text{internal disintegration})$$

The level of adaptation can be measured by measuring organizational energy. The more are we adapted, the more positive energy there is in organization and less negative energy is present. So, we can say, that QMS result should not be focused only on a current short-term results, but also on a successful adaptation for future results.

Disintegration we see as entropy of organizational energy. We see it as that part of whole organizational energy, which is lost because employees are not adapted to each other or because an employee and his work are not adapted to each other. We can estimate the amount of internal disintegration by using the indicator of the level of negative organizational energy.

In order to obtain internal success quantification, we measured the success of these adaptations from employees' point of view. Two questionnaires were developed. The first one covers Internal Disintegration resulting in work environment (focus on social/emotional components) and the second one explores how QMS empowers employees' work.

Since the results presented in this paper have no prior data we created the questionnaire in a way that enables us to repeat it annually with the intention of monitoring the development of (organizational energy) of the company. The future results will be used for implementation in PDCA cycle. In the next phase of QMS adaptation for organizational energy management we will continue to spread focus also on external integration.

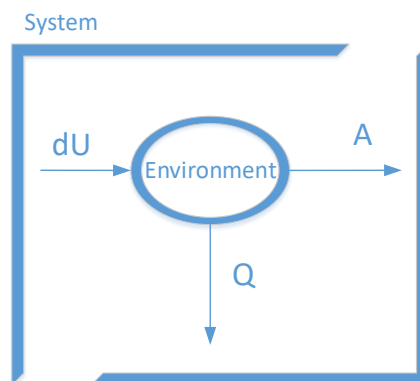
#### 2.4. Organizational Energy – OE

For the purpose of representing organizational energy we made an analogy to the first law of thermodynamics which explains that internal energy of a closed system can neither be created nor destroyed, it can only be transformed (Wikipedia, 2018). Or in other words the internal energy ( $dU$ ) is equal to the amount of heat  $Q$  supplied to the system, minus the amount of work  $W$  done by the system.

$$dU = Q - W$$

Bellow (figure 5) we present our analogy where we define  $dU$  as energy supplied into our work environment. Outcome is total amount of work-done  $A$  that equals to the supplied energy minus losses. The losses are defined as the energy needed to move forward different types of employees.

**Figure 5 Organizational energy and work environment**



Source: Anže Bizjan, 2018



This presented a rigid system in the scope of physical explanation of our universe. However, when it comes to organizational energy, the physical model fails (Autrey, 2018). An individual employee can create or destroy energy thus the total level of energy enclosed in a system can change. There are several methods of increasing individual energy level. We will focus on the idea that the main role of leadership is serving employees to develop themselves (Su, 2017).

## Current situation

To manage our effort, we need to measure what we are trying to improve. Before implementing any changes to our system, we evaluated the measured results of our organization. For that purpose, we made two questionnaires. The first one is about subjective quality of work environment (an indication of organizational energy) and the second one is about the employees' perception of QMS quality. Responses of these two questionnaires gave us a benchmark, so when we will repeat the measurements at some later date, we will see how far we have come.

### 3.1. Measurement of QMS quality

We measured QMS quality using interpretation of the Kano model (Kiauta, Rahelić, Jovanović, 2017) and its two dimensions of quality:

- Objective quality of QMS, defined as fulfilling ISO 9001 requirements, verified by external institution certifying QMS of CCE.
- Subjective quality of QMS, defined as fulfilling needs and expectations of customers of QMS, validated by employees. For validation we used the second questionnaire.

#### 3.1.1. Objective Measurement of QMS Quality

Objective quality of QMS of CCE was verified by Slovenian institute for quality – SIQ and is ISO 9001:2015 certified.

#### 3.1.2. Subjective measurement of QMS quality

Subjective quality of QMS of CCE was validated by employees of CCE by means of the second questionnaire. The results will serve as a benchmark for results in the next years.

There is high awareness of the need and importance of QMS but poor knowledge of our formal documented processes. The level of knowledge of the processes' formal procedures of CCE is a big challenge to be improved. Comments on the assertion “ I know the processes which are marked from PR001-07.” were: I agree (14%), I partially agree (37%), I partially disagree (13%), I disagree (36%). People feel that they have an option of co-creating and shaping the environment they work in. The employees know how to use applications and tools offered to us by the system but we are not using its full potential. One of the most important measurements we got from our survey is the validation of our QM department. The employees recognize that QMS as very important for our organization.

3.2. *Measurement of work environment quality (as indication of organizational energy)*

We decided, that we will evaluate the quality of work environment by measuring the organizational energy of CCE. By using an interpretation of the Kano model, we also identified two dimensions of work environment quality:

- Objective quality of work environment defined as fulfilling needs of CCE employees to continue working in CCE, verified by CCE records, such as absenteeism and loyalty to the company.
- Subjective quality of work environment defined as needs and expectations regarding working environment of CCE validated by employees. For validation we used the first questioner.

3.2.1. *Objective measurement of work environment*

**Table 1 Self-assessment of infrastructure and work environment (ISO 9004:2018, 9.5)**

Level	Maturity level		Conclusion Results/comment
1	Infrastructure and work environment needs are addressed in an informal ad hoc manner.	Yes	Unwritten policy focused on needs of employees of CEO – owner is regularly communicated.
2	Some processes for addressing infrastructure and work environment needs are in place.	Yes	PR001 Managing the company, activities 5 and 6
3	Processes that: address applicable risks and opportunities and that implement activities for the determination, allocation, provision, measurement or monitoring, improvement, maintenance and protection of the infrastructure and work environment needs are in place.	Yes	PR001 Managing the company with activities 12 and 13 which are supported with developed tools for risk management.
4	Processes implementing advanced techniques to improve performance and ensure that maximum efficiency in the use of infrastructure and work environment resources are in place.	Partial	Questionnaires addressing work environment are developed and tested in first application.
	These processes operate in a proactive manner and contribute to the achievement of the organization's objectivities, including the fulfilment of salutatory and regulatory requirements.	X	
5	The way in which infrastructure and the work environment are managed becomes a key contributor in the achievement of desired results.	X	

Source: CCE

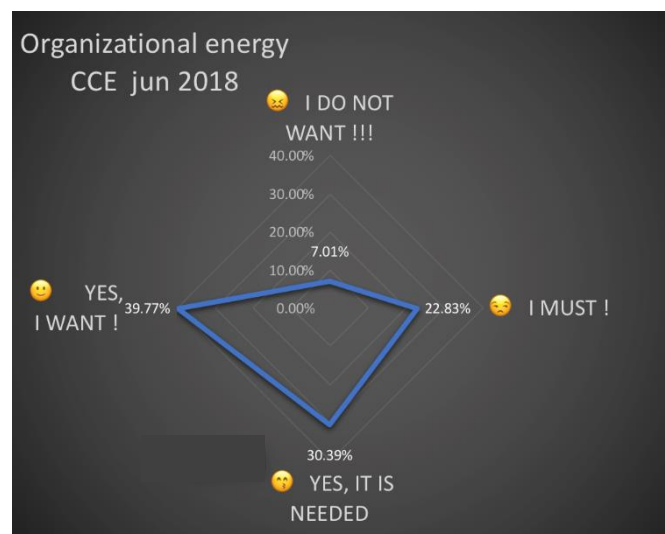


### 3.2.2. Subjective measurement of work environment (as indication of organizational energy)

The current state is good foundation for further development. **Environment:** High creative energy and quality work environment. Relaxed atmosphere. Favourable for implementing innovations. **Task management:** Good task management. Tasks imposed on employees by the QMS are crude and outdated but functional. (Must be quality). The employees accept the established processes and procedures how to achieve something. Support offered by the QMS and organization is good, but has room for improvement. **Relations:** It's not hard to cohabitate. Conflicts are rare, but present and the employees can feel them even if they are not in a direct conflict with someone.

On the basis of answers, we evaluated the amount and quantity of positive and negative organizational energy in CCE (figure 6).

**Figure 6 Organizational energy - CCE June 2018**



Source: CCE

## The strategy to develop OEQMS

We asked ourselves: “What kind of strategy is needed to achieve our vision? What changes are needed and how can they be implemented?”. To successfully implement desired changes, we followed the approach of four questions: a) WHY do we need/want to change; what are the opportunities and threats? b) WHAT are the solutions to manage the threats and to benefit from the opportunities? c) HOW to implement these solutions? e) WHO has important interests related to these changes?

### 4.1. WAY (opportunities and threats)?

In the survey with these two questionnaires we identified opportunities which could become risks if not tackled in time. These fields are: change management, motivation and emotional intelligence skills, bureaucracy balance, mistake management and communication.

#### 4.1.1. Evaluation of results from the first questionnaire about organizational energy

The focus is on the current state of organizational energy and how this state can be an opportunity or even a risk if not managed properly (table 2).

**Table 2 Opportunities and risks related to organizational energy**

Opportunity	Risk
<b>Work environment</b>	
Creating such environment that ensures professional and personal growth.	Neglecting people's needs and wants regarding personal and professional growth.
Proper way of resolving technical and social issues.	Not systemised way of resolving technical and social issues.
Following and using new technologies and ways of achieving our goals	Ignoring new technologies, fresh ideas.
Active further development and implementation of new knowledge and technologies. (constant PDCA cycle).	Sleeping on our trophies.
<b>Task management</b>	
Following the guidelines of organization with support of new communication technologies.	Relying on the old system instead of developing it.
Active dialogue and acknowledgment of feedback.	Ignoring the feedback from the employees who work and use the system.
Knowing the employees and their skills, advantages and disadvantages at delegation of work.	Losing contact with the employees and blind delegation of work
Use of new mediums following the feedback for sharing knowledge and knowledge management.	Relying on the old system instead of developing it.
<b>Relations</b>	
Teambuilding activities, sport activities, good communication. encouraging mutual help.	Not putting any effort in teambuilding activities and expecting that all of the employees will become friends.
Proper way of resolving personal issues and relative small size of the collective (26) allows for us to really know each other's strengths and weaknesses.	Not giving any attention to personal issues/conflicts and ignoring them will lead to disrespect and generally bad environment.
Timely resolving of the issues personally or via mediation with of a third party. Place for open communication.	Sweeping conflicts under the carpet and allowing them to escalate.

Source: CCE

#### 4.1.2. Evaluation of results from the second questionnaire about QMS

Our second questionnaire consists of three segments: General, Processes and Faith in the QMS. The focus is on the current state and how this state can be an opportunity or even a risk if not managed properly (table 3).

**Table 3 Opportunities and risks related to QMS**

Opportunity	Risk
Constant educating and raising awareness of the possibilities and tools that QMS provides, allowing of co-building the system for the best possible experience of the users.	Ignoring feedback and needs of our organization regarding QMS
Public announcement of novelties and improvements to QMS and its tools. Feedback of its users. Using new mediums and technologies to make our system work for us.	Not using new technologies and mediums which are on the market and available to us.
Further development of our processes with more employees involved.	Not educating the employees about the importance of the processes.

Source: CCE

#### 4.2. *WHAT (are the solutions)?*

First, we defined the desired characteristics of creative work environment. CWE is an environment which:

- Ensure that employees' needs are systematically addressed by a process - we already have: PR001 Managing the company with activities 5 and 6
- encourages productivity, creativity and well-being for the people working - we already have: Unwritten policy focused on needs of employees of CEO – owner is regularly communicated; PR001 Managing the company with activity 12
- has validated fulfilment of needs of employees - we already have: PR001 Managing the company with activities 12 and 13 which are supported with developed tools for risk management; Questionnaires addressing work environment are developed and tested in the first application.

#### 4.3. *HOW (to implement solutions)?*

An active engineer with an MBA degree joined to our QM department. This move also serves as a safety feature to ensure that our system will be created on the principles of co-dependence.

##### 4.3.1 *Servant- leader approach*

Emphatical approach going from, how you feel, what is the matter with you, I am worried about you. Sinek (Sinek, 2009) says that we should work towards environment in which employees feel safe enough to raise their hands and say: "I don't know what I am doing." I need help, I made a mistake, I screwed something up or even I am scared... You've given me a job and I haven't been trained to do it...".

And if we succeed in making work environment a safe place for employees we will achieve the second level of Maslow's hierarchy of needs (Maslow, 2014). The third level (figure 7) is love/belonging which we can also achieve by making a change in work environment. We can show employees that we care for them and that they are an important part of the company (covering question: "How do you feel, I care for you..."). In our questionnaire we measured how employees feel that they are part of the company.

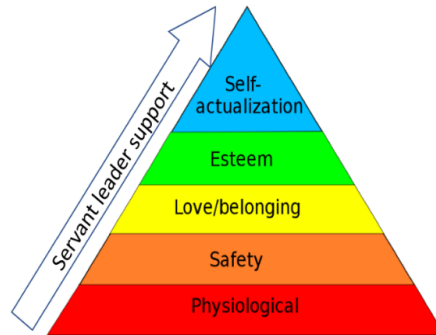
Reaching esteem (the fourth level) is by recognizing each other's contribution and receiving respect from others. All humans have a need to feel respected as well as to have self-esteem and self-respect. Esteem represents the typical human desire to be accepted and valued by others. People often engage in profession to be gain recognition. By improving communication inside the company, we focus on listening to others and also to contribute our ideas. On a long run this raises the awareness between colleagues and generates natural recognition process.

"What a man can be, he must be." This quotation forms the basis of the perceived need for self-actualization (the fifth level). This level of need refers to what a person's full potential is and the realization of that potential. Maslow describes this level as the desire to accomplish everything that one can, to become the most that one can be. Individuals may perceive or focus on this need very specifically. For example, one individual may have a strong desire to become an ideal parent. In another, the desire may be expressed athletically. For others, it may be expressed in paintings, pictures, or inventions.

If we move into professional environment and encourage a person to be self-actualized we need to understand what their strengths are and where their potential lies. And here enters the full potential of leadership in the service for employees. By serving employees with sufficient amount of work, enough free time and challenges in combination of constantly building trust a leader helps employees to reach their potential whatever this might be.

If we want to feel an undying passion for our work, if we want to feel we are contributing to something bigger than ourselves, we all need to know our WHY. (Docker, Mead, Sinek, 2017). Employees are human beings like the rest of us trying to find their way, trying to work in place where they feel that someone cares about them as a human being. Isn't this something that we all want?

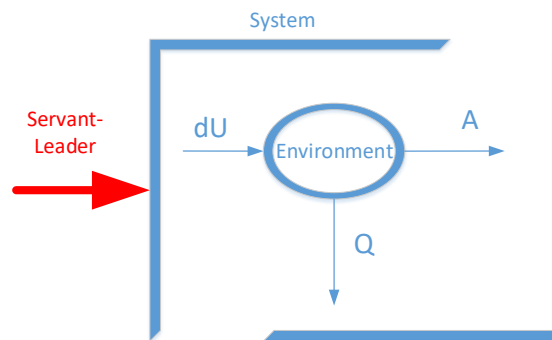
**Figure 7 Maslow's hierarchy of needs with servant leader support**



Source: Anže Bizjan-CCE on the base [https://en.wikipedia.org/wiki/Maslow%27s\\_hierarchy\\_of\\_needs#/media/File:MaslowsHierarchyOfNeeds.svg](https://en.wikipedia.org/wiki/Maslow%27s_hierarchy_of_needs#/media/File:MaslowsHierarchyOfNeeds.svg)

The final outcome is that by smart leadership which is working for the employees and serving them, the total input that person can give (explained in chapter 2.4 Organizational energy) increases. And this leads to overall increase of energy level inside our system as a company (figure 8).

**Figure 8 Servant leadership's influence on Organizational energy**



Source: Anže Bizjan, 2018

#### 4.3.2 Mistake management and communication

When drawing comparison between organizational energy and heat as energy in physics, mistakes and failures could be seen as heat bridges, a phase in the process where organizational energy is lost. Taking in account that mistakes and failures cannot be completely removed from the equation, they are a constant companion to our species. There is even a Latin saying “Errare humanum est (to err is human)” (Wiki, 2018) serving as proof to our mistakes as a human race normal characteristic.

Penalizing all mistakes means denying the most basic human learning technique. It can have a negative effect on employees' morale, creativity and even self-esteem. One of the ways to increase the amount of positive organizational energy, without increasing additionally added energy, is creating a work environment that ensures learning from mistakes and even takes into

account mistakes appearing as the result of innovation practice. Such safe work environment enables personal and professional growth. On the other hand, normal process of learning from mistakes is the base for a professional attitude which does not tolerate repeating the same mistake without learning from it. “Cuiusvis hominis est errare, nullius nisi insipientis in errore perseverare (Anyone can err, but only the fool persists in his fault)” (Wiki, 2018).

The first step in building safe work environment is developing a systematic habit of communication about new knowledge learned from mistakes. The best environment for that is continual building of every employee awareness, that there is no better environment than that of mutual trust and respect (Adizes, 2009). For this, the most important role is played by the leaders.

#### 4.4. *WHO (has important interests related to these changes)?*

Assurance of quality is quite an ungrateful business because it involves a lot of documentation, bureaucracy, which gives us extra work. However, if we make this documentation system in such a manner that it will be helpful and user friendly even bureaucracy can be seen as an opportunity. If we just pile on the documentation for no apparent reason it will become a huge risk.

We are aware of different levels of engagement of employees and that calls for different approaches to differently engaged people.

- Engaged employees need freedom for their innovative agile reactions on opportunities. They need a leader supporting them more with guidelines and less with regulations.
- Disengaged employees still need a safe environment that leads them and takes away most of their responsibility. They need a manager, who determines what and how to do, supporting them more with regulations and less with guidelines.
- Actively disengaged employees need a coach supporting them more with listening than with managing. They need servant leader capable of individual confident approach, empathetic listening and support.

These different needs call for different support from QMS. Every organization has quality management activities, whether they have been formally planned or not. Activities adapted to needs of different engaged employees should have these main focuses:

- For dis-engaged: task definition Internal standards, monitoring, feedback.
- For actively dis-engaged: Communication 1:1 with effort to involve them and to take into account their remarks if applicable.
- For engaged: Vision, values, Guidelines, support

## 5. CONCLUSION

What will be the role of quality management in organizations influenced by the 4. Industrial revolution? What would be a good result in the fight of “man or machine (Martin, 2017)?

We can say, that serving to different needs of engaged, disengaged and actively disengaged employees means following the three values of the French revolution: liberty, equality and fraternity. For that, we believe that time is for servant leader, who will be capable of acting in three different approaches:

- as manager to give equality to disengaged employees safety with tasks and standards,
- as coach to give fraternity to actively disengaged employees with esteem in communication,

- as leader to give freedom to engaged employees with vision, values and confidence.

The most important in our opinion is love (belonging) which is needed to grow from equality to fraternity level. So, for reaching the goal of organizational energy management it would be helpful to have in mind Khalil Gibran's (Gibran, 1923) interpretation of WORK:

“Work is love, which have become visible.”

For that purpose, in the humans' fight with machines, love should be the fundamental element of emerging culture. And if we follow another wise man Viktor Frankl (Frankl, 2006) we can instead of love, use another crucial term – purpose.

In the end, we can bring to our awareness also the quality guru William Edwards Deming (Deming, 1990) who always promoted awareness of the three purposes:

“We are here to learn, to have fun and to make a difference.”

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