

# Factors influencing the success of Continuous Improvement

A case study assessing the peculiarity of key success factors after the implementation and realization of pilot improvement projects in an organization

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"Master of Business Administration"

supervised by  
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## Affidavit

I, **BERND KÖGLER**, hereby declare

1. that I am the sole author of the present Master's Thesis, "FACTORS INFLUENCING THE SUCCESS OF CONTINUOUS IMPROVEMENT - A CASE STUDY ASSESSING THE PECULIARITY OF KEY SUCCESS FACTORS AFTER THE IMPLEMENTATION AND REALIZATION OF PILOT IMPROVEMENT PROJECTS IN AN ORGANIZATION", 79 pages, bound, and that I have not used any source or tool other than those referenced or any other illicit aid or tool, and
2. that I have not prior to this date submitted this Master's Thesis as an examination paper in any form in Austria or abroad.

Vienna, 13.09.2017

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Signature

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Also, my thanks go to Oliver Jöbstl and Harald Strommer who supported the implementation of CIP in our organization and were always constructive partners in respect of my personal development as a mentor of CIP at Pankl.

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## ABSTRACT

KAIZEN, an old Japanese philosophy describing the infinitive process of modifying or changing something for the better, inherited and adopted by the rest of the world, and in the present days known as Continuous Improvement Process (CIP) has become an essential and important standard procedure in the automotive industry. The need for continuous improvement is strongly driven by the market economy, competition and by the customers using the products or services delivered. As continuous improvement needs to become a standard recurring procedure in an organization, driven mainly by the employed staff, the value of the results and the achievement of infinite existence are heavily dependent on the intrinsic self-motivation of the employees. This thesis concentrates within the theoretical part on the analysis of determining factors which need to be in place to generate a useful breeding ground for the establishment of a sufficient improvement system within an organization to become a CIP-center of excellence. In this context analysis is done on the factors of company philosophy, personal factors of influence, leadership factors and cultural aspects.

Subsequently, the current state on those CIP elements of a company is measured by the results generated in a survey against these defined key success factors of a center of excellence organization by the peculiarity of certain characteristics which are of significant importance. The main focus is set on the elements of motivation, leadership, teamwork, cultural aspects, customer orientation, the value of targets, training and coaching, freedom to act and a suitable system of reward and feedback.

Whether the implementation of pilot CIP-projects, which were already completed in a certain department of the investigated organization, created a significant difference in the manifestation of those factors and how managers reflect the readiness for CIP implementation in their opinion against the view of their employees is also derived in greater detail within the practical part. The thesis is concluded by an assessment of the strengths and weaknesses of the observed organization against the key success factors of CIP. This result finally leads to suggestions for activities that could generate general mindset changes which would enable an improvement from the current status towards an environment that encourages all involved employees to perceive and care about continuous improvement in their daily work routine in future.

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## 1 INTRODUCTION

The Continuous Improvement Process (CIP) is one of the key success factors in a production company driving both the automotive original equipment manufacturers (OEM) and the companies delivering into the automotive industry's supply pyramid as tier-n contractor. The idea behind CIP, contrary to an innovation or re-engineering attempt, is that the generated improvement happens gradually and continuously (Japan Human Relations Association, 1995). It should be managed by the employees themselves using the method and structure of the Deming cycle: **Plan**, **Do**, **Check**, **Act** (PDCA) (Gorecki, et al., 2013). In conjunction with the customer demand and target-performance comparison, continuous improvement in both production and service delivering companies can be realized. (Evans, et al., 2009).

Seen from a systemic point of view, organizations in general tend to stay in a stable condition; they are structurally conservative and they are individual "inertial systems". The demand of continuous improvement stands in clear conflict to this behavior. Therefore the success of the continuous improvement process requires constant effort, commitment and a good way of internal communication. Otherwise results will not be implemented and institutionalized; the whole process falls asleep and will therefore never lead to sustainable success. In other words CIP needs to be kept alive with the effort of motivation through active social leadership, time and money<sup>1</sup>. Continuous improvement also encourages flexibility which is an essential quality feature to be able to adapt an organization to a changed market situation. An organization either only changes if an external occasion exists, or continuously just by its internal attitude. If an organization does not realize that and how boundary conditions are changing it cannot fulfill its purpose anymore and will die sooner or later<sup>2</sup>.

The general **objective** of this work is to understand the necessary boundary conditions for a successful CIP realization and preservation followed by the assessment of the presence of them in an organization which was potentially influenced by pilot CIP-projects conducted lately in one of its profit-centers.

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<sup>1</sup> [https://de.wikipedia.org/wiki/Kontinuierlicher\\_Verbesserungsprozess](https://de.wikipedia.org/wiki/Kontinuierlicher_Verbesserungsprozess) - accessed on May 14, 2017

<sup>2</sup> [https://de.wikipedia.org/wiki/Kontinuierlicher\\_Verbesserungsprozess](https://de.wikipedia.org/wiki/Kontinuierlicher_Verbesserungsprozess) - accessed on May 14, 2017

The first target of this thesis is to measure which are the relevant elements of a successful CIP and to which grade they are already present within the whole organization of Pankl Systems Austria GmbH (in the following named Pankl) with the method of a employee survey. Second is the assessment of generated influences in these features in the department of series connecting-rod production where pilot-projects were already implemented, against the other departments at Pankl with a still unaffected and unchanged culture.

Subsequently the topic-related answers of managers are compared with those of their employees to derive whether the whole organization is already effected by and prepared for the implementation or upgrading of CIP to the next level. Finally the conclusion from the combined results is derived.

The ***hypothesis*** of this work is that the already concluded implementation of CIP projects in a part of an existing organization caused a measurable difference compared to the still unaffected divisions and by that generated positive influencing effects among the necessary conditions and cultural aspects which enable and cause the long term success of CIP in the entire company.

This master thesis is divided into a theoretical and a practical part. After the transfer of general information on continuous improvement in chapter two, the following chapter three is basically focusing on the description of the most important key elements which are essential to generate a good breeding ground for the sustainable success of continuous improvement within an organization. Following this information the research assignment is described in chapter four based on the actual company's boundary conditions. This concludes the theoretical part of this work.

In the practical part starting at chapter five, the necessary boundary requirements are assessed against their existence and peculiarity in a company after the realization of CIP pilot projects through the analysis of data generated by an online survey. This chapter is closed with a short executive summary of the gained results. The work is continued with chapter six which evaluates the gathered results of the overall preparedness for CIP, assesses strengths and weaknesses at Pankl and finally shows possible opportunities to improve. It is closed with the final conclusion described in chapter seven.

## 2 THE PROCESS OF CONTINUOUS IMPROVEMENT (CIP)

A process (from Latin *procedere* = move forwards) can be described as a progress or development or generally as a system of flow or actions<sup>3</sup>. In business the process describes the steps which are necessary to generate a desired output from a defined input. This association leads to the necessity of an input, a trigger or stimulator for the initiation of the process as well as an effect caused by activities such as those associated with continuous improvement as an output or desired result which of course must be measurable against a defined target or desired post condition (Richter von Hagen, et al., 2004).

### 2.1 Terminology and history of CIP

Coming from the Japanese life- and work philosophy the word “KAIZEN” is a composition of the syllables “KAI” (改) which stands for “modification or change” and “ZEN” (善) meaning “to the better”. The Japanese understand the word Kaizen as a symbol which comprises the daily fights and efforts happening at a workstation and the way we try to handle and deal with them (Japan Human Relations Association, 1995). As the central pursuit of eternal alteration is inherent to Japanese philosophy, it is not seen as a technical invention itself and there is not an inventor who is or was accountable for the development and introduction of KAIZEN in the field of the automotive industry.

After losing World War 2 in the year 1945, the Japanese economy was in a disastrous state. New labor and employment laws created by American occupying forces brought workers into an invigorated position at the negotiations of improved working conditions. Trade unions took advantage of this situation and negotiated the equalization of blue and white collar as well as a basic restriction for corporate management to lay off employees. Unions also achieved the obligatory payout of part of the generated profit to the employees paid as a bonus in addition to their base salary<sup>4</sup>. Japan at that time also did not have any migrant workers or minority groups available who would be willing or forced to work for less money or under poor working conditions because of their limited prospects on the employment market (Womack, 1990). The combination of the above mentioned social and legal aspects led to higher manufacturing costs, which together with the overall bad economic situation brought Japanese companies into deep crisis.

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<sup>3</sup> <https://de.wikipedia.org/wiki/Prozess> - accessed on May 17, 2017

<sup>4</sup> <https://de.wikipedia.org/wiki/Kaizen> - accessed on May 17, 2017

As a consequence of the above mentioned facts, Toyota at that time wanted to make a quarter of its total number of employees redundant, but only after a hard fight and long term negotiation with the union labor, the family Toyota agreed upon a compromise which is still the basis for the relationship between employer and employee in the Japanese automotive industry today<sup>5</sup>.

One fourth of the employees were fired but the remaining workforce did receive two guarantees: a life-long job at Toyota plus salaries arranged by the length of their employment and not based on the job title or function. The agreement did also include a bonus payment depending on the company profit (Womack, 1990).

This stipulation resulted in a change of the wages expenditures from variable or short term fixed cost into real fixed cost which were even more important than machine costs that could be long-term depreciated and scrapped. The companies' human capital of a single person was therefore used highly profitably, for a time-frame of forty years or more. Hence, it was necessary to continuously improve the skills, knowledge and experience of these workers (Womack, 1990). Improved workforce can generate higher enterprise profit on the employer side but also result in higher bonus payments to the employees; the circle of optimization is closed and yet to be continued<sup>6</sup>.

Optimizations conducted within the Kaizen process are including but not limited to the reduction of waste within the manufacturing process itself, the sub-optimal mode of operation, improved work space cleanliness, refined system organization and optimized ergonomics (5S topics). Whether the definition of activities related to continuous improvement is rather slim and, for example, only focused on new ideas generated by the employees or somewhat broader, including also activities resulting off process deviations or budgeted targets is either part of the overall company's culture or determined by the opinion of the operations management responsible (Buhiyan, et al., 2005).

Improvements are continuously performed in incremental selective steps with active participation of both workers and line managers. Kaizen based work is not leading to fast skyrocket improvements as for instance those improvements generated by straight forward innovation (re-engineering) but shows a continuous step by step perfection of a reliable, proven and tested product or process (Gorecki, et al., 2013).

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<sup>5</sup> <https://de.wikipedia.org/wiki/Kaizen> - accessed on May 17, 2017

<sup>6</sup> <https://de.wikipedia.org/wiki/Kaizen> - accessed on May 17, 2017

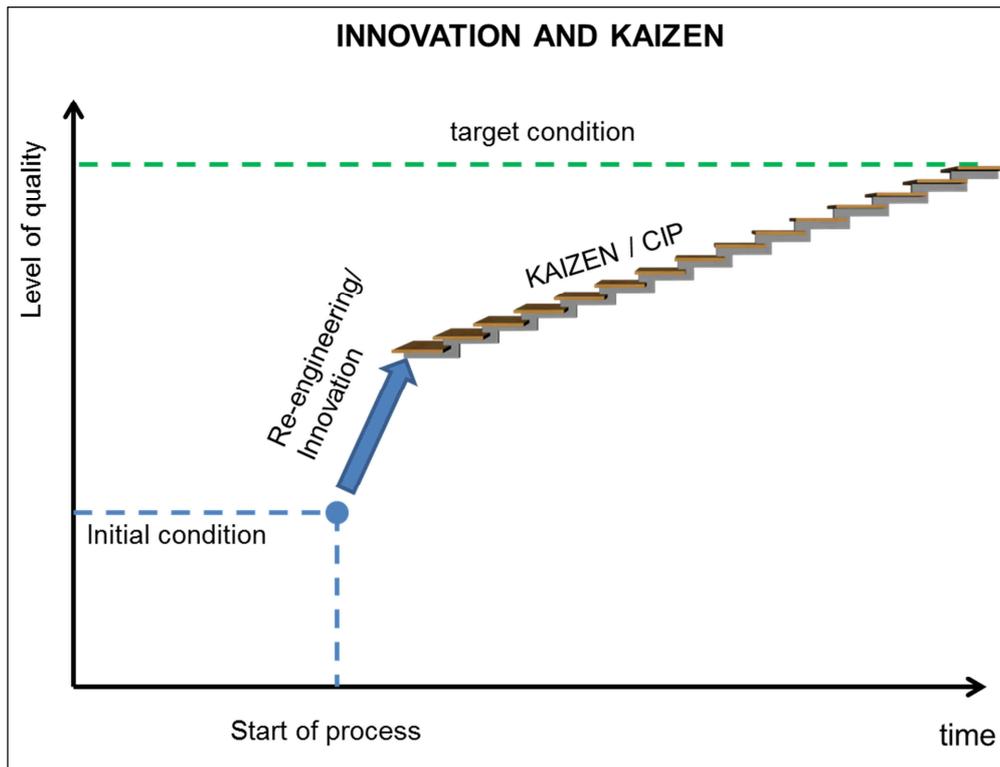


Figure 1: Comparison of re-engineering and CIP

Only innovation can generate an unprecedented progress and devastating diversification for a corporation, but it will not grant long term prosperity as a stand-alone solution no matter how big the initially gained advance is. The momentum of success can only be kept alive with a two-track combination of significant innovations coupled with incremental improvements. With each single enhancement step created, a new standard is defined and institutionalized and the level of quality is increased continuously (Japan Human Relations Association, 1995).

The assumption of economic success through the application of the Kaizen philosophy is that the production of a product or delivery of a service at a superior level of quality leads to a maximization of the customer satisfaction on a long term basis. This persuasion ensures a continuous search of possible improvements on all levels of hierarchy within an organization which has to be settled as one of the core processes of a corporation using the Kaizen methodology. In this respect, Kaizen also leads to a higher level of personal identification of all employees with their employer ensuring an improvement of the overall competitiveness of the corporation (Japan Human Relations Association, 1995).

In Japan, the Toyota motor company as first practitioner within the automotive industry introduced the thoughts and activities related to Kaizen into their production system (TPS – Toyota production system) in the late 1970's together with the

activities of the systematic workplace organization method (5S), Just In Time production (JIT) and the idea of Kanban (pull system of material). This led to an overwhelming advantage against their competitors in respect of productivity, reduction of failure, repair cost and decrease of the working capital which all together at the end made Toyota the largest and most profitable Original Equipment Manufacturer (OEM) of the world in the first quarter of 2007 (Ohno, 1993).

The five key principles of the “Toyota way” were (Bicheno, et al., 2009):

- **Challenge** – giving employees a long term vision which will add value to the business
- **Kaizen** – continuous improvement
- **Genchi Genbutsu** – “Go and see” meaning go to the source where the problem occurs
- **Respect** – building mutual trust based on accepted responsibilities and comprehension of others
- **Teamwork** – share opportunities and maximize team performance

In 1984 the Toyota production system with all its features was introduced in the U.S. through the joint venture of Toyota and General Motors (GM) under the New United Motor Manufacturing Inc. (NUMMI) and became known as the system of lean manufacturing (Womack, 1990). The ideas and concept of Kaizen was subsequently inherited and adopted by the western economy into a management system which is nowadays commonly known as the Continuous Improvement Process (CIP). In Europe it is mainly focusing on the improvement of the produced quality and reduction of cost and is therefore seen as an integral content of the Total Quality Management system (TQM) (Japan Human Relations Association, 1995).

## 2.2 CIP Philosophy

As an adoption of Kaizen, CIP in the western world went historically through a development process. In the early years it was focused solely on following a precise methodology and tried to operate on voluntary ideas created by staff-members in an institutionalized frame with standard procedures (check → realize or dismiss → reward). In the recent years the process is used less methodically but rather became a central part of the companies’ philosophy, integrated in the individual enterprise culture. A main feature in this respect is that improvements are not seen primarily or solely as rationalization activities but also include the support and the acknowledgement of lots of small ideas with minor financial effect which build the

basis for motivation and participation in CIP (Menzel, 2010). The eight principles of a modern CIP philosophy are described in the following figure 2.

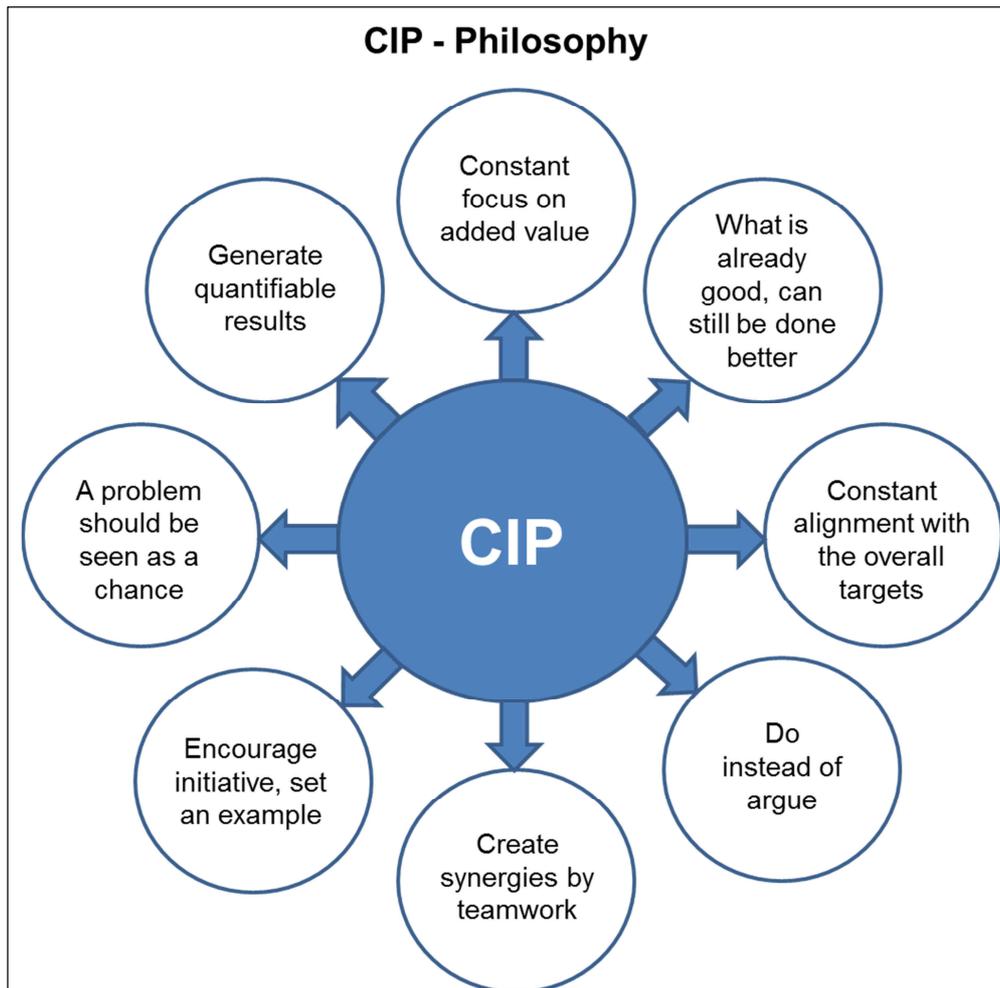


Figure 2: Eight principles of CIP philosophy (translated and slightly modified), (Menzel, 2010)

Starting at the 12 o'clock position of the figure and following all aspects in a clockwise sequence, the first aspect is the constant focus on value added, as it would make no sense to create ideas which do not have a positive effect or influence on the value creation process of an organization. The personal attitude that there is nothing, even if already on a high level of performance that cannot be improved any further reflects the sufficient breeding ground for CIP and ensures that potential improvements will be continuously identified and realized. An important aspect in this respect is also to be encouraged to act and use synergies by working together in a team, see every problem as a chance to become better and generate results instead of losing efficiency with endless discussions about what should be improved. Of course, all activities generated out of these ideas at the end need to be quantified and evaluated against the overall targets of an enterprise.

With the application of continuous improvement, work is transformed into a creative function and manpower is converted into contribution (Witt, et al., 2010).

Finally, as the long-term target of absolute perfection can only be understood as an asymptotic function, the realization in its entirety can never be completely fulfilled. To aspire hereafter therefore is both exciting and frustrating at the same time.

### 2.3 The project cycle in Continuous Improvement

So far we have learned about the history and philosophical aspects in continuous improvement, now let's have a closer look on how successful CIP-projects should be structured, initiated, realized and finally concluded.

As already mentioned in the introduction of this work, activities in continuous improvement should follow a certain structure which helps the participants to solve the problem, they are confronted with, in the best efficient and solution-oriented way.

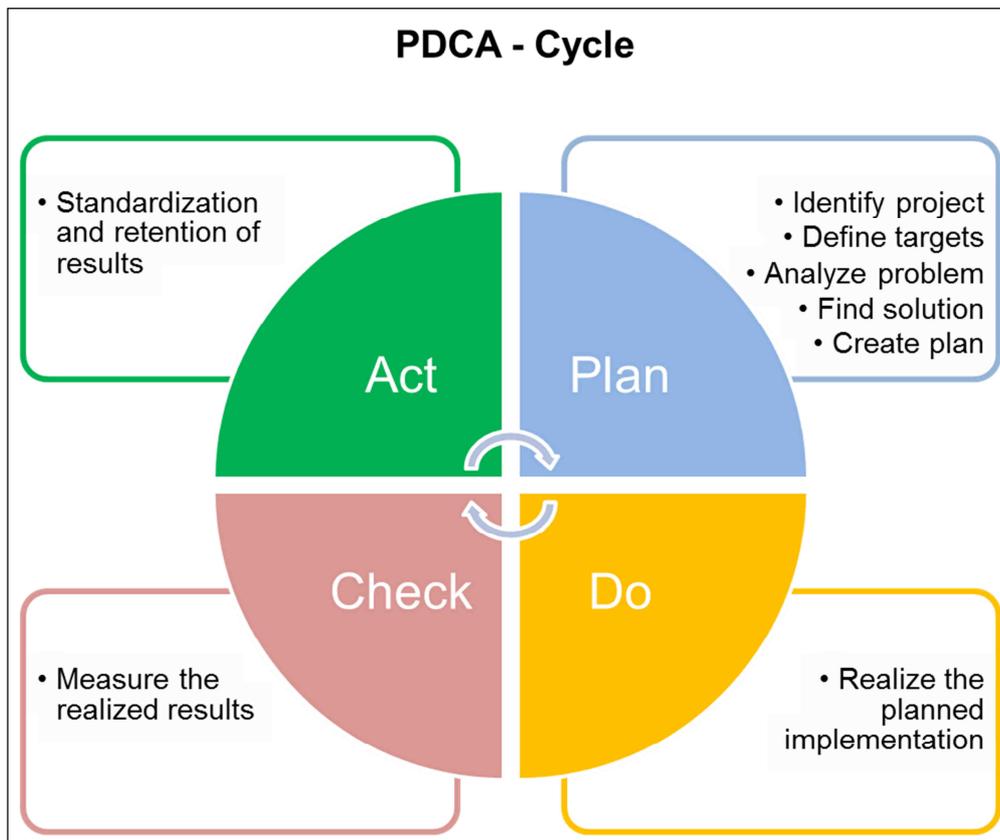


Figure 3: PDCA – Cycle (translated and slightly modified), (Witt, et al., 2010)

The four sequential steps of this re-occurring process (PDCA or Deming-cycle) start with the **planning-phase (P)** which includes the distinct project description, followed by the definition of targets, a detailed analysis of the selected problem, detection of a sophisticated solution and finally the creation of a plan to realize and introduce the

found answer to the problem. In terms of a good target setting process, the project should be described as clearly as possible and it should be obvious for all team members why exactly the topic was chosen. Once the project content is defined, the topic related objectives have to be determined clearly to ensure that everyone is aware of what exactly needs to be achieved and when. This specifies the common direction of the following team activities. The third step in the planning phase is the detailed analysis of the problem in which the participants must generate a common picture and assessment of the initial situation. Applied supporting analysis tools can be among others the brainstorming methodology, a Pareto – analysis, the 5 why method or an Ishikawa diagram (Oakland, 2014), (Bicheno, et al., 2009). Now that the root cause of the problem is clear, the discovery of a proper improvement for the problem to be solved is the subsequent activity for the CIP team. Criteria for the selection of the best possible solution are for example the provided monetary budget, the ability of the team to realize the solution by them, possible risks generated by the new operating principle and so on. Finally the team needs to create a plan on how and when the realization should take place, who is responsible for what and which investments are required. This project plan will be the basis for the project sponsor to make the formal “go” decision for the realization of the planned activities (de Groot, et al., 2008).

Once the planning phase is completed and the team is assigned with the project execution, the CIP-team proceeds to the **do-phase (D)**, the realization of the implementation plan in which the team members themselves control the progress by reference of the project time schedule and intervene in case of delays or set-backs (de Groot, et al., 2008).

The subsequent **check-phase (C)** is designed to measure the realized results against the defined targets described within the planning phase (de Groot, et al., 2008).

Finally, as the most important thing is not the unique single realization of a correction, but the preservation of realized corrective and improving actions, the last step is the **act-phase (A)** to ensure that the documented implementation of what has been improved within an organization is complied, accepted and sustained as the new standard (de Groot, et al., 2008).

So far we have looked into the theoretical and philosophical aspects of Kaizen and evaluated the CIP project structure. As we can already see, the responsible CIP employees are challenged to develop themselves in respect of their mental attitude

as well as personal qualification and skills. They also need to adopt towards a questioning and method oriented way of working, expand their ability to work in a team and generate the competence to act in an autonomous and self-responsible style. On the other hand, also managers need to undergo a transition from the current status quo. Potential team members have to be evaluated in respect of their suitability, they need to actively promote the thoughts behind CIP, care substantially about the personal motivation of the CIP team, give a higher level of freedom to act and assign part of their own responsibility with the decision made to implement continuous improvement in an organization. Because of the novelty of the above mentioned requirements it is advisable to consult an external expert with the required level of competence and experience to support the launch (Witt, et al., 2010).

In the following chapter we will take a look at the most important element of CIP which can potentially influence the mindset and behavior of people and create motivation by possible adaptations in the company's organization and its culture.

### 3 KEY ELEMENTS FOR A SUCCESSFUL CIP AS PART OF THE CULTURE

The purpose of CIP as described in the previous chapter is to create new ideas, discuss them and make them transparent. Furthermore those ideas should be realized in products (product innovation), processes should be designed or executed in a more efficient form (process innovation) and infrastructure as well as culture to support CIP should be provided in an optimum way. The aim of the systematic management of ideas is that each participant on every hierarchical level not only recognizes imperfections and potential for improvements, but also works on their solutions and the realization of optimizations. Of course continuous improvement as a stand-alone process is not granting prosperity but it is an important component in the overall and long term economic success of a company. The benefit of this instrument is perfectly obvious: the creativity potential is fully exploited; problems are solved where they occur, complaints are reduced and a boost of the overall work-satisfaction will be generated. This altogether finally leads to an enhancement in customer satisfaction, which is the precondition of entrepreneurial triumph (Frey D., 2000).

The question to be answered in this context is which kind of determining factors need to be in place to generate a useful breeding ground for the establishment of a sufficient improvement system within an organization to become a CIP-center of excellence with the basic knowledge that

- the continuous improvement process is always customer- and target oriented
- solving a problem can be done the best way by the involvement of affected parties (the employees)
- solving of problems should be practiced where they occur (“Genchi Genbutsu”)
- the organization will self-adapt to the challenges and demands in small steps
- with little (cost) effort, significant optimizations and economic results can be realized
- a suitable way of leadership and resulting motivation of the people involved is key and crucial for the long term success and sustainability

In this chapter we will have a close look at the following elements which have a potential effect on the creation of the boundary conditions required to enable a successful realization of continuous improvement:

1. Company philosophy and self-conception of involved people
2. Personal factors of influence

3. Leadership influence
4. Cultural aspects

This exploration builds the theoretical core of this thesis which will subsequently be used as the initial basis for the practical part where most of these elements will be assessed on their presence and peculiarity within the selected company.

### **3.1 Company philosophy and self-conception of involved people**

The first requirement is a suitable company philosophy (continuous reflection) and self-conception of the participants. By continuous reflection is meant that a guiding principle exists within an organization which supports the demand and encouragement of the continuous creation of new ideas and the central statement that there is nothing that cannot be improved any further.

The cognition of the necessity of an equally entitled role of managers and their employees with the line-manager of high emotional intelligence acting rather in the role of a coach and mentor who lets others grow is essential. On the other hand also the staff-members need to step out of their role as solely being recipients of orders into the function of mature, responsible and autonomous entrepreneurs in their enterprise. This means that they have to reflect whether they themselves work as effective as they would if she or he were the owner of the same company. Decisive however in this context is that the behavior of all employees is affected by the way top-managers as well as all managers of lower hierarchy behave and whether they act as role models with their support and acknowledgement in the process of continuous improvement. This transformation in culture needs to start in the heads of all employees and managers, otherwise the change in process will be doomed to fail (Frey D., 2000)

### **3.2 Personal factors of influence**

In the content of improvement and innovation processes, the knowledge of psychology (science of experience and behavior) was considered too little in the past although it contributes crucially to the advancement. Applied to the continuous improvement this means that besides personal variables such as motivation and basic mental attitude, also environmental factors like the corporate culture and management behavior play an essential role when it comes to the sense of detecting problems and creating and realizing proper solutions for them. Promoting factors in this context are for example personal support, acknowledgement, freedom to act and organizational fairness (Frey D., 2006).

**Personality traits** of innovative people among others are openness for new experiences, ambitiousness and the talent to generate different solutions for one and the same problem (divergent thinking) (Barron, 1981). The factors of performance orientation, initiative thinking and acting, as well as the ability to collaborate in a team should be looked at in detail when picking participants for improvement projects.

The **motivation** to behave in a creative and innovative way is primarily influenced by immaterial aspects, it is intrinsic. The term intrinsic describes the attempt to do something on his/her own will simply for the fun of it, to meet individual interests or because it represents a personal challenge (Amabile, 1996). The influence of extrinsic motivators on personal motivation and innovative behavior, such as monetary reward, image and career promotion, is inconsistent and pending on multiple factors such as composition of the reward, company culture (Vargic, 2016) and the financial situation of the effected people (Witt, et al., 2010). They do have a negative impact on motivation (Amabile, 1998) but seem to also generate a positive effect when it comes to file an improvement proposal (Nickel, 1998). According to other studies monetary reward does only play a peripheral role when it comes to improvement proposals (Frese, 1999). It is therefore essential to choose the right form and context of rewards to express acknowledgement and by this to promote creativity and innovative behavior in an organization (Amabile, 1996).

**Mental attitude:** Improvements will cease in case of two conditions: Firstly if people do not perceive the need of alteration, everything seems to be in good order and therefore does not have to be changed. Or if they simply just do not see the possibility to modify what currently is in deficit. The generation of innovation and improvements out of deprivations and errors will happen primarily where humans have the personal freedom to shape and act. Another aspect is the knowledge and differentiation of individual positive and negative perspectives (strengths, weaknesses) as they both can be the origins in the creation of a positive attitude which is a necessary condition in the process of initiating innovations (Frey D., 2006).

Summarizing the personal qualification attributes, the ability to perceive problems and their reasons, generate solutions, make decisions and the capability to work in a team are key factors of success for each member of a CIP project.

### 3.3 Leadership influence

According to various research studies, leadership style has a 50 – 70 % impact on the climate that the leader creates. The four types of climates a leader can generate are distinguished as demotivating, neutral, motivating or high performing (Vargic, 2016).

Compliant with different sources, a large variety of theoretical modern leadership models was developed in the recent years (Bass, 3rd edition, 1990) , (Stone, 2003). To name only a few, the dynamic concepts of transformational leadership by Bass and Avolio (Bass, 1994), the servant leadership model by Greenleaf (Greenleaf, 1977), the leadership-grid, developed by Blake and Mouton (Blake, 1964) and the paternalistic headship by Westwood which is commonly applied in the Chinese and far-east culture (Westwood, 1997).

Another modern principle model of leadership was developed initially by Dieter Frey and his colleagues (Frey D., 2000) which, with its direct link to CIP topics seems to be the best fitting for this field of study and the overall purpose of this thesis. It contains numerous central principles which executives and leaders should orient themselves on, in cases where yielding self-responsible, confident, innovative and involved employees is their main target. The hypothesis that the application of the subsequent principles of leadership has positive influence on the mindset and behavior of staff members is based on the potentials of reduced stress, company affinity, satisfaction at work, acknowledgement of performance and personal autonomy. Improvements realized in those factors will generate a better social climate within the corporation in general, increase creativity and performance and subsequently reduce absence and fluctuation (Frey D., 2000).

Frey's model of leadership is based on the theory that humans are characterized by five psychological basic needs (of which a, b and c were postulated in the first place by Deci and Ryan (Ryan, et al., 2000) which are:

- a) humans have the endeavor to derive a feeling of competence
- b) humans strive for autonomy
- c) humans search for social connection and embeddedness
- d) humans try to have a feeling of control of their environment, meaning they want to be able to take influence on things, predict and explain them
- e) Humans are striving for a general sense in other words they want to have the feeling that what they do and experience has a meaning to them

By accepting that humans have these needs, Frey's principle model of leadership contains following eleven elements with the leadership finally affecting both mindset and behavior of people and the mindset cross-influencing behavioral aspects of humans (Frey D., 2000). This model of leadership eventually promotes intrinsic motivation and joy at work which are essential and indispensable conditions for creativity and innovation (Frey D., 2006). With the realization of the following principles a positive influence in innovative attitude (satisfaction at work, achievement and motivation) as well as positive behavior of staff members (reduced absence, increased creativity) can be generated (Colquitt, 2001).

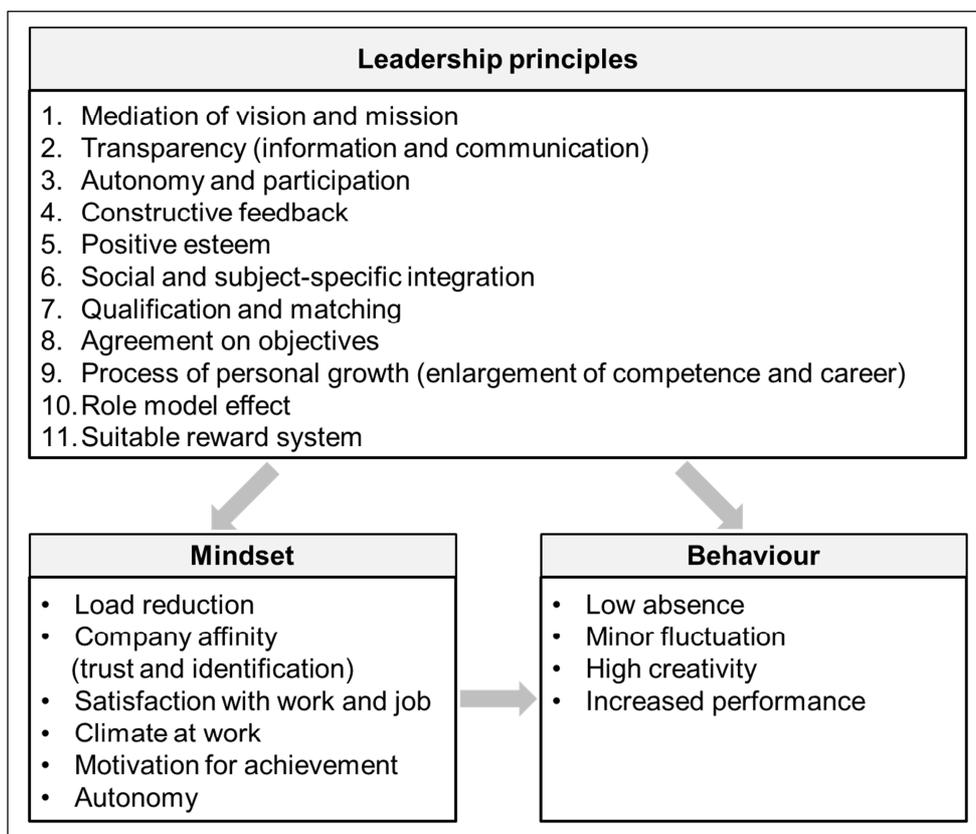


Figure 4: Principle of leadership (translated and slightly modified), (Frey D., 2000)

### ***Mediation of a vision and mission***

The main goal is that every employee understands the reason of the company's existence and is aware of the possibility to contribute to the larger whole in a meaningful way. If the staff-member finds his work generally useful he will be wondering more about possible improvements. Contrary to that, useless work leads to spiritless behavior.

Referring to the process of continuous improvement this means that people need to have an understanding of the significance of innovation and improvement as a central part of their daily work (Frey D., 2000).

### ***Transparency of information and communication***

Directly connected to the knowledge of the company's vision is the principle of transparency. Only people who are informed sufficiently and even beyond their range of operation can behave in a progressive and future oriented way and are therefore able to frame and realize suggestions for improvements of processes, products and services. In this content it is not useful to inform only in a one way direction but to seek for a personal and face to face dialogue (Frey D., 2000).

### ***Autonomy and participation***

Transparency as a stand-alone solution will not be sufficient as long as employees are not able to participate actively. Only with a minimum level of regulation, and a maximum level of contribution and delegation of responsibility, problems will be analyzed where they occur and decisions are made where they have to – not some hierarchy levels above (Antoni, 1999).

CIP in this content is affected majorly because the employee is challenged in multiple ways with the articulation of the improvement and also by contributing to the realization and assessment of the effectiveness after implementation. Only with an appropriate level of adjudicated autonomy, personal freedom and assigned responsibility an efficient and continuous progress is possible (Frey D., 2000).

### ***Constructive feedback***

Mentioned autonomy and level of freedom to act does by far not mean to be left to take care of oneself - quite the contrary. Leaders must be courageous to praise effectively and also criticize in a clear and constructive way. People must be enabled to develop a feeling of their already existing competence and understand where further personal improvement is still necessary (Frey D., 2000).

Applied to CIP the goal is that during and after completions of an optimization project the employee gives and receives constructive feedback which enables both parties to further improve with these lessons learned. This will create the will and motivation to go on with the next upcoming task after this learning phase.

### ***Positive esteem***

To sustain the engagement of employees on a long term perspective, it is essential for leaders to strengthen their staff members. People who are not given attention and do not feel respected will not deliver engagement above the average level.

In CIP this means that different talents of people must be identified and should be promoted and encouraged to ensure that everyone does what he is best talented for (Frey D., 2000).

### ***Social and subject-specific integration***

The employee needs to empathize a feeling of social and emotional integration within his company to satisfy his personal needs based on a positive social relationship. This will enable the development of a social identity besides his personal one, which is a meaningful aspect as people would like to be proud and identify with their team, department and employer. With this attitude people will be committed to think about new solutions for problems even over and beyond their paid work time (Tajfel, 1981).

In the context of CIP this kind of integration satisfies the psychological need on the search for social connection and embeddedness which was described at the beginning of this chapter. This will raise the personal ability and interest in teamwork and self-motivation.

### ***Qualification and matching***

A full social and subject-specific integration only helps little in case the skills and ability of the employee do not fit the requirements of the workplace or job position. This can inevitably lead to a constant over- or underload of the affected person which will create dissatisfaction on both the staff-member and his line manager. An attentive and successful leader will ensure that his employees form a team of common understanding and each individual holds a job which matches his comfort zone which means it fits his bias and interests (Frey D., 2000). In the end, humans will be more encouraged and interested if their natural talents and predisposition are addressed, and compatibility exists (Prenzel, 1998).

As the generation and processing on improvement projects is a time consuming event, leadership needs to keep an eye on the balance of workload each single employee has to carry in his daily business. Also the need for additional education and the support of employees in a changing environment and / or new line-assignments should always be taken under consideration by the effected manager to keep motivation and willingness to participate on a high level.

### ***Agreement on objectives***

With the bidirectional agreement on clear and measurable targets between line management and employees, a chronic personal under- or overloading should be

avoided and the enhancement of staff-members will be promoted at the same time. The demand of specific and quantifiable targets has informative and motivational advantages: the employee knows which goals are to be achieved and he also becomes motivated to jump over the natural threshold (Brandstätter, 1999). The difficulty for continuous improvement is to create objectives on creativity and innovation which can be quantified in the same way as all other goals without inhibiting the advancement of this process (Frey D., 2000).

### ***Process of personal growth***

The daily challenge of an employee is not only to fulfill his personal targets but also to improve on competencies and together with the (over) fulfillment of the objectives they feel the urge of advancement and promotion. Therefore each employee should get the chance to personally enhance according to his talents, interests and competences to enable a job-enrichment culture which has beneficial effects on the success of CIP (Hacker, 1999).

### ***Role model effect***

All the above mentioned aspects will be more or less ineffective if the manager preaches the implementation and realization, but does not act as a general role model himself. Leaders must convince as a living subject-specific role model to enable a fear-free climate and environment of bilateral trust in which motivation and creativity can grow substantially (Frey D., 2000).

CIP will only work in a proper way if it is lived by all members of a society. If employees see the active participation of their responsible managers, their motivation to yield will increase, if they do not see the attendance and interest of their leader, the self-motivation will be reduced (Avella, et al., 1998).

### ***Suitable reward system***

Last, but not least, in the cluster of leadership influence, the principle of fair and incentive-emphasizing rewarding has to be mentioned. The expectancy theory which was first proposed by Vroom of the Yale School of management (Vroom, 1995) in general underlines the need for organizations to relate rewards directly to performance and ensure that the chosen compensation are those wanted by the recipients. This aspect can and should be controlled by managers as people will strive for an inner resignation in case their top-performance is not rewarded in a proper (material) way. Of course the goal for a leader cannot be to continuously act as an extrinsic booster however a suitable balance of performance and (monetary) compensation plays an essential role in context of personal satisfaction (Frey D.,

2000). Multiple scientific research on the effect of a reward system have shown that monetary compensation alone will drive motivation for CIP only on a short term basis but will hinder the growth of motivation on a longer period of time. Analysis even indicated that motivation for CIP in this case will be reduced because increased efficiency or thinking outside the box will only be provided as long as an additional cash flow is granted (Pink, 2009). As a matter of fact there are no general recipes on the dimension of reward, but also this delicate matter needs to fit into the overall culture of an organization (Frey D., 2000).

### **3.4 Cultural aspects**

Besides the factors mentioned on leadership in the previous chapter, a successful improvement system strives for cultural aspects and virtues to anchor the principles of leadership within an organization from top down (Frey D., 2000). The upcoming cultural subjects in this context must not at all replace the (German) goddesses of discipline, perfection, properness and performance-orientation but should complement them (Frey, 1994). Referring to the theoretical aspects of CIP philosophy described in section 2.2 the following cultural topics are taken under consideration because of their high relevance on the success of CIP.

#### ***Customer orientation culture***

As a top requirement every single employee and each department needs to act as a service center with the common target to ensure the highest possible level of customer satisfaction with their product, process or service delivered. Finally the customer will rate the achieved quality level and decides whether he would be willing to pay for what was supplied to him. This kind of culture respects the external customer in the same way as the internal one. Basically every colleague is in the role of a customer and supplier at the same time. Each and every improvement activity therefore needs to undergo a challenge against the customer requirements and every complaint coming from the customer needs to be seen as a chance to improve the quality further with the final goal of perfection. Most likely from time to time there will be a conflict between a “customer is king” mentality and economic targets, not all requirements of the customer can be fulfilled free of charge but there should always be a fair negotiation towards bilateral satisfaction (Frey D., 2000).

The first factor in the key elements for success in CIP which was described at the beginning of chapter three is the fact that CIP needs to always be focused on the alignment with the customer targets. If the culture of customer orientation is in place

within the whole organization, one important cornerstone for a well-working improvement system is laid.

### ***Creativity culture***

As the rigid strive for perfection is a killer on creativity and innovation, flexibility in thinking and behavior is essentially required. The target in this context is to minimize obstructive rules and regulations and substitute them by honoring the systematic anticipatory way of thinking. Such kind of a culture can only be realized with the line managers as a mediator and mentor on creativity techniques (such as brain storming, Ishikawa and others) (Frey D., 2000).

By promoting creativity and flexible thinking as a culture in an organization, all employees including the management will be invited to think about possible improvements within their own workplace and work area in an independent way. At the same time they will also be encouraged to think outside the box and search for options of refinement along the whole operational value stream of an enterprise.

### ***Communication culture***

The quality of internal communication and the exchange of information between different departments play an essential role in the context of the whole improvement process. The target is to get interfaces together to ensure the best possible outcome in the interest of all involved persons. Most disturbances occur because the need for networking and collaboration in innovation is recognized not at all or at least too late (Frey, 1998).

For the progress in CIP this means that the more fluent the flow of information, the more intense the co-operation in communication between involved parties and the better the transparency of relevant data, the higher will be the additional value created by continuous improvement.

### ***Entrepreneurial culture***

Each and every employee needs to understand himself as businessman in his enterprise with the target to individually or together in a team yield top performance. This enables the improvement on the quality and performance of products or services delivered, to finally become better than all competitors on the market. This kind of entrepreneurial behavior requires holistic and integrated thinking as well as hyperopic decision making (involvement of pre- and post-processes). Also continuous transfer of bi-directional information beyond one's own range of duty as well as self-initiative and the willingness to take responsibility are key factors of

success created by intrinsic motivated staff-members (Frey D., 2000). This finally leads to a better well-being, higher creativity and better performance (Deci, 1985).

For CIP this means, referring also to chapter 3.3 that four out of the five psychological basic needs will be satisfied by the entrepreneurial culture at least partly. People will have the feeling of driving their own level of competence, see the chance to work in an autonomous way, generate the ability to take influence on things, control their environment and finally have the feeling that what they do has a meaning to them.

### ***Problem solving culture***

Problems are existent to be solved; therefore every single member of staff in a leading-edge enterprise needs to act as a problem solver and not as a problem addressing person. There is no reason to resign or to give up on problems; they need to be seen as a chance, challenge or even a gift to improve. People need to learn to think in opportunities rather than in difficulties, they should decide whether to be a part of the problem or a part of the solution. Every employee who defines a problem should also be a recommender and developer of a solution to create a common corporate mentality of “we are champions in problem solving” (Frey D., 2000).

For CIP the problem solving culture is essential because improving activities can only be generated and take place where imperfections are detected. This fact implies the need for everyone to continuously and actively search for potentials, with the personal attitude that there is nothing that cannot be improved any further. Also, this culture encourages one to act instead of discussing endlessly about what needs to be improved.

### ***Learning culture***

In a learning and future oriented culture every staff-member and executive needs to see life-long learning as natural, with the own personal development as being never completed. The pre-condition for this behavior is a permanent readiness for self-reflection on how products and processes can be further improved. One can learn from both good and bad, learning can be done via analogies, by one's own weaknesses or the strengths of others. In the first place learning must not be understood only as the participation in education seminars or workshops but as a reflection of deficits in the processes of daily work. As creativity and innovation ability are only partly learnable, it is moreover important to have role models, examples and systematic models in place to be able to orient on (Frey D., 2000).

Only if CIP is based on a learning culture, the infinity of the process is guaranteed. With the continuous education and learning, personal knowledge rises, and more complex problems can be approached and treated in a successful way. As a side effect, the step into a learning zone shifts the stress zone and opens the personal willingness to follow into changing processes.

### ***Curiosity culture***

Another essential feature for a successful improvement system is curious employees. People need to be interested in what is happening in their direct environment, what and why things are going wrong and first and foremost how the corporate future could develop. Employees in this context need to be informed properly and in a comprehensive way and should also be encouraged to ask questions on a regular basis (Frey D., 2000). No question in this context is a taboo; the questioned manager needs to decide by himself what he answers and how much information is transferred (Frey D., 2006).

### ***Team culture***

Top performance is generated where heterogeneous talents and teams are combined to complement each other. The individual success is thereby completed with the achievement of the whole (“your success is our success”) which will lead to a social-emotional affinity and a common sense within the working group. The team culture will be very individual, but constructive feedback, open and civil courageous conflict management and tolerance of the attitude of others will always be central components in an effective team (Frey D., 2000).

For CIP the team-culture in general leads to the fact that the sum of the individual parts is more than the whole which means that a greater output and progress can be generated with an effective team working together. Also the affiliation to a successful team leads to an additional boost in personal motivation and self-confidence.

As a conclusion of what has been researched so far the final question is whether a successful improvement system is plannable by following the mentioned psychological rules as framework conditions. The answer to this question must be yes and no at the same time. The “yes” is valid for the fact that the company which is actively living the principles will be equipped with a creative and successful improvement system. The “no” is appropriate in case the cultural aspects are lived without any inner belief.

Crucial for the success in this context for the management is to grapple with the mindset described in the underlying principles and cultures and to internalize them. The realization will follow almost automatically with the inner (autonomous) persuasion and motivation of the involved people. The decisive step, the big hurdle in the end therefore is not to perfectly plan the successful improvement system but to really “want” it with all its implications and consequences.

Attention should be paid to the fact that the impact will not only be generated from leadership and culture towards the improvement system but also inversely: if the improvement system works, management will also receive feedback and proposals on deficient leadership (bad communication, vague objectives, sub-optimal feedback received, poor work climate) which can be used to improve on their side.

Ultimately an idealized improvement system covers the increase in employee’s motivation, initiates the process of re-thinking and has a positive influence on the effectiveness of processes. These aspects will all together create a cost efficiency which is a core entrepreneurial interest (Frey D., 2000).

Cultural aspects close the theoretical part of this thesis. As a conclusion of what has been said so far in chapter four, the main key elements of a successful CIP can be summarized as (Witt, et al., 2010):

1. Suitability of employees (positive personal attitude)
2. Appropriate, sensitive and reasonable way of leadership
3. Beneficial and alimentary company culture
4. Proper financial and time-wise freedom

The upcoming practical part will be dealing first with the research assignment which includes the creation of the research objectives, the definition of a suitable research methodology and finally the design of the survey in chapter four. This section is followed by the analysis of gathered results created by the conducted survey, first on a high level, sub sequentially more profoundly in chapter five. After this, chapter six deals with the discussion of results and the generation of suggestions; finally chapter seven closes the work with the general conclusion.

## 4 RESEARCH ASSIGNMENT

### 4.1 Pankl Racing Systems A.G.

Pankl Racing System A.G. with its headquartering located in Kapfenberg, Austria is specialized in the development and manufacturing of engine and drivetrain components for racing and high performance cars and the aerospace industry<sup>7</sup>.

The company structure of Pankl Racing Systems, which was founded in 1985 by Mr. Gerold Pankl, actually consists of three main business divisions as described in figure 5: Racing, High Performance and Aerospace. The **Racing** segment, established in 1985 is responsible for the production of engine and drivetrain components used solely in the motorsports industry. Nowadays the Racing division is a leading supplier for engine and drivetrain elements and systems for the exclusive racing market.

The **High Performance** segment is specialized in the production of engine and drivetrain components for luxury vehicles and has been successively expanded in the last few years<sup>8</sup>.

The experience of the **Aerospace** division goes back to the year 1994 when the first tail rotor driveshaft was produced and delivered by Pankl. Today Pankl Aerospace Systems is a tier one supplier within the global aerospace market.

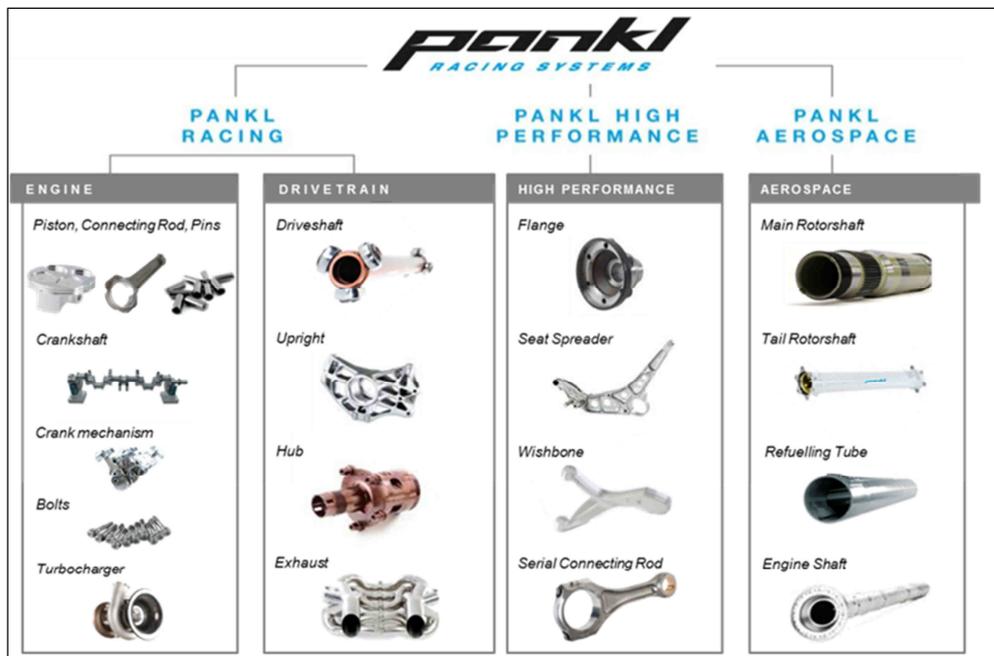


Figure 5: Structure and products of Pankl divisions (taken from an internal Pankl presentation, usage approved by Pankl's COO in May 2017)

<sup>7</sup> <http://www.pankl.com/en/> - accessed April 11, 2017

<sup>8</sup> <http://www.pankl.com/en/company/company-structure/> - accessed April 11, 2017

Pankl's mission is defined by the following three core topics:

## MISSION STATEMENT

**Identity - who we are**  
 We develop, manufacture, maintain and distribute mechanical systems in the hi-tech field for dynamic components in the global niche markets of motor racing, luxury automobiles and the aviation industry.

**Vision – what we are going to achieve**  
 We strive to be the world's leading supplier of systems to the motor racing, luxury automobiles and the aviation industry. Systems from Pankl should feature in every upmarket racing and luxury vehicle as well as in all aircraft built by the most important manufacturers. Our goal is to be a leading innovator within all our business and corporate fields when we launch new products and materials.

**Mission – why we do this**  
 We share our customers' passionate desire to come out on top. We want to make the best of ourselves and do our utmost to ensure that our systems are made with the highest levels of quality. The resultant success promotes the prosperity of our customers, staff, investors and the society we live and work in.

**Figure 6:** Pankl's mission statement (copied from [www.pankl.com/en/company/mission-statement](http://www.pankl.com/en/company/mission-statement) accessed on April 11, 2017)

Within the definition of Pankl's core values – “how we achieve our goals” the following statement describing the value of Pankl's employees is anchored:

“We act out of the conviction that our conscientious staff constitutes our most valuable assets. In creating a performance-driven environment we want to be attractive for creative and loyal members of staff. We appreciate and cultivate both the professional advancement and self-development of our staff (leadership qualities, holistic thinking, role models, etc.). We promote openness and fairness in our dealings with our staff and colleagues”<sup>9</sup>

Finally the vision and mission of Pankl is prescribed by the following eight catchphrases.

We comply with legal obligations.	We take care of the conservation of resources.
We avoid hazardous waste.	We avoid injuries and accidents.
We protect the health of our employees.	We meet the requirements of our customers.
We improve continuously.	We define targets and achieve them.

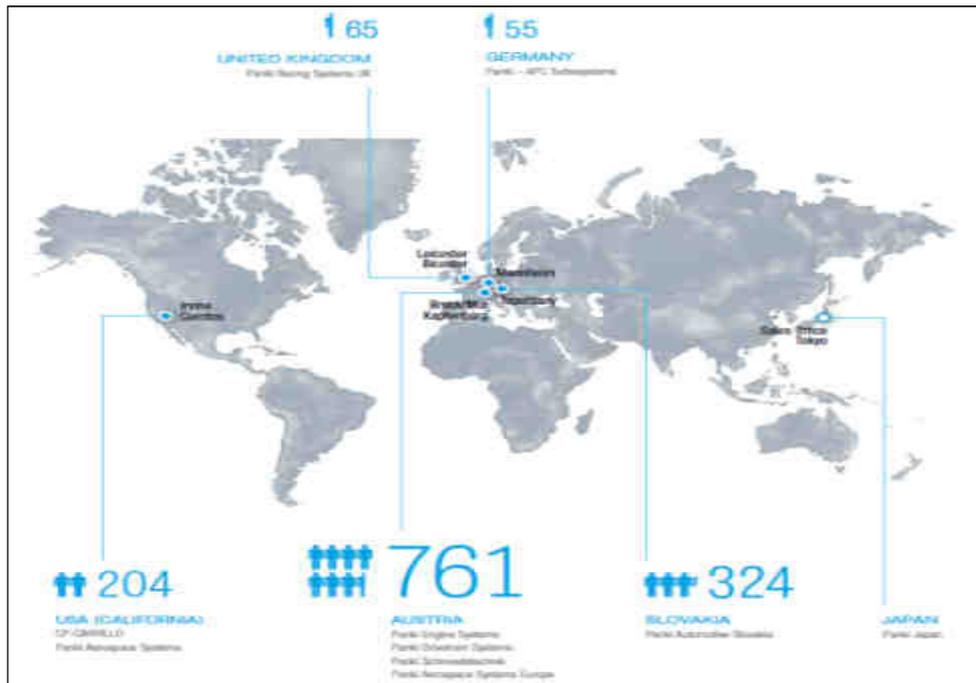
**Figure 7:** Pankl's vision and mission (copied from [www.pankl.com/en/company/mission-statement](http://www.pankl.com/en/company/mission-statement) accessed on April 11, 2017)

Production and development of Pankl is located in eight sites around the globe with the biggest two plants in Austria named under Pankl Systems Austria GmbH

<sup>9</sup> <http://www.pankl.com/en/company/mission-statement/> - accessed April 11, 2017

(merged out of Pankl Engine Systems, Pankl Drivetrain Systems, Pankl Schmiedetechnik and Pankl High Performance Systems by Jan. 1, 2017), operating in Kapfenberg and Bruck an der Mur.

In the year 2016 the Pankl Racing Systems A.G. group realized a total turnover of 186 million Euro (+7 % compared to 2015) with a worldwide number of roughly 1.500 people employed (+200 compared to 2015)<sup>10</sup>. More details in this context can be seen in the annual report of the year 2016 issued at [www.pankl.com](http://www.pankl.com)



**Figure 8:** Global plants and employee numbers of Pankl in 2016 (copied from Pankl's annual report of the year 2016)

The following case study will focus strictly on activities at the Engine Systems division plant in Bruck an der Mur; in the section of prospects and further activities generated out of the case study, other plants and locations will be taken into consideration as well.

The Engine Systems division at Pankl in Bruck an der Mur generated a total performance of approximately 54,5 million Euro in 2016 with the development and manufacturing of connecting rods, pistons and piston pins for both racing and high performance engine applications with a total number of roughly 350 employees dedicated to this business unit by the end of 2016.

<sup>10</sup> <http://www.pankl.com/en/header-navigation/investor-relations/publications/financial-statements/> - accessed April 11, 2017

The turnover of the three profit centers (Racing connecting rod, racing piston and piston pin and series connecting rod) acting under the organization of the Engine Systems Division is almost equal with one third each, the number of blue-collar employees is split in roughly 65 % racing and 35 % of all dedicated to series production. Whilst the blue-collar employees are affiliated strictly to either racing or high-performance business – because of the required level of quality and complexity of processes, the manufacturing of racing components requires a way higher level of training and education – the white-collar staff members either work for strictly one profit center or for all three at about the same level of their work load dedication.

## **4.2 Continuous improvement at Pankl**

In the years before 2013, Pankl's connecting rod series facility was producing a maximum quantity of roughly 80.000 pieces per year strictly for high performance cars in series quality made from both steel and titanium alloys. As the business in racing engine components is not growing ever since the Federation International de l'automobile (FIA) started to regulate the engine configuration and minimum life time per powertrain, the biggest chance to grow in total turnover within the engine division was therefore to invest further into Pankl's series production.

In consequence of this matter the production facility in Bruck an der Mur was refurbished in 2012 including a shop floor enlargement of roughly 2.500 square meters dedicated to series production. Completely new production equipment was bought in strictly for the manufacturing of connecting rods for series applications to increase the production volume up to 500.000 units per year using modern, smart and state of the art manufacturing concepts.

As the total production capacity needed to ramp up in a short time starting by the first quarter of 2013, the production shift model had to change from one shift to three per day (24/7 four shift full-continuous production with roughly 80 % new staff-members applied in the third quarter of 2013) which together with technological issues (new equipment) and the lack of know-how on the production processes at that time (high volume, automation, traceability) led to a difficult situation for the whole organization. Day to day business in 2013 and 2014 was heavily driven by fire-fighting activities to ensure the quality and quantitative demand of the customers and continuously reduce cost on scrap, re-work and unplanned transportation expenses. In the long run, with the increasing technical knowledge on processes, growing experience of the blue collar staff and thereby created reduction of daily stress more of the higher hanging fruits came within reach. This enabled the

organization to implement additional automation on single processes, reduce the number of employees per shift, helped to increase the productivity, reduce unit tool cost and further decrease cost for scrap and re-work on parts which finally lead to an appropriate economic performance in the year 2015.

In that same year, when the key performance indicators (KPI) in series production turned their signs, began to stabilize at a reasonable level and vectors was further pointing into the right direction it was not enough anymore to only live on the results of fire-fighting activities and process innovations to correspond with the objectives given by the management on a long term prospective. Therefore a plan was created together with a well-known local consulting partner to take a new way at Pankl and implement a process of continuous improvement in a specific way designed for and fitting into the culture of Pankl Engine Systems series facility.

In total six internal blue collar employees picked from different areas of the organization (production, quality assurance, tool management) were assessed and nominated to take over the responsibility of small single projects to ensure continuous improvement within the series production from that time on. The background they were initially given was the fact that CIP will

- be a process initiated and executed by the employees to optimize the current situation
- create a co-determination environment to improve the actual status
- stop the endless trouble-shooting and eliminate disturbing errors and problems
- improve the overall quality by lasting and stabilized processes
- refine the work area and increase motivation to work
- change the culture to the cognition that errors and problems are reasons and chances for improvements

The next figure visually describes the environment and periphery in the content of the CIP implementation which was completed in the year 2015.

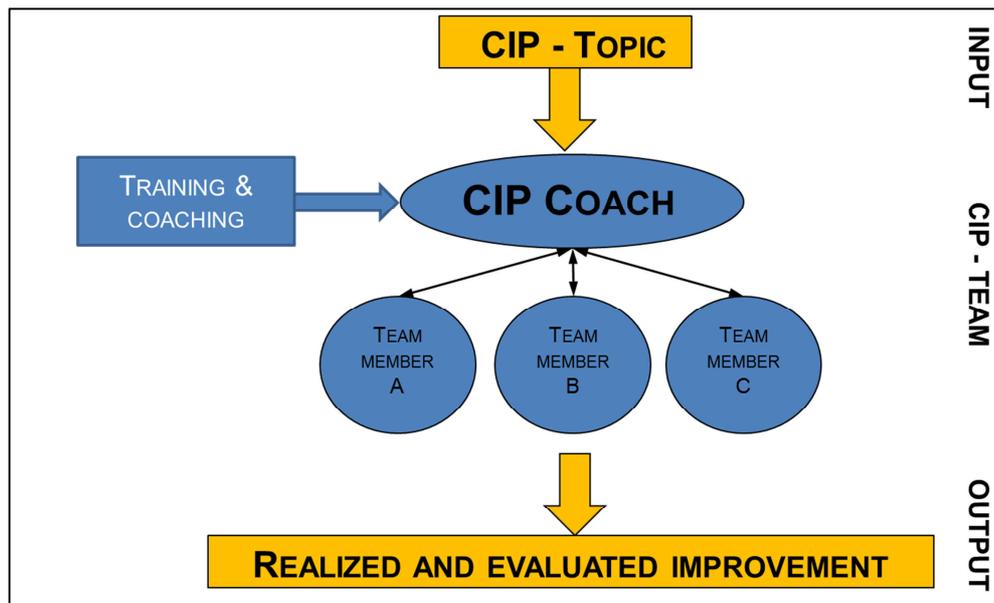


Figure 9: Structure of CIP pilot projects

The future CIP-coaches were given a theoretical and practical on-site training during a period of six months on the basic principles, general content, applicable supporting methods and systematics of CIP. Additionally individual coaching as well as team trainings took place in a regular sequence or on demand of the trainees.

Within this learning period each coach also took over the responsibility for a self-chosen improvement project on a topic of their interest and environment which was conducted by the means of theoretical knowledge gained within the trainings. The contents on this first cycle of projects was within the wide range of optimization of production set-up time (SMED), work place optimization and ergonomics (5S) as well as inspection frequencies and data collection of production processes (SPC). To enable the execution of this additional work load and content, an official time-out of two hours per week within their official working time was given to each of the coaches for a total period of four months. Additional required and project supporting members of their team could be picked individually on demand which lead to a teamwork in small groups on the topic, with the method trained CIP-coach in a leading function. Finally, after the ending of the six months pilot phase, results of the projects were presented by the coaches in a c-level (describes the grouping of senior business leaders with high-ranking executive titles preceded by the word "chief") meeting, that took place together with the examination on the theoretical part which was the other premise for the obtainment of the official certificate of a CIP coach.

To reward the success of the individual project and the graduation of the training and also to compensate the additional effort the CIP coaches had, each single CIP-coach was given a voucher for clothing of the Pankl and Redbull shop. The value of the voucher was not dependent on the actual monetary saving generated with the realized project.

The cycle was finally closed with a verbal feedback session of the new CIP-coaches, the external trainer and the person in charge for the CIP implementation at Pankl, followed by an official promotion of the CIP coaches and their implemented project results in Pankl's internal semi-annual issued newspaper, the "Pankl Formula".

To measure the success of this new method, a short survey was handed out in addition to the six coaches in the second quarter of 2016 with following results displayed as average value of six given answers:

Question	Score / max. rating
1. Am I generally satisfied with the results of my CIP project?	100 %
2. Was the CIP coach training in general suitable and did it fulfill my expectations?	100 %
3. Was the coaching done properly?	94 %
4. Was my CIP project defined in a proper way?	100 %
5. Were the targets of the project defined properly (SMART)?	100 %
6. Was I able to use the learned content of the trainings in my project?	100 %
7. Did I manage to solve the CIP project within the projected timeframe of two hours / week?	75 %
8. Was it important to me that results were presented officially?	83 %
9. Was it important to me that management participated at the presentation?	83 %
10. Did I personally feel comfortable at the final presentation?	92 %
11. Is the reward system suitable?	100 %
12. Am I positive to coach another project at the next CIP cycle?	100 %

**Table 1:** Results of 2016 CIP coach survey

These single choice questions were completed with another two open questions on what should be kept as is and what should be changed on equivalent future activities in the eye of the CIP-coaches. An example for what should be kept was

the group-training and coaching, the support of the coaches during the training phase and the chance to create an own structure in the individual project. The most frequently mentioned improvement suggestion was the given timeframe for the realization of the project with only two hours per week. This matches also with the low result of question number seven in the survey (table 1).

Besides the questions related to the presentation of the results, the overall feedback given by the survey was outstanding positive. Especially the fact that all new CIP coaches were motivated to run yet another cycle of projects in future shows that the new track driven was an overall success not only for the company with the generated improvements but also for the employees as part of their professional career. As a successor the second circle of CIP projects was initiated in fall 2016 with the same group of CIP-coaches, again using the new improvement ideas generated by the coaches or their colleagues in the time between the cycles. Due to the feedback on available time for the execution the overall project duration and/or weekly available time was adapted according to the content of the project.

Another training session to qualify additional employees of the series department is planned for the last quarter of 2017. No other or further activities have been done yet to apply this specific procedure at other profit centers of Pankl in Bruck an der Mur nor in any other Pankl manufacturing plant worldwide so far.

### **4.3 Taking CIP to the next level at Pankl – the research objective**

Pankl at the moment has a total number of six method trained and certified CIP coaches in its series production organization. By now six individual projects were realized solely in series production with their improvements implemented, verified and standardized. Another six improvement projects in series production are currently in process.

The pilot-project activities showed that besides the operations plant management, also the coaches themselves were satisfied with their gained results, and that the training method and frequency was sufficient for this kind of education and project complexity; the reward system also fulfilled the expectations of the trainees. Some fine-tuning still needs to be done on the availability of individual time for the realization of the projects but all in all a good level of motivation and encouragement was created by this new approach and cultural adoption.

As a conclusion of the actual status and the results gained by the survey, the core research objectives of this thesis are:

1. To measure which of the relevant elements of a successful CIP are already present to which grade of peculiarity after the pilot-run within the whole organization of Pankl Systems in Bruck an der Mur.
2. To derive whether the implementation of CIP in the department of series production caused any measurable differences to the still unchanged culture of the racing division and how do people behave in these respects who work for both of the operative organizations to about the same content.
3. To assess on how the management of the organization in all departments reflect the readiness for CIP implementation in their opinion against the view of their employees and what this result could mean to the further development of CIP at Pankl in general.
4. Finally the last main objective is to derive future perspectives out of the results generated and to evaluate which general mind changing activities could be implemented to improve from the current status quo towards an environment that encourages both racing and series department's employees to perceive and care about continuous improvement in their daily work routine in future.

#### **4.4 Research Methodology**

Application of a sufficient and adequate methodology forms the basis for answering a scientific research question in a profound way. The chosen research approach, research design, and research question are all connected. Approach in this context means something more than the type of data used – it refers to the overall orientation to research and the type of claims made for studies<sup>11</sup>.

“If the research question to be answered is about trying to find out peoples opinion, a qualitative path can be the right approach. If the task is about to measure something and do direct comparisons it is more likely to choose a quantitative methodology. Of course it is possible and appropriate to triangulate methodologies and use more than one basic approach to get a good mix of both” (Interview Garner). “Data to be analyzed can be gathered in both ways: either by collecting information gained by an own new survey or case study (primary data) or by looking

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<sup>11</sup> <http://www.socscidiss.bham.ac.uk/methodologies.html> - accessed on April 11, 2017

at the research results of others and analyze them in your own and different way (secondary data)<sup>12</sup>(Interview McCoy).

The science of organizational behavior knows several research methods, the five most commonly used ones are case studies, laboratory experiments, field experiments, survey research and simulation (Khanka, 2006)

The practical part of this master thesis uses the method of a quantitative data analysis based on primary data which is collected by a survey research that at the end proves or invalidates the hypothesis (theory testing - deductive research). The preparation of the survey forms the theory-generating (inductive research) part of the thesis by defining the group of survey respondents as well as the wording of the specific questions in a way that the results generated can be used in a proper way to imply on the entirety.

The evaluation of the data generated uses the methods of statistics to quantify them and use synthesis to generate a new whole out of the single elements and results gained by the analysis.

The sequence of processes followed through the experimental part of this thesis is described in the following figure 9.

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<sup>12</sup> <http://www.socscidiss.bham.ac.uk/videos/v6-approachingmethodologies.wmv> - accessed on April 11, 2017

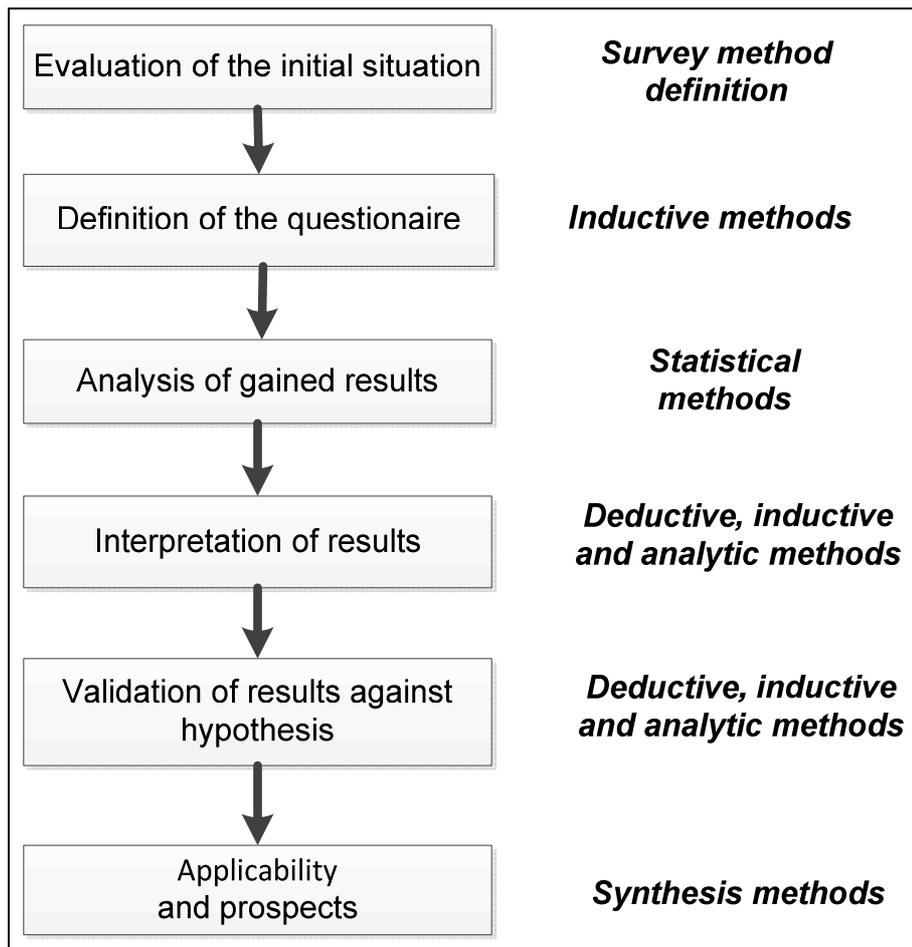


Figure 10: Visualized research methodology

The reason for the decision to use the methodology of a questionnaire to catch the opinion of a targeted group is that this form of survey is realizable in a short period of time, addresses a large number of respondents at the same time whilst still maintaining anonymity. Also the quick and easy availability of the answer-data and the direct transfer into MS-Excel to conclude the multivariate data analysis militated for this approach.

#### 4.5 Survey design

The survey is meant to capture the opinions of involved people related to a variety of topics which reflect leadership and company culture, give indications for the readiness of CIP implementation in an organization and which have major influence on the long term success of continuous improvement as described in the theoretical part of this thesis. The survey name is “Questionnaire on personal opinion and personal experience in my work-environment” without a direct link to continuous improvement in the title.

Thirty individual statements in a closed form were chosen for the first single choice part of the questionnaire. They are clustered into the following nine categories with three questions each and the double number of questions related to the group of CIP culture because of the higher relevance in respect of the hypothesis to be proven. The following nine main topics were developed (without a priority ranking) out of the theoretical part of this thesis and are of highest relevance when it comes to the success of an excellent continuous improvement process referring to the theoretical aspects described in chapter three.

The original survey design in English language can be found in the appendix of this thesis.

1. Motivation	4. Targets	7. Reward and feedback
2. Freedom to act	5. Teamwork	8. Customer orientation
3. Training & coaching	6. Leadership	9. Culture of CIP

**Table 2:** Cluster of nine categories of highest relevance

To ensure that the answers given do not imply that all results on the same topic do show the same result because of the sorted order of them within the survey, the questions were randomly mixed between the different categories.

### **1. Motivation (3 questions)**

The questions in this first category basically focus on the existence of personal intrinsic motivation and the will to use it actively, referring to the personal factors of influence described in chapter 3.2, and whether the direct line supervisor is aware of this given motivation, tries to increase the level of motivation and acts as active mentor and motivator by himself.

### **2. Freedom to act (3 questions)**

The statements in this topic cover the assessment of the actual individual work load versus available time to create new ideas and optimizations. They also try to answer the question whether the employee has enough personal freedom and self-esteem to act on his own and can grasp the initiative to improve things based on his own incentive. This part is mainly challenging the theoretical aspects described in chapter 3.3 under the paragraph of autonomy and participation.

### ***3. Training and coaching (3 questions)***

The third group of propositions is related to the need and value of trainings and personal coaching for the employee to improve his / her performance which was mentioned in the theoretical section of qualification and matching under chapter 3.3 and the learning culture described under 3.4. The statements also do cover the support given and required at the preparation or during a change in responsibility and / or new assigned business tasks. This matter addresses the positive esteem, social and subject-specific integration and the process of personal growth as well as the communication and problem solving culture.

### ***4. Targets (3 questions)***

Target setting and evaluation of the achievement of objectives is covered by the statements within this fourth cluster. Questions are related also to the “big picture” which means if and how personal targets are linked to the general targets and whether these goals in general are relevant and help to focus on what is most important. The statements cover the leadership principle of mediation of a vision and mission, transparency of information and communication and the agreement on objectives out of chapter 3.3 as well as the customer orientation and entrepreneurial culture stated in chapter 3.4.

### ***5. Teamwork (3 questions)***

Whether an employee feels as being part of a team that supports each other and shares information and knowledge with each other as a content of their daily work is asked in these three questions. Also it is questioned whether sharing this kind of data helps the organization and its customers. With these statements the influence of communication and team culture described in chapter 3.4 are covered.

### ***6. Leadership (3 questions)***

The topic of leadership deals with opinions of the role modeling of managers and the transparent flow of information throughout the vertical hierarchy of an organization. Also the statements should clarify whether leadership has a clear general vision for Pankl. With this topic, the role model effect described in chapter 3.3. is questioned.

### ***7. Reward and feedback (3 questions)***

The next group of the poll is searching for answers to the questions on the value of reward and feedback. Statements should deliver answers to whether and how additional effort should be rewarded the best effective way to create additional

motivation or at least keep the level of motivation alive, and how also constructive feedback can help in this respect. This cluster deals with the constructive feedback influence of leadership and questions the suitability of the reward system in a company, both outlined theoretically in chapter 3.3

#### ***8. Customer Orientation (3 questions)***

The focus on customers is challenged by asking the next three questions. Customer in this respect is not only the party to whom goods are delivered to and turnover / profit is generated but also colleagues who have to work with the results generated by yet another employee within the same organization (internal customer). The value of customer orientation was described as the most important cultural aspect in chapter 3.4 of the theoretical part.

#### ***9. Culture of CIP (6 questions)***

The last cluster of statements tries to create a picture on how important innovation and continuous improvement activities are seen in an organization for the benefit of all. It also focuses on the value of lessons learned and whether it plays an essential role for the employee that successful realized optimizations are promoted and shared in a proper way. Basically these questions cover the personal traits and mental attitude of the questioned employees which was described in chapter 3.2 as well as the creativity and curiosity culture mentioned in chapter 3.4

This total of 30 statements is supplemented by another six general and demographic questions on age, gender, education, professional experience and work division (Racing, Series or both). The question on the work division was mainly chosen because of the generated cultural influence caused by the implementation of CIP projects in one part of the organization. Additionally it is also addressing possible cultural differences between racing and series departments which might be caused by the quality requirements, production volume and complexity of production processes as well as the difference in generated EBIT which is directly coupled with the economic need to constantly improve in one department more than in the other. Finally the last personal question is related to the managerial responsibility of the questioned people.

The questionnaire was pre-assessed by a number of three independent colleagues at Pankl and one psychology and philosophy high-school teacher as well as by the supervisor of the thesis to ensure that each statement is clear, precise and understood in the way the author meant them and does not bear any risk of

misleading answers. The feedback of those assessors was used as an input to fine-tune the survey before the official launch.

The use of an online platform ([www.umfrageonline.at](http://www.umfrageonline.at)) was chosen for the conduction of the survey. The reasons for this decision was the easy accessibility and short time required to run the survey, on the other hand the web-based survey ensures anonymity for the participants.

Each of the above described 30 topic related questions is rated by a graded value of “1 = I totally disagree” to “6 = I totally agree” which gives the respondent the chance to fine tune his answer and provides the author with the possibility to directly compare analyzed results by a value rating (e.g. mean value, minimum and maximum, standard deviation). This also enables further mathematical evaluation of the data. A scale without a center position (2, 4 or 6 possible answers) furthermore prevents a “neutral” opinion to the given statement. (Kühl, 2009)

All above mentioned questions including the demographic ones are single choice and do have a “must” fulfillment in the online survey to be able to continue with the next following statement.

The author chose to submit the questionnaire to all 130 white collar employees along all three profit centers of Pankl Austria Systems in Bruck an der Mur. This decision was made mainly because of anonymity reasons, as blue collar employees at Pankl do not have individual access to an independent terminal or PC to answer the poll online.

The survey was released on Wednesday, April 5, 2017 and closed fourteen days later on April 19, 2017. All potential participants were pre-informed with an official E-Mail which was supported by the COO, after seven days a reminder was sent to the subjected group.

## 5 RESEARCH RESULTS AND ANALYSIS

The feedback rate on the survey was above the author's expectation with a degree of fulfillment of 68,5 percent; 89 out of a total number of 130 colleagues who were invited to give their answers to the statements provided in the online survey did so within two working weeks. One reason for this high percentage share might be the supporting E-mail from the COO, also the reminding E-mail sent out after the first week helped to further increase the number of participants in week two.

In general also the verbal feedback to the questionnaire was very positive. None of the statements was shaped too complicated or could not be understood in the sense the author verbalized them in the opinion of a sample of participants questioned personally.

### 5.1 Evaluation of demographic data

The six demographic and general questions show the participants distribution in age, gender, total professional work experience and level of personal education. The last two of these questions are related to the scope of work at Pankl and whether one currently occupies a management position or not.

Out of the total of 89 filled surveys, 26 % of the respondents are female and 71 % male, 3 % did not give information on their gender (Figure 10).

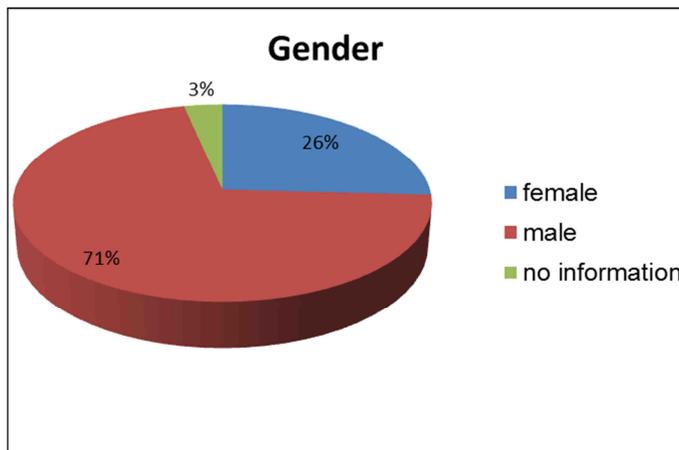


Figure 11: Gender of survey respondents

The age is classified into four ranges starting at 20 years at the lower end and finishing at 50+ years on the upper border. The group of people aged 31 to 40 years is by far the largest one among all (Figure 11).

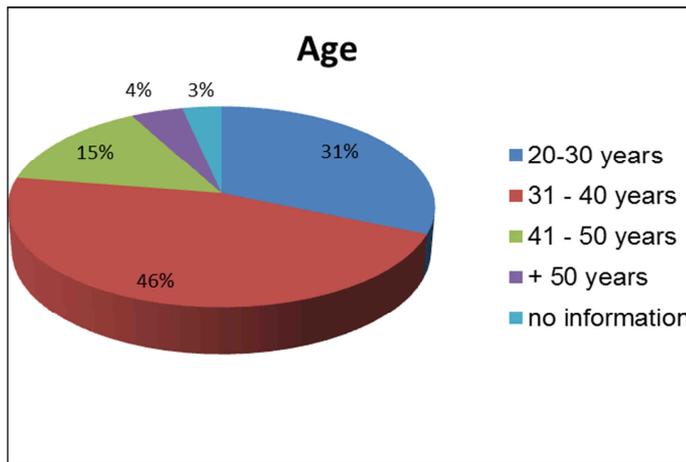


Figure 12: Age distribution

On the work experience question the possible answers is ranged in groups from 0-5 years up to larger than 15 years in total (total work experience contains Pankl plus other employers from the past). The largest group of all respondents is the one of most experienced employees with a share of 38 % (Figure 12).

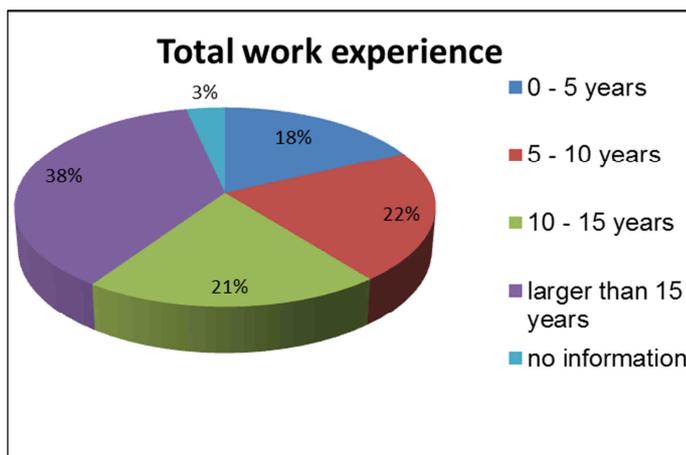


Figure 13: Work experience categories

The educational question is split into the four categories: scholastic profession (in German: abgeschlossene Lehrausbildung), finished high school, college or university degree and other with the largest amount of people (38 %) belonging to the group of high school graduates (Figure 13).

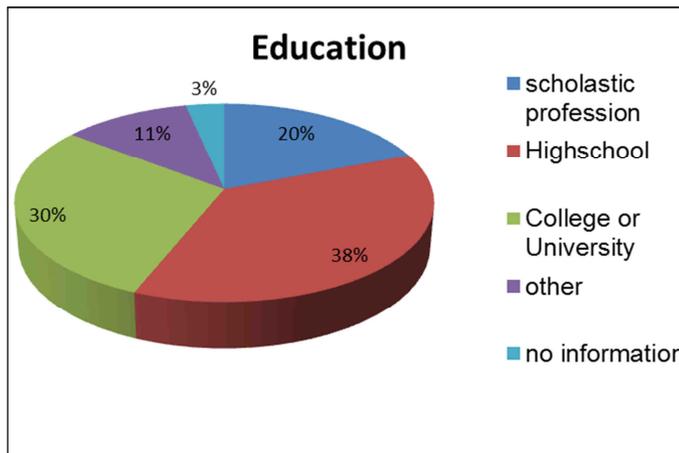


Figure 14: Educational level

In the fifth general question, 34 % out of all questioned people gave the answer “yes” and by that stated that they do have a direct personnel responsibility (Figure 14). This means that they either hold a team leader, department managing or general managing position at Pankl. Data dedicated to the people with no information given on the management status will be counted to the group of “no’s” in this question at the data analysis, if applicable.

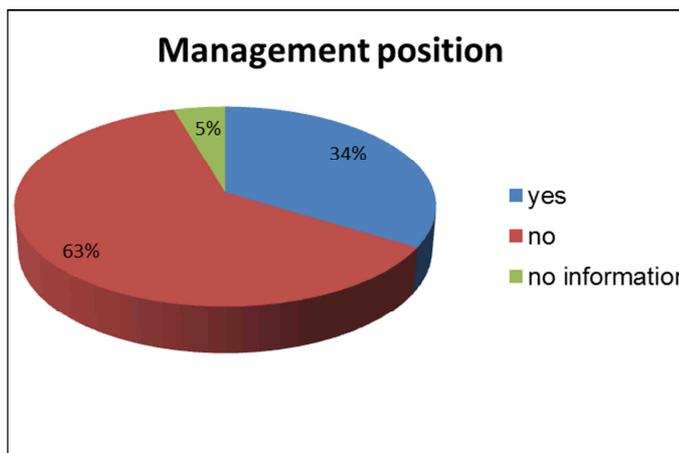


Figure 15: Managerial position

The last question of the block of general topics is related to the department people work for (Figure 15). As described in the previous chapter, Pankl does have two different production systems (Racing and Series) in one and the same plant. Therefore the analysis of this data is based on the affiliation of the people to the particular division and whether there is any influence on the work environment, culture and behavior caused by this fact. Possible answers in this category were “Series” – including the production of connecting rods and transmission components which will ramp up series production in the last quarters of 2017, “Racing” – valid for

production of racing connecting rods, pistons and piston pins and finally “Both” – intended for those working for Series and Racing at about the same extent.

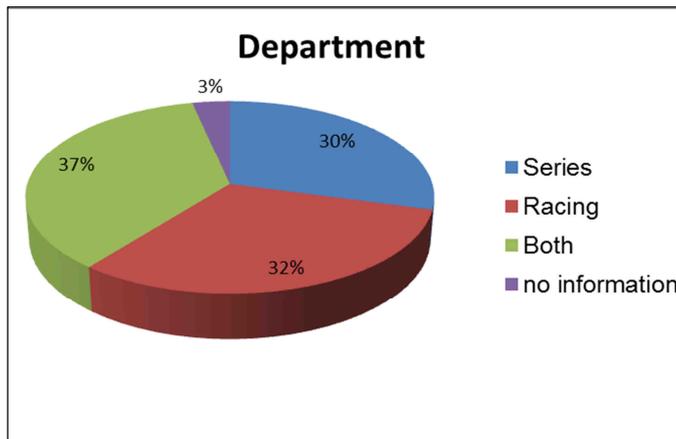


Figure 16: Department affiliation

Data of respondents without information on the question of the department will only be counted to the overall results but will not be added to any of the other groups of people within the upcoming analysis.

The connection between management position and department is described in the following figure 16 including the number of respondents per filtered group of people.

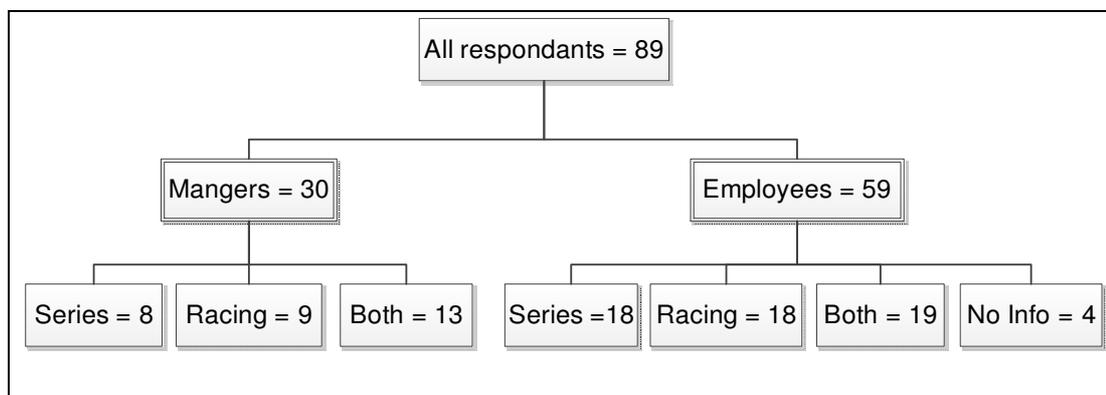


Figure 17: Number of participants per cluster

As the number of respondents is big enough even applying the double filtration and divide the group into managers and employees in different departments (no further investigation will be made on the group with no information on the department under the group of employees), also this information can be used for detailed analysis when required.

## 5.2 High level result evaluation

Looking at the overall result of the feedback 2.646 topic related answers given by 89 colleagues, an average value of 4,75 (79 % of the maximum of 6 points), which is

notably higher than the mean value of 3,0 is derived. Pankl's employees rate the topics reward and feedback, motivation and leadership as well as teamwork from high to low above the average value. Statements on targets and cultural CIP aspects are assessed at about average and questions related to the individual personal freedom to act, customer orientation and training & coaching are answered below the average.

The background color of table 3 and all following tables in the score column is given by whether the result on the single statement is above the average (green shading) of all thirty statements, at about the average (yellow color) or below the mean value (orange to red background) – Remark: the colors were automatically generated in the related MS-Excel sheet using the function of conditional formatting / color code on the relevant cells, percentage values shown in tables are all integer-rounded.

Overall result (average = 4,75)		
1. Motivation	4. Targets	7. Reward & feedback
4,95	4,73	5,01
2. Freedom to act	5. Teamwork	8. Customer orientation
4,43	4,89	4,57
3. Training & coaching	6. Leadership	9. Culture of CIP
4,52	4,90	4,74

**Table 3:** Overall survey result

The highest partial result is reflected by the value of 5,01 at the section of **reward and feedback**. This seems to be of highest relevance for the questioned employees and reflects the importance of the expectancy theory described in section 3.3 of this thesis (induction aspect). Second highest score is given at the passage of **motivation** with the mean value of 4,95. The fact that motivation plays an essential role for each individual employee fits into the theory on motivational aspects and the types of motivators described in chapter 3.2. Unsurprisingly the number three in the overall ranking in the eyes of the employees is the factor of **leadership** with a score of 4,90. As also clearly highlighted in section 3.3 the topic of leadership plays a major role when it comes to assess the personal level of satisfaction of the staff-members. The rating on the topic of leadership is followed closely by the results of **teamwork**, which is also a necessary factor of success as described in the theoretical culture related to chapter 3.4.

Valuated lower than the top four subjects but still ranked at about the overall average value of 4,75 are the topics concerning **targets** and the **CIP-culture** related statements which are rated close to each other in respect of their overall relevance.

At the lower end of the assessment the subject-areas of **customer orientation**, **training and coaching**, and finally with the lowest overall score of 4,43 the topic of **freedom to act** can be found.

Both the two mid-ranged as well as the three lowest ranked categories do also have a high relevance in theory as stated in the chapters 3.3 and 3.4 but they are obviously assessed lower and are consequently of less importance for the questioned employees at Pankl.

To understand the overall result better in respect of the composition of the gathered data, the total information is first split by some of the general information gained in the second (general) section of the survey. The two main aspects which will be focused on out of the empirical information will be the **management position** versus their employee's opinion and the **individual's work environment** (Series, Racing or Both).

The analysis of the data filtered by the managerial responsibility shows the results of managers under the column "M" and those of the employees under the "E" column. Filtration is done without cross-checking the influences of the department people work in, in the first place. The score created under this condition for managers is four percent points above the average; the non-managers score two points below the average value of 4,75.

Overall (average = 4,75)	
Managers (M)	Employees (E)
4,94 (+4 %)	4,65 (-2 %)

**Table 4:** Overall result split by managerial position

Employees who are currently acting in a managing function (no further difference was made whether the response comes from a team leader or the managing director) score above the average on each single group of statements whilst the non-managing employees score equal or below the average in all nine main categories.

Table 5 shows that relative conformity (difference of maximum 2 % points) of the topic specific statements between managers and their employees is only given at reward and feedback (which received the highest value at the unfiltered overall

score) and on the training and coaching section, again with a difference of maximum two percent points between lower and higher score.

Medium difference of three to six percent points between the results exists at the cluster of teamwork, customer orientation and cultural aspects in CIP.

The results on motivation, targets, freedom to act and leadership differ by more than six percent points between manager's opinion and the answers of their employees. The absolute highest difference results at the topics of motivation and leadership with a gap of eleven percent between both groups. Both these last mentioned topics were rated green (means above the average) on the overall table, motivation as second highest and leadership in position numbers three.

1. Motivation		4. Targets		7. Reward & feedback	
M	E	M	E	M	E
5,31	4,77	5,01	4,58	5,04	4,99
7%	-4%	6%	-3%	1%	0%
2. Freedom to act		5. Teamwork		8. Customer orientation	
M	E	M	E	M	E
4,69	4,30	5,04	4,81	4,70	4,50
6%	-3%	3%	-2%	3%	-2%
3. Training & coaching		6. Leadership		9. Culture of CIP	
M	E	M	E	M	E
4,50	4,53	5,23	4,72	4,95	4,64
0%	0%	7%	-4%	4%	-2%

Table 5: Category split by managerial position

On the work environment filter which clusters the data in the results generated by people (managers and non-managers together) working strictly in Series (S), only Racing (R) or in both to about the same content (B), the general single scores differ from the overall value by only -1 % for Racing (R) to +2 % for the category of both (B) with series (S) affiliation in the middle only minimal off the average value.

Overall (average = 4,75)		
Series (S)	Racing (R)	Both (B)
4,74 (0 %)	4,70 (-1 %)	4,83 (+ 2%)

Table 6: Overall result split by department affiliation

Looking closer into the filtered data of the nine main topics a clearer picture is created. Basically the same color codes as in the unfiltered information apply also to the filtered data. The main differences of data filtered by the department people work in can be seen in the table 7. People working in both departments (B) score close to, or above the average at each single group of statements with a plus sign (= above the average) in eight of the nine categories. Series employees (S) score below the average only on the topics of teamwork and customer orientation, all other clusters are rated at about the average level. Racing employees (R) score above the average only on the teamwork, reward and culture of CIP statements.

Consensus between all employees, independent of their affiliation, on the agreement to the statements in average is given at the clusters of targets, reward and feedback (which were rated highest in the overall unfiltered ranking), training and coaching and culture of CIP with a deviation of maximum two percent points between all groups.

Medium deviation, rated by an offset of three to four percent points between the groups (S), (R) and (B) can be seen at the topics of teamwork and leadership.

The highest difference in results are found in the categories of motivation, freedom to act and customer orientation with the maximum of eight percent points between highest and lowest score at the topic of freedom to act.

1. Motivation			4. Targets			7. Reward & feedback		
S	R	B	S	R	B	S	R	B
4,97	4,81	5,06	4,73	4,70	4,77	4,99	4,99	5,09
0%	-3%	2%	0%	-1%	1%	0%	0%	2%
2. Freedom to act			5. Teamwork			8. Customer orientation		
S	R	B	S	R	B	S	R	B
4,45	4,27	4,59	4,77	4,96	4,95	4,47	4,52	4,71
0%	-4%	4%	-2%	2%	1%	-2%	-1%	3%
3. Training & coaching			6. Leadership			9. Culture of CIP		
S	R	B	S	R	B	S	R	B
4,52	4,43	4,53	4,92	4,80	4,99	4,74	4,79	4,79
0%	-2%	0%	1%	-2%	2%	0%	1%	1%

Table 7: Category split by department

Overall these results show the level of relevance of the topics of statements within the survey and the different results when it comes to look behind the general and

empirical data. Only the aspects of reward and feedback as well as training and coaching are rated in the same way applying either the single filter of the management position or a department filter again using single filtration on the data (analysis with one filter at the time).

The final evaluation on the high level is a combination of the management function together with the department people work in. This double filtration of data should help to understand whether managers and their employees think differently depending on the influence of series manufacturing versus racing culture.

First manager's opinion is looked into more detailed in table 8; double filtration splits the total number of 30 managers into the groups of managers in series (M/S), racing (M/R) and those managing both departments (M/B) to about the same content (see also figure 16 on page 42).

1. Motivation			4. Targets			7. Reward & feedback		
M/S	M/R	M/B	M/S	M/R	M/B	M/S	M/R	M/B
5,63	5,07	5,28	5,25	4,81	5,00	5,29	4,89	5,00
14%	2%	7%	11%	2%	6%	6%	-2%	0%
2. Freedom to act			5. Teamwork			8. Customer orientation		
M/S	M/R	M/B	M/S	M/R	M/B	M/S	M/R	M/B
4,88	4,52	4,69	5,00	4,96	5,13	4,71	4,67	4,72
10%	2%	6%	2%	1%	5%	3%	2%	3%
3. Training & coaching			6. Leadership			9. Culture of CIP		
M/S	M/R	M/B	M/S	M/R	M/B	M/S	M/R	M/B
4,92	4,48	4,26	5,50	5,11	5,15	4,67	4,96	5,15
9%	-1%	-6%	12%	4%	5%	-2%	5%	9%

**Table 8:** Managers filtered by their department affiliation

On the top three overall topics which were reward and feedback, motivation and leadership, managers in the series department score significantly higher than their colleagues working in the other areas. The highest single value is calculated at the motivation topic of managers in series department with a score of 5,63 (94 % of the maximum). Looking at the subjects of targets, teamwork and culture of CIP which were rated average in the overall observation, no clear trend is visible in respect of the cultural affiliation. Series-managers score highest on the topic of targets, managers of both series and racing are top at the teamwork and culture clusters. Series managers score even below average on the statements related to CIP

culture. At the categories rated below average without any filtration applied on the data, which were customer orientation, freedom to act and training and coaching, the customer orientation is rated almost equal by all managers, freedom to act and training and coaching is scored higher by managers of the series department. Overall, managers in series department score highest on six out of the nine categories, followed by their colleagues acting in both departments. No topic was rated highest by racing managers.

Finally the same kind of double filtration as already applied to the data of managers in table 8 is now used for employees. In table 9 the shortcuts E/S for employees in series, E/R for those in racing and E/B for staff acting in both departments are used for the single clusters. On the employee level, a completely different result is generated compared to the result created by the management filter. On the top three categories of reward, motivation, and leadership the score of employees who work in both the series and the racing department is highest, staff members working strictly in racing department score best at two out of the three average rated categories targets and teamwork. The topics rated below the average on the overall view, which are customer orientation, freedom to act and training and coaching are again rated highest by the hybrids of series and racing.

1. Motivation			4. Targets			7. Reward & feedback		
E/S	E/R	E/B	E/S	E/R	E/B	E/S	E/R	E/B
4,69	4,68	4,91	4,50	4,65	4,61	4,85	5,04	5,16
-5%	-5%	-1%	-5%	-2%	-3%	-3%	1%	3%
2. Freedom to act			5. Teamwork			8. Customer orientation		
E/S	E/R	E/B	E/S	E/R	E/B	E/S	E/R	E/B
4,26	4,16	4,53	4,67	4,96	4,82	4,37	4,46	4,70
-4%	-6%	2%	-4%	1%	-1%	-4%	-2%	3%
3. Training & coaching			6. Leadership			9. Culture of CIP		
E/S	E/R	E/B	E/S	E/R	E/B	E/S	E/R	E/B
4,46	4,40	4,72	4,67	4,65	4,88	4,76	4,60	4,46
-1%	-3%	4%	-5%	-5%	0%	0%	-3%	-6%

**Table 9:** Employees filtered by department

Overall employees working in both departments score highest on six out of nine topics; racing staff scores highest on two and finally series staff only scores highest on the one topic regarding the cultural aspects of CIP. This reflects and confirms the results of the department affiliation with applied single filtration for the most part.

The general conclusion of the high-level evaluation is, that based on the unfiltered data each single topic is rated individually and different. The topics of reward and feedback, motivation and leadership are ranked highest; customer orientation, training and coaching and finally freedom to act are those with the lowest overall score.

With the single filtration applied on the managerial position clearly managers score higher than their employees on all clusters besides training and coaching. Using the filtration on the department affiliation, the result generated shows that employees which are breathing in both the series and racing world score higher than their colleagues working strictly in one of the two either series or in the racing department.

Double filtration finally reveals the different opinion of managers and employees affiliated to their work environment: managers in the series department score higher than all other managers. On the employee level, basically a result is generated which is comparable to the single filtration on the department affiliation only.

In relation to the research objective some global answers are already given by the overall analysis (e.g. which elements are present more than others) also an initial answer to the question of mind-setting on different managerial levels realized by the CIP pilot projects could be given. However no specific and detailed data is available at this point of the evaluation which would bring the author into the position to propose useful and profound perspectives for further activities and the development of a strategy in the context with continuous improvement.

Therefore the data analysis is now pursued on to the next lower level by splitting the category's overall score into the dedicated single statement results.

### **5.3 Evaluation of the single statement results**

The observation on single statement level will start with the top overall ranked cluster of reward and feedback, followed by the topics of motivation, leadership and teamwork which succeed reward in ranking. The reason for this approach is that strengths obligatory must be kept and weaknesses which can only be seen by a closer look into detailed results should be improved no matter how high the overall score of the related category is.

The analysis will be continued with the mid ranged topics of culture of CIP, targets and customer orientation; the deepest study in this group of categories will be done at the cultural CIP aspects because of the top relevance and double number of

statements defined in this topic. Customer orientation and target related examination of questions will be done in case the single statement data contains relevant and important information.

Finally training and coaching and freedom to act will be looked at in more detail with again the focus on the statement whether employees at Pankl feel that they can do things independently and in an autonomous way as this is an essential pre-requisite for an efficient and well-functioning process of continuous improvement.

As each topic's overall result was calculated in chapter 5.2 by the mean value of the answers to three respectively six questions on the CIP-culture topic, a closer look to the result of the single question will now help to understand the overall result in a more precise way. Each proposition will be looked at in a general way taking into consideration the responses of all people in the first place, after that again the data collected will be filtered by some of the general information.

First in this context, the overall view on all 30 statements with the score, ranking and affiliation to the category (topic) is displayed in the following table 10.

<b>Ranking</b>	<b>Statement</b>	<b>Topic</b>	<b>Score</b>
1	I think that the customer comes always first at Pankl	Customer orientation	5,49
2	My line manager gives me enough freedom to process my daily work in an autonomous and sufficient way	Freedom to act	5,47
3	I think that leadership at Pankl has a clear vision for the company	Leadership	5,34
4	I can always ask my colleagues for support or help in case I have a problem that I cannot solve alone by myself	Teamwork	5,33
5	I am constantly encouraged to search for improvements within my work environment	CIP culture	5,28
5	I think it is fair to reward someone if he/she saves the company money by optimizing work processes	Reward & feedback	5,28
7	I believe that the improvements I make to my work contribute to the total success of our company	CIP culture	5,20
8	The quality of leadership of my supervisor has direct influence on my motivation	Motivation	5,17
9	I think that only product or process innovation can lead to a long term success of a company	CIP culture	5,13
10	I think that a monetary reward for process optimization creates additional motivation	Reward & feedback	5,12
11	I always make sure that I utilize experience from the past events on new tasks and new problems	CIP culture	5,10

Ranking	Statement	Topic	Score
12	In my work environment I feel as being part of one united team that works towards a common goal and shares the same purpose	Teamwork	5,02
13	My line manager makes sure that I get enough personal support to successfully deal with new assignments or tasks given to me	Training & coaching	4,92
14	I think that my line supervisor is aware of my current level of motivation and is aware about what keeps me motivated	Motivation	4,84
14	I would be motivated to create an extra effort project to improve my work environment, if I were given extra time	Motivation	4,84
16	I think that my targets help me focus and prioritize on the most relevant activities of my work	Targets	4,81
17	It is clear to me how my personal targets are linked to Pankl's strategy and business plan	Targets	4,78
17	My supervisor provides me with sufficient amount of information on the actual economic and operational status of the company	Leadership	4,78
19	I always receive constructive feedback from my supervisor that helps me improve in my work	Reward & feedback	4,62
20	I think that my personal targets are clearly defined and followed up by my supervisor in a sufficient way	Targets	4,60
21	I think that managers at Pankl act as role models in respect of their work behavior and compliance	Leadership	4,57
22	I think that focus on customer satisfaction at Pankl is excellent with all employees	Customer orientation	4,55
23	At Pankl people are encouraged to take initiative and do things on their own to improve company's performance	Freedom to act	4,38
24	Training and coaching I receive helps me increase and improve my performance	Training & coaching	4,33
25	I think that knowledge sharing at Pankl is at very good level and brings greater values to our shareholders and customers	Teamwork	4,31
25	I think that if I received extra training on how to optimizing my operative job content, I would be able to increase my performance.	Training & coaching	4,31
27	Successful work improvements are officially shared and acknowledged in a proper way within our company	CIP culture	3,93
28	I feel that there is a constant pressure from management to improve employees' performance	CIP culture	3,83
29	The inputs I get from other colleagues for my work are always of such a quality as if I were the end customer	Customer orientation	3,65

Ranking	Statement	Topic	Score
30	I have a balanced work load, so I can have time to think about ways to how improve my own performance and the performance of my company	Freedom to act	3,44

**Table 10:** Ranking of single statements

These findings on the ranking of single statements transferred into the overall result of table 3 in section 5.2 gives the following outcome with the individual ranks implemented as numbers in brackets.

Overall result		
1. Motivation	4. Targets	7. Reward & feedback
<b>4,95</b> (8, 14, 14)	<b>4,73</b> (16, 17, 20)	<b>5,01</b> (5, 10, 19)
2. Freedom to act	5. Teamwork	8. Customer orientation
<b>4,43</b> (2, 23, 30)	<b>4,89</b> (4, 12, 25)	<b>4,57</b> (1, 22, 29)
3. Training & coaching	6. Leadership	9. Culture of CIP
<b>4,52</b> (13, 24, 25)	<b>4,90</b> (3, 17, 21)	<b>4,74</b> (5, 7, 9, 11, 27, 28)

**Table 11:** Overall result with implemented single statement results

Table 11 now reveals that the overall result is not automatically generated by each single statement outcome at about the same range of score. For example the lowest rated category of freedom to act contains the second highest single score as well as two low single scores and the top rated reward and feedback category does not include one of the top three rated single statements. The following detailed category analysis will now show how the overall results emerge out of results generated by each individual result.

### 5.3.1 Reward and feedback

Starting with the top-ranked statements on reward and feedback with a score of 5,01, a significant difference can be seen in in table 12 by the rating from one proposition to another within the same cluster.

Topic	Statement	Score	Topic average
REWARD & FEEDBACK	I think it is fair to reward someone if he/she saves company money by optimizing work processes	5,28	5,01
	I think that a monetary reward for process optimization creates additional motivation	5,12	
	I always receive constructive feedback from my supervisor that helps me improve in my work	4,62	

Table 12: Statement results in reward and feedback

The general statement on the value and need to reward successfully concluded optimizations confirms the expectancy theory and is therefore rated highest within this group followed by received money as additional motivator. Lacking behind is the score on the message of feedback given by the supervisor for the work that has been done and should help to improve the quality of the individuals work. Due to the fact that the scores on the first two statements which are related to reward, differ substantially from the result on the third, feedback concerned question, a more detailed look into the data will be necessary to clarify the overall result. As the average value in this group is calculated with a weight factor of two for reward but only one for feedback, the overall category value of 5,01 is driven by the higher values of the first two answers in this cluster. The two answers on reward will be taken under consideration together in the upcoming analysis shown in table 13.

The scores differ significantly between those of managers and employees as well as between the affiliations to a department (single filtration). Whilst the employees see reward with higher relevance than the managers do, managers feel that the feedback they receive is constructive and helps; their employees say quite the opposite. The highest relevance of rewarding is given by employees affiliated to both departments; feedback quality is rated highest from people employed in the series department.

Topic	Managers	Employees	Series	Racing	Both
Reward (two statements)	4,97	5,33	5,08	5,21	5,38
Feedback (one statement)	5,20	4,32	4,81	4,54	4,53

Table 13: Reward and feedback by managerial position and department

Applying double filtration, as also done on the high level evaluation, shows in table 14 that managers in series department score higher than their colleagues on the

reward statements, this is where series employees score lowest of all. The result on feedback quality is also rated highest by managers of the series department; same is valid also for their employees.

Topic	Managers			Employees		
	S	R	B	S	R	B
Reward (two statements)	5,19	4,83	4,92	5,03	5,39	5,68
Feedback (one statement)	5,50	5,00	5,15	4,50	4,32	4,11

**Table 14:** Reward and feedback with applied double filtration

The conclusion of the reward part of this section is that both, the received personnel feedback and reward created for realized sufficient optimization activities have a high value in the organization of Pankl. Employees, especially those in racing department and hybrids of racing and series, see this topic with high relevance in respect of their personal motivation. Reward should be given to those who contribute to the overall economic success of the company with realized optimizations. Managers do not rate this topic as important as their employees with the exemption of managers in the series department.

Managers on the other hand feel the feedback they receive from their supervisors as constructive and helpful but combined with the result of their employees it seems that they are not handing down the same level of quality to their staff-members. Best in this respect co-operate managers of the series department with their employees.

### 5.3.2 Motivation

Ranked second overall with a score of 4,95 is the category of motivation. The first statement is questioning the level of intrinsic motivation which is currently present in the organization; the other two questions within this cluster are related to leadership at Pankl (role and influence). First whether additional motivation can be created by a proactive leader who cares about his employee's motivation, second whether the supervisor actually cares about the level of motivation in the eye of his employees or not. These latest named two again will be analyzed together in the upcoming assessment.

Topic	Statement	Score	Topic average
MOTIVATION	I would be motivated to create an extra effort project to improve my work environment, if I were given extra time	4,84	4,95
	I think that my line supervisor is aware of my current level of motivation and is aware about what keeps me motivated	4,84	
	The quality of leadership of my supervisor has direct influence on my motivation	5,17	

Table 15: Statement results on motivation

The result of this cluster shown in table 15 again is not rated similar on all three statements; therefore a deeper investigation on the single results is useful. Managers score higher than their employee which again proves the result of the overall analysis. Table 16 shows that the people working in both departments score higher than all of their colleagues on the intrinsic motivation topic, series-personal on the other hand scores higher in the leadership statements.

Topic	Managers	Employees	Series	Racing	Both
Intrinsic motivation	5,27	4,63	4,65	4,68	5,13
Role and influence of leadership (2 answers)	5,33	4,84	5,13	4,88	5,03

Table 16: Motivation results by managerial position and department

Finally applied double filtration in table 17 points out, that again managers working in the series department score higher than all others, on the employee side hybrids are best intrinsic motivated. The role and influence of leadership is seen similar important by all employees.

Topic	Managers			Employees		
	S	R	B	S	R	B
Intrinsic motivation	5,38	5,11	5,31	4,33	4,47	5,00
Role and influence of leadership (2 answers)	5,75	5,06	5,27	4,86	4,79	4,87

Table 17: Motivation with applied double filtration

Summarizing the latest results it can be said that managers in general show a higher level of intrinsic motivation than their employees and that they do understand the direct relevance of (their) leadership on motivation. The last aspect is distinct

more in series department. Employees show a lower level of intrinsic motivation and also see the role of leadership which was questioned by the awareness of the motivation level of the employees not existent in the same way managers do.

### 5.3.3 Leadership

Rated third highest on overall with a score of 4,90 the next analysis is done on the leadership cluster in table 18. The first statement is questioning the clear vision Pankl's management has. Together with the second question on the behavior of managers, they build the group of vision and role modeling which will be sub sequentially analyzed together. The third statement is questioning the existence on vertical transparency of information from the manager to the employee level.

Topic	Statement	Score	Topic average
LEADERSHIP	I think that leadership at Pankl has a clear vision for the company	5,34	4,90
	I think that managers at Pankl act as role models in respect of their work behavior and compliance	4,57	
	My supervisor provides me with sufficient amount of information on the actual economic and operational status of the company	4,78	

Table 18: Statement results on leadership

Also on the leadership topic, the three statements are answered differently applying single filtration referring to table 19. Managers again score higher than the staff members on both topics, no big difference is seen on the vision and role modeling questions between the different departments. The transparent downstream-flow of information is rated lower by the racing employees.

Topic	Managers	Employees	Series	Racing	Both
Vison and role modeling (2 answers)	5,32	4,77	4,94	4,91	5,05
Transparency of relevant information	5,07	4,63	4,88	4,57	4,88

Table 19: Leadership results by managerial position and department

With applied double filtration, table 20 shows that managers in the series department score highest on both topics within this cluster, on the employee side those working in both series and racing create the highest values.

Topic	Managers			Employees		
	S	R	B	S	R	B
Vision and role modeling (2 answers)	5,56	5,22	5,23	4,67	4,76	4,92
Transparency of relevant information	5,38	4,89	5,00	4,67	4,42	4,79

**Table 20:** Leadership with applied double filtration

The conclusion on leadership is that, in the opinion of Pankl's employees, leadership does have a clear vision for the company. The quality of the role-model function of managers is seen by themselves higher than in the eye of their staff members; this reveals that managers should not only reflect on themselves (self-image) but also take care about their public image. Finally managers do have sufficient information about the general status of the company, their employees are obviously lacking behind in this respect.

#### 5.3.4 Teamwork

Teamwork is the last category with an overall result above the average value. The first two statements in this cluster are questioning the team-affiliation in table 21; The average score on the team-affiliation statement is 5,18 (86 % of the maximum, calculated by the mean of 5,02 and 5,33) which shows that in general employees at Pankl feel as being part of a team to a high degree. The third question is challenging the level of knowledge sharing in our company. A quite significant difference on the results of single statement responses can also be seen within this overall topic.

Topic	Statement	Score	Topic average
TEAMWORK	In my work environment I feel as being part of a one united team that works towards a common goal and shares the same purpose	5,02	4,89
	I can always ask my colleagues for support or help in case I have a problem that I cannot solve alone by myself	5,33	
	I think that knowledge sharing at Pankl is at very good level and brings greater values to our shareholders and customers	4,31	

**Table 21:** Statement results on teamwork

Basically the same offset between managers and their staff can be seen on the team affiliation category in table 22 as in others; in respect of knowledge sharing no

significant deviation between the two groups is detectable. It is rated highest with significant offset to all others by the employees of the racing department.

Topic	Managers	Employees	Series	Racing	Both
Team affiliation (2 answers)	5,38	5,07	5,05	5,16	5,36
Knowledge sharing	4,37	4,28	4,27	4,57	4,13

**Table 22:** Teamwork results by managerial position and department

By applying double filtration, analysis in table 23 shows that this high scoring on knowledge sharing is generated by both the managers and their employees in the racing department.

Topic	Managers			Employees		
	S	R	B	S	R	B
Team affiliation (2 answers)	5,38	5,22	5,50	4,86	5,13	5,26
Knowledge sharing	4,25	4,44	4,38	4,28	4,63	3,95

**Table 23:** Teamwork with applied double filtration

Summarizing the latest results, the picture can be created that at Pankl the support of others does work on a good overall level, same is valid for the sense of a shared identity as an outcome of the survey feedback. More critical seems to be the fact that knowledge sharing is lacking behind the result of team affiliation. Employees engaged in the racing department score by far higher than any manager or employee with other affiliation.

### 5.3.5 Culture of CIP

The number of statements in this category is doubled compared to all other topics; this was chosen because of the high relevance as CIP stands in the foreground of the theoretical aspects and the hypothesis of this work. As shown at the beginning of this section, the single statements within this group were rated between ranks 5 to 28 which illustrate the wide variety of answers given.

The highest score in table 24 is generated at the statement of self-encouragement (5,28) followed by the believe in the contribution of individual improvements. Pankl employees strongly believe in the long term effectiveness of innovation but do not feel a pressure they cannot bear in this content as the lowest score is given on the statement of pressure to improve.

Topic	Statement	Score	Topic average
CULTURE OF CIP	I think that only product or process innovation can lead to a long term success of a company	5,13	4,74
	I am constantly encouraged to search for improvements within my work environment	5,28	
	I believe that the improvements I make to my work contribute to the total success of our company	5,20	
	I always make sure that I utilize experience from the past events on new tasks and new problems	5,10	
	I feel that there is a constant pressure from management to improve employees' performance	3,83	
	Successful work improvements are officially shared and acknowledged in a proper way within our company	3,93	

Table 24: Statement results on CIP culture

Again sub-groups are built out of the single statements with the content of success factor of CIP (first and third statement), self-encouragement for CIP (clusters the second and fourth statement in table 24), and stress to improve and proclamation for the more detailed upcoming analysis.

Table 25 shows that managers score higher on believe in the success and self-encouragement in CIP than their colleagues, but they also feel a higher stress level put on continuous improvements. The value of CIP in general is seen on a high level throughout all departments. The level of self-encouragement is higher in series department than in others. Stress felt by the employees to continuously become better is less present in the series department (remark: although the cost pressure for sure is higher in every series manufacturing than in a prototype or racing facility). The proclamation of concluded improvements in general is scored low on all questioned groups of employees with only little difference between them.

Topic	Managers	Employees	Series	Racing	Both
Success-factors (2 answers)	5,50	4,98	5,12	5,04	5,31
Self-encouragement (2 answers)	5,45	5,06	5,31	5,09	5,19
Stress to improve	4,00	3,75	3,58	3,96	3,84
Proclamation	3,80	4,00	4,04	3,86	3,91

Table 25: CIP culture results by managerial position and department

With the second filter additionally applied to the data, the information gained and shown in table 26 becomes even more interesting. Managers in the series department feel the less stress to improve at all, whilst their employees feel the highest pressure of all groups on the same topic.

Topic	Managers			Employees		
	S	R	B	S	R	B
Success-factors (2 answers)	5,56	5,11	5,73	4,92	5,00	5,03
Self-encouragement (2 answers)	5,63	5,33	5,42	5,17	4,97	5,03
Stress to improve	2,75	4,22	4,62	3,94	3,84	3,32
Proclamation	3,88	3,56	3,92	4,11	4,00	3,89

**Table 26:** Cultural CIP aspects with applied double filtration

As a conclusion of the CIP culture cluster of statements it can be said that the high score on encouragement to improve is a positive signal for the readiness to introduce CIP in an organization and also a factor that enables the process to be kept alive by the employees once initiated. As employees are generally encouraged, the need for additional constant pressure is not extraordinary high thus also rated low by the participants of the survey on average. Pankl employees in general are well trained to use the lessons learned in the past to improve the actual situation and perform better on new future assignments. The clear commitment to the need of innovation combined with continuous improvements will lead to a long term success of the company and their employees in the eye of Pankl's staff members. Realized improvements finally are not shared and acknowledged enough in an official way by the management.

### 5.3.6 Customer orientation

This category of statements is of high interest in so far as it contains the highest single rating of 5,49 as well as the second to last score of 3,65 on the internal customer satisfaction question. The first two statements of table 27 are merged to the topic of external customer relation; the high score of 5,02 on the average of both shows that focus on sales-customers plays an essential role at Pankl. Lacking far behind this score on external customers is the internal customer relation at Pankl shown in table 27.

Topic	Statement	Score	Topic average
CUSTOMER ORIENTATION	I think that focus on customer satisfaction at Pankl is excellent with all employees	4,55	4,57
	I think that customer comes always first at Pankl	5,49	
	The inputs I get from other colleagues for my work are always of such a quality is if I were the end customer	3,65	

Table 27: Statement results on customer orientation

Both the external and internal customer orientation is valued significantly different between managers and employees with managers again on the higher score side. Internal customer relation is rated lower by racing affiliates in comparison to their colleagues with assignments related to the series production (table 28).

Topic	Managers	Employees	Series	Racing	Both
External customer (2 statements)	5,13	4,96	4,87	5,04	5,17
Internal customer	3,83	3,56	3,69	3,50	3,78

Table 28: Customer orientation by managerial position and department

No different result and additional information is generated applying the second filtration on managers and employees (table 29).

Topic	Managers			Employees		
	S	R	B	S	R	B
External customer (2 statements)	5,13	5,17	5,12	4,75	4,97	5,21
Internals customer	3,88	3,67	3,92	3,61	3,42	3,68

Table 29: Customer orientation with applied double filtration

Summarizing the latest results it can be said that the customer definitely plays an essential role in the world of Pankl and his employees. The lower score on customer satisfaction implements that the focus could be adjusted on orienting more on what specifically the customer really wants and/or needs.

Internal customer relation focuses on the way people treat each other with the quality of our work and the given feedback. Pankl's employees in this respect score this topic way lower than the orientation and focus on the final customer who buys the product or service provided which still leaves large space to improve within the organization.

### 5.3.7 Targets

The upcoming statements of the targets section in table 30 are questioning the relevance of target-setting in general, the link between personal and overall targets and the leadership functions in creation and evaluation of objectives.

Topic	Statement	Score	Topic average
TARGETS	I think that my personal targets are clearly defined and followed up by my supervisor in a sufficient way	4,60	4,73
	I think that my targets help me focus and prioritize on the most relevant activities of my work	4,81	
	It is clear to me how my personal targets are linked to Pankl's strategy and business plan	4,78	

Table 30: Statement results on targets

Managers again rate the relevance of targets higher than their colleagues. The importance of targets is also assessed highest by those people working in both departments. The link between targets and strategy / vision is basically recognized by both managers and employees with a relative maximum score at series department affiliates (table 31).

Topic	Managers	Employees	Series	Racing	Both
Relevance of targets (2 statements)	4,93	4,59	4,63	4,70	4,80
Targets and business strategy	5,17	4,58	4,92	4,71	4,72

Table 31: Targets by managerial position and department

Series managers rate the merit of targets as well as the link to the global values higher than their employees. Series employees obviously understand the link between their personal targets to the overall business strategy better than their colleagues in the racing department although the definition and relevance of their own targets is not as good as in racing respectively in both departments (table 32).

Topic	Managers			Employees		
	S	R	B	S	R	B
Relevance of targets (2 statements)	5,19	4,72	4,92	4,39	4,68	4,71
Targets and business strategy	5,38	5,00	5,15	4,72	4,58	4,42

Table 32: Targets with applied double filtration

Recapitulating, targets do generally help focus on what is most important in the eyes of Pankl's employees and they are also well defined in general in the opinion of the questioned people. Defined targets are also followed up in a sufficient way and the link between individual targets and the overall strategy is understood well in the eyes of most of the respondents of the organization. Interesting is the behavior of staff members of the series production department. They do not see the high relevance of personal objectives but still feel a strong link of personal targets to the overall strategy which is a comparable result scenario to that of managers in all departments.

### 5.3.8 Training and coaching

The three questions in this segment are focusing on the support of management in respect of training and coaching on the job, the need of additional training and the effectiveness of concluded education (table 33).

Topic	Statement	Score	Topic average
TRAINING & COACHING	My line manager makes sure that I get enough personal support to successfully deal with new assignments or tasks given to me	4,92	4,52
	Training and coaching I receive helps me increase and improve my performance	4,33	
	I think that if I received extra training on how to optimizing my operative job content, I would be able to increase my performance	4,31	

Table 33: Statement results on training and coaching

The need and effectiveness of trainings and coaching is scored higher by employees than by their managers, no significant difference is seen in table 34 between the different department affiliations. The second topic which is questioning the quantitative line-manager support at a new work task is rated higher by managers than by their employees. Series affiliated personal values this topic higher than all other (table 34).

Topic	Managers	Employees	Series	Racing	Both
Need and effectiveness (2 statements)	4,15	4,41	4,35	4,30	4,31
Support of management	5,20	4,77	5,12	4,68	4,97

Table 34: Training and coaching by managerial position and department

Managers in the series department rate both, the need for training and the support of management given, higher than all other colleagues. On the employee side staff members affiliated to both departments rate the need and effectiveness highest, support of management is best in the series world, the employees' state (table 35).

Topic	Managers			Employees		
	S	R	B	S	R	B
Need and effectiveness (2 statements)	4,56	4,33	3,77	4,25	4,29	4,68
Support of management	5,63	4,78	5,23	4,89	4,63	4,79

**Table 35:** Training and coaching with applied double filtration

To sum up, training and coaching in general is on an average level at Pankl, also the kinds of trainings applied seem to be sufficient in respect of the generated improvement in performance. Line managers do care about the support required by their employees but the racing and series department differ clearly from each other in their opinion.

### 5.3.9 Freedom to act

These statements ask the question whether the employees have the feeling of enough self-determination to process their daily work in their own preferred method and style. The first two propositions were designed to figure out whether people are overloaded with their daily work content or if sufficient time is left over to also reflect on what and how things could be improved. The third statement of this group is questioning the company's cultural aspect on the freedom given to the employees to fulfill their job. Does Pankl want his staff to take the initiative to improve?

As this is the category with the lowest overall score of 4,43 and is yet key to a good CIP process, a lot of potential should be detectable in the following results described in table 36. Due to the fact that results of each single statement differ significantly, no further clustering will be made on this topic.

Topic	Statement	Score	Topic average
FREEDOM TO ACT	My line manager gives me enough freedom to process my daily work in an autonomous and sufficient way	5,47	4,43
	I have a balanced work load, so I can have time to think about ways to how improve my own performance and the performance of my company	3,44	
	At Pankl people are encouraged to take initiative and do things on their own to improve company's performance	4,38	

Table 36: Statement results on freedom to act

The question of freedom to process autonomously is rated high throughout all categories of people. Contrary to that the work load employees have to carry is high and does not leave enough time for improvements in the eyes of basically all groups of staff (table 37). Managers are encouraged more than their employees to improve, racing employees score lowest of all on this single statement.

Topic	Managers	Employees	Series	Racing	Both
Freedom in daily work	5,77	5,32	5,38	5,39	5,72
Balanced work load	3,63	3,34	3,69	3,39	3,28
Encouragement	4,67	4,23	4,27	4,04	4,78

Table 37: Training and coaching by managerial position and department

No matter which department managers are affiliated to, the topic of freedom to act is rated at about the same level. The work load is more balanced for those working in series or racing only. Racing managers and series employees somehow are not encouraged as much as others to take the initiative to improve (table 38).

On the employee level, highest freedom and encouragement is given to those persons working in both departments, the highest balance of work load is seen at series employees.

Topic	Managers			Employees		
	S	R	B	S	R	B
Freedom in daily work	5,75	5,78	5,77	5,22	5,21	5,47
Balanced work load	3,88	3,89	3,31	3,61	3,16	3,26
Encouragement	5,00	3,89	5,00	3,94	4,11	4,63

Table 38: Freedom to act with applied double filtration

As a conclusion of this last category it can be said that in general there seems to be enough freedom to individually act in his / her own autonomous way but the work load in general is quite high. Encouragement for improvement is provided by the general company culture of Pankl, but the level is different in each department.

#### 5.4 Executive summary

To summarize the results gained by the analysis in section five of this thesis following top five findings will be highlighted in respect of what is already present at Pankl and which the aspects are where potential could be found and further improvement made to bring CIP to the next level.

First to mention is the high level on the overall result. The highest score in a single category is 5,01 and the lowest 4,43, still significantly above the average which is in the middle of “I totally agree” and “I absolutely disagree” with a rating of 3,0. As the result of both the managers (5,31 – 4,40) as well as their staff members (4,99 – 4,30) is on a high level, and also no single department is lacking behind mentionable, (the lowest single result is rated 4,16 by employees of racing in freedom to act) the general condition and climate at Pankl can be seen “pro-CIP” meaning well prepared for the implementation even if not yet present.

The second general finding is the presence of positive results on topics which are not easy to be changed in an organization in a short timeframe as they are linked to the general climate, the culture, the feeling of affiliation and the positive overall attitude of all employees in an enterprise. In this context the results on motivation, teamwork and leadership are to be mentioned on the high level results. Assuming that these topics are indispensable conditions for people acting in a management position, a closer look should be made on the result generated by the staff-members. The lowest score of 4,65 is generated in the leadership category by Pankl’s racing department employees (referring to table 9). This again shows the good initial position for the implementation or the further development of CIP in this organization.

Moving to the level of single statement data analysis, interesting information is gathered by the ranking of all questions in the order from highest to lowest score. Even if rated at the lower end on the overall topic ranking like in the categories of freedom to act, customer orientation and CIP culture, single statements in these cluster were answered with a high score which does mean that there is potential to improve and turn the rating by setting the right accents. To mention in this context

are the number one rated statement “I think that the customer comes first at Pankl” with the customer orientation rated overall only in place seven of all nine categories. Also “My line manager gives me enough freedom to process my daily work in an autonomous and sufficient way” in second single statement position which is part of the freedom to act cluster validated on last place. Finally “I am constantly encouraged to search for improvements within my work environment” as the fifth statement in ranking within the culture of CIP group.

However where there is light, there is also shadow. The workload Pankl's employees have to carry on both management and employee level is high and does not leave too much time to think about possible improvements. The statement on this topic has scored lowest over all 30 questions with a remarkable distance to the next higher ranked. This score admittedly is balanced by the facts that not too much pressure is put on the people to constantly improve referring to the low rating of 3,83 at this statement (which is ranked number 28) and people are encouraged to improve as “I am constantly encouraged to search for improvements within my work environment” is ranked fifth but all in all this result is not the best possible initial situation for the implementation and keeping CIP alive in an organization and this shows that there is still room to improve.

Second lowest ranked on the single statement layer is the question on the quality of the internal customer relationship. Pankl does take a lot of care and values the importance of its sales customers to a high degree (assuming that the word “customer” in the statement “the customer comes always first at Pankl” implies that external customers were meant in this context). Of less importance in the eyes of the employees obviously the internal customer relationship is seen. By rating the statement “the inputs I get from other colleagues for my work are always of such a quality as if I were the end customer” on the second lowest position at the end of the ranking list, Pankl employees see a significant drop in the quality when it comes to transfer the high value of its external customers to the operational level.

Last to mention in this summary is the statement in the group of CIP culture: “Successful work improvements are officially shared and acknowledged in a proper way within our company”. This is by the way one of the few statements on which Pankl's staff members scores higher than their managers. By scoring at the lower end of the statement ranking, we can deduce that there is a lack of official communication and promotion when it comes to show and explain the positive results of improvements conducted, and motivate the employees by this to follow the

track which was generated by other colleagues in a positive manner. This implies that the topic of sharing internal results or even the relevance of CIP in general is not of high relevance at Pankl's management which does play an essential role in the success of continuous improvement.

Finally, by looking into the overall results with the focus on possible influences generated by the implemented CIP projects within the series production department, the analyzed data shows that people who were affected by the realized change shown under "Influenced" score higher than the "Unaffected" Racing department employees in eight out of the nine top categories.

1. Motivation		4. Targets		7. Reward and feedback	
Influenced	Unaffected	Influenced	Unaffected	Influenced	Unaffected
5,02	4,81	4,75	4,70	5,05	4,99
1%	-3%	0%	-1%	1%	0%
2. Freedom to act		5. Teamwork		8. Customer orientation	
Influenced	Unaffected	Influenced	Unaffected	Influenced	Unaffected
4,59	4,27	4,87	4,96	4,60	4,52
4%	-4%	0%	1%	1%	-1%
3. Training & coaching		6. Leadership		9. Culture of CIP	
Influenced	Unaffected	Influenced	Unaffected	Influenced	Unaffected
4,56	4,43	4,96	4,80	4,74	4,71
1%	-2%	1%	-2%	0%	-1%

**Table 39:** Opinion of CIP influenced versus unaffected employees

This fact in general proves the hypothesis of this work and shows that a positive influence is generated on employees who were involved in the process of continuous improvement in a certain part of the organization.

## 6 DISCUSSION AND IMPLICATIONS

This chapter will summarize the gained results in chapter five and assesses them against the objectives defined under paragraph 4.3 with the final prove or refutation of the hypothesis. First each single category is analyzed by the means of continuous improvement and the existence in the concerned organization. This reflection is followed by an assessment on which cultural aspects are currently already present at Pankl. Finally strengths and weaknesses will be derived and opportunities to improve will be highlighted.

### 6.1 Evaluation of the overall preparedness for the next CIP level

Based on the theoretical aspects described in the first sections of this thesis, some pre-conditions are of high importance and therefore proposed in order to implement and maintain CIP successfully in an organization. Let's summarize these nine subject areas in a slightly re-organized sequence with the customer in first place in the following section and finally challenge the survey results against the guideline.

**Customer orientation** is the most important key element in CIP. Without the evaluation of planned and concluded optimizations against the demand of our clients, the whole procedure would not create an additional value nor generate a significant benefit for an organization.

Agreed **targets**, defined in a proper way, give the individual person clear information on the operational activities which are of highest importance and relevance. If targets are not shaped well or are not fully understood by the affected person, activities in general as well as in CIP will not work towards the fulfillment of these objectives and can therefore not generate the maximum possible level of efficiency.

By acknowledging the personal performance and creating an autonomous work-environment, **leadership** has the potential to create a positive influence on the mindset and behavior of employees. Especially the aspect of the self-governed method of operation plays an essential role in the success of CIP.

**Freedom to act** is exactly what is generated by the autonomous way of work enabled by the management which was mentioned in the last paragraph. The employee who emphasizes a good balance of what needs to be done and the given level of freedom to decide in which way these targets are going to be achieved will use this design flexibility and create a positive influence in the success of CIP.

**Training and coaching** are substantial elements in the creation and transfer of knowledge within an organization and therefore irreplaceable features when it comes to the formation and execution of new contents, methods and ideas in a properly functioning CIP.

**Teamwork**, co-operation and support of each other will create an environment of shared problems and related solutions on daily work within an organization. These features are substantial parts in CIP when it comes to create and work on common goals and share same purposes in a project in order to generate a progression.

**Culture of CIP** topics in an organization are the personal encouragement to create something new and also the belief that improvements made are meaningful for the whole, but also the way advancements are proclaimed within a company. This subject is important in CIP because it is one key factor which establishes and ensures the maintenance of motivation.

The level of intrinsic **motivation** is a result of basically all of the above mentioned topics. It is the most important factor when it comes to infinite success of CIP which is created, driven and kept up by the employees.

**Reward and feedback** finally is the return for what has been done additionally to the amount of work people get paid for basically. In CIP reward (in which way done however), if done in a proper and sufficient way, plays the important role of acknowledging the performance and by that fulfilling the expectation of the involved people.

Now that we have summarized the meaning and importance of the nine subject categories defined in the process of survey creation described in section 4.5, let's see what the results of the conducted survey tell us in this respect.

Comparing the leadership principles and center-of-excellence cultural aspects with the actual figures at Pankl leads to following basic statements per survey topic:

Pankl's general company culture is strongly focused on **customers**, yet not all employees are acting constantly to improve the satisfaction of these clients. Internal customer relationship is lacking far behind in this respect. The value of **targets** and the link to the overall strategy are clear to Pankl's employees but they are not consistently exactly defined and sufficiently followed up by the line management. The **leadership** of Pankl has a clear vision for the company in the eye of the whole staff but obviously does not submit enough information on the current status from the management vertically down to the employee level. Also managers are not

consistently seen as the best preferably role models for their employees. In autonomy which was asked in the category of **freedom to act**, we see that the employees do empathize a high level of given personal freedom to design but the encouragement to take the initiative is lacking behind this result. This could also be related to the unbalanced and high work load individuals have to carry. Next, the statements on **training and coaching** yield that the employees of Pankl do not believe too much in the effectiveness of further education but they do see a good level of personal support already present by their line managers. **Teamwork** is rated high when it is questioned on the co-operation of staff-members; the feeling of acting in a group that works on the same goals and purposes is also present. In the opinion of the questioned persons the overall level of knowledge-sharing is not present on a very high level at Pankl. **Cultural aspects of CIP** at Pankl are strongly present in the form of the encouragement to autonomously search for improvements and the belief in the success of those activities although the employees do not feel a very high pressure in general put on them to constantly improve. Also the staff of Pankl is motivated to improve their future activities based on lessons learned in the past. Finally the acknowledgement of conducted improvements is on a low level in the opinion of the employees. **Motivation** to work actively and help to shape CIP is basically present, the management is also aware about this level of motivation which is directly connected to the quality of leadership received. Finally **reward and feedback** is important to and definitely a motivator for Pankl's white collar staff. They highly rate the thought that received money will create additional motivation; an opinion that the managers of Pankl do not share. Possibly this result on employee level is also linked to the lack of constructive supervisor feedback they currently receive on their performance.

Looking deeper into the data and compare the behavior and sensation of employees in series department where CIP pilots were already implemented versus racing affiliated staff members, the overall statement is that the pilots conducted have a positive influence on culture and the behavior of people who have already felt the new breeze within their organization. This can be seen in the answers of both the managers as well as staff-members affiliated in either strictly series or both series and racing versus the opinion of racing staff on the topics of freedom to act, CIP culture (except the pressure to improve which is higher in the eyes of racing employees), and intrinsic motivation. An interesting side aspect is that employees working strictly in series department score lower than those affiliated in both profit centers on a wide range of these results.

To sum it up we can say that Pankl is generally strong and ready for the CIP in most of the relevant topics which stand for a center of operational excellence in the content of continuous improvement. A learning effect was also already created by the implementation of pilot-projects in series department which generated potentials to be applied at the further development and/or roll-out of CIP in all other profit-centers. To be named in this content is the knowledge on CIP methods gained during the pilot-project phase referring to chapter 4.2 (table 1), the value and peculiarity of general CIP-cultural aspects (table 9), the importance of feedback (table 13 and 14 in section 5.3.1), the manifestation of leadership (table 16 in section 5.3.2), the level of self-encouragement (table 25 in section 5.3.5), the knowledge on how the personal targets are linked to the overall strategy (table 31 & 32 in section 5.3.7) and finally the personal support given by the management (table 34 and 34 in section 5.3.8).

However there are also some areas in the range of subjects that could use fine tuning and improvement activities before moving CIP to the next level at Pankl. These will be discussed in more detail in the upcoming chapter 6.4 of this work.

## 6.2 Interpretation of the presence of cultural aspects

The cultural aspects described under paragraph 3.4 of this thesis show the high relevance of customer orientation, creativity, communication, entrepreneurship, learning and problem solving as well as curiosity and team effects.

The **customer orientation culture** is high at Pankl when it comes to their sales clients (ranked first in the single statements evaluation), orientation on the satisfaction of internal customers is validated by far lower (ranked next to last) which shows that the knowledge on the value of a customer could still be raised.

That the **culture of creativity** is existent at Pankl is reflected by the high level answers to the questions of freedom to act (ranked number 2) and personal encouragement (position 5). On the other hand, Pankl's staff ranks the question on whether all employees are encouraged to improve low, respectively on position 23 and the proper honor donation of successful improvements only on place 27 which implies that the creativity present is not valued accordingly.

The value of a good **communication culture** is approved by the high level result (ranked fourth) on required support and help but is weakened on the other hand by the answer to the statements of transparency of information and that of knowledge sharing (ranked 17<sup>th</sup> and 25<sup>th</sup>).

The existence of an **entrepreneurial culture** at Pankl is evaluated positive by the answers to the statements of encouragement to search for improvements (ranked 5<sup>th</sup>), the belief that innovation is necessary and that improvements contribute to the overall success (rank 7 and 9) of an enterprise.

That a sufficient **problem solving culture** is existent is assessed with the survey question on the personal encouragement to search for improvements (ranked 5<sup>th</sup>), the usage of experience gained within past events (rank 11) and the motivation to create projects to improve as 14<sup>th</sup> highest ranking.

The current peculiarity of a **learning culture** is approved by the statements of the line-managers role (personal support, rated 13<sup>th</sup>, constructive feedback, ranked 19<sup>th</sup> and role modeling ranked 21<sup>st</sup>), as well as by the questions on the benefits of the training and coaching effects (24<sup>th</sup> and 26<sup>th</sup> place). Pankl in this respect scores relatively low on basically all of the mentioned topics.

The **culture of curiosity** is questioned by the statements of the sufficient flow of information and knowledge (rank 17, 25 and 27) and the allowance to ask colleagues rated 4<sup>th</sup>. Also in this field, Pankl is on a good level but room to improve is still available.

Finally the assessment of **team culture** is answered with the questions on support ranked 4<sup>th</sup>, team affiliation ranked 13<sup>th</sup> and knowledge sharing rated 25<sup>th</sup> out of 30 statements. Also in this respect, a good basis is existent but further improvement is possible.

Summarizing the above stated results the conclusion is that Pankl's CIP-culture is basically present to a certain extent but still leaves room to enhance and become a center of excellence for upcoming CIP activities. These potentials will also be described in chapter 6.4 of this thesis.

### 6.3 Assessment of strengths

Out of the total of nine high-level categories, four of those can be considered as strengths at Pankl.

First to mention is the aspect which is directly related to the top rated single statement answer, Pankl's level of customer relation and orientation. The high score stands for the clear focus within the whole organization on what is really important for a company which sells a product or service: the customer. The client is who really matters, without him buying what is produced or ordering an offered service,

the value of a business entity would be zero no matter how big the assets, no matter how high the current stock price.

The second positive aspect is dedicated to the general quality of manpower at Pankl. The fact that almost 70 % of the questioned persons concluded the survey and thereby contributed their data is a positive sign of interest for what is happening in an organization, and curiosity is also where motivation starts. Additionally to this fact, the high level of scores on basically all single statements shows that Pankl is on a good level from reward and feedback down to freedom to act.

The employees also do have a high grade of freedom to run their daily work in an autonomous way, which is the third positive aspect to be mentioned. They are motivated to constantly improve and also do believe in the long term success of these refinements. They can additionally get enough support from their team and line-management in case they are on the wrong track and lost their way or are over-challenged with a new assignment or task.

Altogether this finally leads to the last brownie point, the current high level of motivation which is generally felt by the whole staff. As managers feel personal incentive in the same peculiarity as their employees, they can pretty much understand their influence on the motivation of their staff. It is not about constantly putting pressure on topics such as continuous improvement, but to keep the grade of motivation on a high level in a coaching function, do care about their (work related) problems and needs and do not forget to make decisions on the important aspects of reward.

The approach within a SWOT (Strengths, Weaknesses, Opportunities and Treats) analysis in the first place is always to focus on the available strengths and use them for the creation of opportunities. Now what can the management of Pankl learn from the positive results as an outcome of this survey?

1. The customer needs to be maintained as number one focus of all activities conducted in the organization.
2. Continue to conserve and retain the value of the human workforce. Ensure that the personal qualification fits to the severity and complexity of work, care about the personal freedom of each single employee and ensure that teamwork is present and highly valued. Be a part of the whole and also a part of the team, always act as a role-model that your employees can and willingly rely on.

3. Motivation is the most important driver to keep on going with improvement activities without the constant impulse of the management. Pankl's line managers need to continue with their encouraging stimulation to maintain motivation on a high level and give it an additional push from time to time.
4. Keep on thinking about an expectation-fulfilling reward, given to those who are mainly responsible for improvements and optimizations of work processes and which thereby support the economic advancement of the company.

#### **6.4 Areas of weakness and opportunities to improve**

The second aspect of the SWOT – analysis is focused on the reduction of weaknesses and the prevention of treats. Let's now therefore have a look at the found current weak spots of Pankl based on the data generated in the survey.

Starting at the bottom of the single statement ranking, the question on a balanced work load was rated lowest of all by both the managers and the staff-members at about the same level of score. This means, as there is too little free time left over in the daily business, that currently no or only a negligible number of improvements will be generated continuously although encouragement and the necessary level of motivation is present on basically all levels in the organization.

Second, the internal customer relation, meaning whether we treat colleagues in the same way we (would) treat our final customer is rated second lowest on the single statement analysis. This means that people at Pankl do not care as much about their direct colleagues as the overall organization cares about their clients. This either implies that the received feedback is not always constructive yet the statement on this topic was rated not bad at least for the feedback given by the line-management. Another thesis is that work is really lacking in quality in the eyes of others but the affected employee still would expect a positive attitude.

Next topic is that the value of training activities, to improve the potential output, is not assessed high in the survey. Together with the statement that knowledge sharing at Pankl is not on a very good level, the question comes up on how Pankl's employees are able to constantly develop their subject-specific attitudes and how they will be capable to adapt to new and difficult challenges.

Target setting and the follow-up procedure of these objectives finally is a complex and time consuming reoccurring procedure especially for mid-level managers (department) who are a little off the general strategy and top-management vision

and also have to deal with a higher number of direct associates. Every manager in such a position for sure had to pass certain theoretical training on how to set targets, coach and finally evaluate the results with the reward on the fulfillment as a final outcome. Still it is a hard task which only becomes easier with the number of cycles executed and as long as it is done badly the employees will neither see the benefits of actually having agreed targets nor notice the connection between individual objectives and the general strategy and business plan.

What can be suggested as a summary for the management of Pankl in the respect of these recognized weaknesses?

1. The high load of work at Pankl needs to be taken under consideration to give employees more time to constantly improve. Which part of the daily content could be made easier and more efficient would be one aspect; also the current need of time-consuming activities with only little value added should be generally challenged. All together a project on "lean processes" within the organization (apart of production) could be created, maybe already as a specific CIP-project within the roll-out of CIP.
2. The value of colleagues as customers within the organization should also be a field of improvement. If we treat each other in a respective, fair and co-operative style, still maintaining a culture of constructive criticism, every company member can benefit from this culture. A possible approach in this respect for example is the implementation of a SIPOC analysis conducted in a group of direct-dependent people or departments which could clarify the role of supplier and customer in each single process and help to improve the understanding of who requires what and expects which content delivered in which kind of quality.
3. A lot of money is spent every single year on personal and subject-specific educational activities by an organization such as Pankl, yet still the employees rate the value of these partly very expensive actions low and do not see additional trainings as very helpful performance increasers. Obviously the current procedure in continued education at Pankl is not favorable. Pankl's managers therefore need to learn on a detailed level which kind of education their employees personally require to improve in the first place - a good chance in this respect is to add the section of further training again in the annual interview, which was erased previously. Also the management should be given more personal freedom and flexibility to make

distinct training and coaching decisions, based on the need of the individual staff members and the agreed budget they can spend annually, by themselves.

4. At Pankl the personal targets are usually defined in the first quarter of the year as part of the appraisal interview but after that they are only followed up irregularly or not at all until the assessment of the achievement of objectives as a part of the estimation of the annual monetary bonus in the conclusive year. It also seems, that the line-managers at Pankl empathize target setting as a burden they need to undergo but this process is not seen as a direct value creator.

Therefore the first suggestion of the author is that top managers should support the mid-level managers on this task. The objectives given by them need to be SMART (Specific, Measurable, Accepted, Realistic, Time bound) and clearly understood by the receiver in the first place. Additionally the link of personal targets to the overall business plan and strategy must be individually explained and understood. Targets for the next lower level of hierarchy can be constructed together by top and mid-managers to ensure that the business strategy can still be seen in the objectives of the employees.

Second proposition is to look into the agreed targets at least on a quarterly basis together by the individual staff-member and his line manager. This puts both the employee and his leader into the position to clarify obscurities, adjust time schedules and create new or erase obsolete articles within the ongoing year in which the objectives were created. Also the need of extra training or coaching within a single period can be discuss and evaluated together.

## 7 CONCLUSIONS

The objectives of this master thesis were the analysis of the current status of CIP-related overall topics after the conduction of a pilot-run of CIP-projects in one of Pankl's profit centers together with the discussion of differences between the already CIP-influenced and other departments situated in Bruck an der Mur. Second target was the assessment of the opinion of managers versus the view of their employees in the context of CIP to create a plan of suggestions on how to develop CIP at Pankl to the next level. The final goal aimed to define possible future perspectives and activities which could establish an environment that encourages all Pankl employees to perceive and care about continuous improvement in their daily work routine.

The structural approach in this respect was to initially look into the theory of cultural and center of excellence aspects which are relevant for a successful CIP in chapter two and three. This information gathered together with aspects derived from the current status and culture of the considered company in chapter four enabled the author to create a grid of topics which describe the Key Success Factors (KSF) in continuous improvement. With this knowledge a survey of statements questioning exactly the relevance and presence of these subjects within the organization was created and implemented. The respondents of the survey generated data that led to the analyzed results which were used for a detailed evaluation. Finally potential opportunities and recommendations were created out of the strengths and weaknesses resulting from the executed data analysis.

The hypothesis of this thesis was that a well-conceived and monitored implementation of CIP in an organization will generate a change in the mind of the employees who were affected by CIP, towards an improvement of their views and opinions which at the end will generate a shift in the assessment of the key success factors related to CIP.

The comparison of the gathered results against the objectives and the hypothesis implies that

1. The objectives of the thesis were fulfilled to a high degree. The study of theory on relevant CIP content lead to the generation of a suitable survey content and list of topic-specific single statements (deductive approach), results gathered in both quantitative and qualitative respect were useful for a sufficient analysis of this data to derive the CIP status currently present

within the organization and depending on the relevant work environment. The results also enabled the chance to individually look into the opinion of managers and their employees. Applying double filtration a closer look on both managers and their staff in each single department was possible. Finally the inductive approach (theory creation) was used to create perspectives and suggestions for the whole organization to further improve the current status and move onto the next level: the self-preservation phase of CIP.

2. The hypothesis is at least confirmed to a certain degree as the scores gained by the survey respondents who were affected by the implementation of CIP-pilot projects – those who work either strictly in series department or are affiliated to both racing and series to about the same content – are higher than the values created by people working in the still unchanged culture of the racing organization. Unsecure is the level of created influence as the results of both can only be compared by relative numbers.

And Pankl finally, proven by the results of the practical part of this thesis, is in a very good overall condition but still with room to further improve when it comes to match the requirements for CIP in a center of operational excellence with the present status in its organization. To benefit from the yet generated advantages of continuous improvement to a larger extend and scale the overall enterprise success, a rollout of the continuous improvement process in other profit centers and plant locations around the world is highly recommended as next upcoming steps.

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## LIST OF USED ABBREVIATIONS

5S	-	Seiri (Sort), Seiton (Set in order), Seiso (Shine), Seiketsu (Standardize), Shitsuke (Sustain)
CIP	-	Continuous Improvement Process
COO	-	Chief Operating Officer
EBIT	-	Earnings Before Interest and Tax
FIA	-	Federation International de l'Automobile
GM	-	General Motors
Inc.	-	Incorporated
JIT	-	Just in time
KPI	-	Key Performance Indicator
KSF	-	Key Success Factor
MS	-	Microsoft
NUMMI	-	New United Motor Manufacturing Inc.
OEM	-	Original Equipment Manufacturer
PC	-	Personal Computer
PDCA	-	Plan, Do, Check, Act
SIPOC	-	Supplier → Input → Process → Output → Customer
SMART	-	Specific, Measurable, Attractive, Relevant, Time-bound
SMED	-	Single Minute Exchange of Die
SPC	-	Statistical Process Control
SWOT	-	Strengths, Weaknesses, Opportunities, Treats
TPS	-	Toyota production system
TQM	-	Total Quality Management

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## APPENDIX: SURVEY IN ENGLISH LANGUAGE



### Master thesis - MBA Bernd Kögler

#### Seite 1

Dear colleague,

thanks a lot in advance for your support!

The upcoming questions will strictly be used for the generation of my master thesis, which is part of my post graduate education (MBA Automotive industry at TU Vienna and STU Bratislava)

The statements in this survey are related to how you work and how you think about work at our company on a day-to-day basis. Also your responses should reflect your opinions and experiences at our company

I would kindly ask you to answer the next questions as precise as possible. All data and information gained will be treated absolutely discrete, anonymous and confidential

To give you an insight in the results of this survey I will give a presentation on the data analysis in fall 2017

Best regards  
Bernd Kögler

#### Seite 2

**I would be motivated to create an extra effort project to improve my work environment, if I were given extra time. \***

1 = totally disagree  
6 = absolutely agree

1       2       3       4       5       6

#### Seite 3

**My line manager gives me enough freedom to process my daily work in an autonomous and sufficient way \***

1 = totally disagree  
6 = absolutely agree

1       2       3       4       5       6

#### Seite 4

**I think that my targets help me focus and prioritize on the most relevant activities of my work. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

#### Seite 5

**I think that a monetary reward for process optimization creates additional motivation \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

#### Seite 6

**I have a balanced work load, so I can have time to think about ways to how improve my own performance and the performance of my company. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

#### Seite 7

**I think that if I received extra training on how to optimizing my operative job content, I would be able to increase my performance. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 8

**I am constantly encouraged to search for improvements within my work environment \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 9

**Training and coaching I receive helps me increase and improve my performance. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 10

**I feel that there is a constant pressure from management to improve employees' performance \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 11

**The quality of leadership of my supervisor has direct influence on my motivation. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 12

**It is clear to me how my personal targets are linked to Pankl's strategy and business plan. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 13

**In my work environment I feel as being part of one united team that works towards a common goal and shares the same purpose. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 14

**I always receive constructive feedback from my supervisor that helps me improve in my work. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 15

**I think that leadership at Pankl has a clear vision for the company. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 16

**The quality of the inputs I get from other colleagues for my work always gives me the feeling that I am treated the same way that we usually treat our customers \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 17

**I think that my personal targets are clearly defined and followed up by my supervisor in a sufficient way \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 18

**I always make sure that I utilize experience from the past events on new tasks and new problems. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

### Seite 19

**I think it is fair to reward someone if he/she saves the company money by optimizing work processes. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 20

**I think that my line supervisor is aware of my current level of motivation and is aware about what keeps me motivated \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 21

**I think that knowledge sharing at Pankl is at very good level and brings greater values to our shareholders and customers \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 22

**I think that managers at Pankl act as role models in respect of their work behavior and compliance. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 23

**At Pankl people are encouraged to take initiative and do things on their own to improve company's performance**

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 24

**I think that only product or process innovation can lead to a long term success of a company \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 25

**I can always ask my colleagues for support or help in case I have a problem that I cannot solve alone by myself. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 26

**My line manager makes sure that I get enough personal support to successfully deal with new assignments or tasks given to me. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 27

**I believe that the improvements I make to my work contribute to the total success of our company \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

**Seite 28**

**I think that customer comes always first at Pankl.**

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

**Seite 29**

**Successful work improvements are officially shared and acknowledged in a proper way within our company \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

**Seite 30**

**My supervisor provides me with sufficient amount of information on the actual economic and operational status of the company. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

**Seite 31**

**I think that focus on customer satisfaction at Pankl is excellent with all employees. \***

1 - totally disagree  
6 - absolutely agree

1       2       3       4       5       6

## Seite 32

You have successfully completed all specific questions - thank you for that!

I would now kindly ask you to give me information to your person, education and work area / department

### My age \*

- 20-30 years       31-40 years       41-50 years       > 50 years

### My gender \*

- female       male

### My total work experience (Pankl and other employers) \*

- 0 - 5 years       5 - 10 years       10 - 15 years       > 15 years

### My level of education \*

- compulsory school       College / university  
 Skilled trade       other  
 High school

## Seite 33

### Department I work in \*

- Racing Piston / piston pin       Racing Conrod       Series conrod

### I am in a team leader / management position \*

- Yes       No