Chapter 45

Routine and quality management in the chemical industry

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ABSTRACT
The work shows the importance of routine management, performance, and quality in chemical industry companies. To this end, the necessary factors for application are described, in addition to showing better results when routine management is used. In this study, successful cases were used and a breakdown of the main indicators was exposed. The main results were the reduction of maintenance cost of physical and chemical analysis equipment, the reuse of organic waste, the resolution of failures in the production plant, the control of production procedures, and the resolution of failures in the pulp and paper industry.

Keywords: Routine Management, Performance Indicators, Quality Methodologies, Chemical Industries.

1 INTRODUCTION

Routine management uses means to ensure the correct functioning of all processes within an organization. It makes use of performance indicators, quality tools, and routine meetings, among other practices that help in the development and maintenance of good results for companies (Belmonte and Freitas, 2020). In addition to ensuring that the organization's good practices are adhered to, it also assists in the continuous improvement of the organization through well-founded strategic plans.

As for its application, this technique can be applied in any part of the organizational structure, controlling the organization's indicators and carrying out continuous improvements of each microprocessor used by the company in question. In this way, it is possible to guarantee the resolution of the problems faced daily (Peixoto et al., 2015). Routine management assists in controlling the indicators and in the necessary actions to be taken so that the expected results are always achieved.

As observed by Campos (2004), it is necessary to list the sectors from the most to the least critical and start the routine management by the most critical. Routine management is based on the system of performance indicators used by the organization and on the application of quality tools that result in great results when properly applied. The wrong choice of performance indicators used by the organization or the non-use of them can generate disastrous results, such as bankruptcy or degradation of its technical systems (Fischmann and Zilber, 2015). Such indicators also make it possible to carry out precise action plans carried out in the company (Peixoto et al., 2015).

Given this, the present work aims to explain the importance of using routine management in companies in the chemical industry, since it also brings good results for this industry. This is done by explaining their support bases, that is, performance indicators and quality tools. In addition, examples of the application of these concepts are used, which generated expressive results as evidenced by the cases described throughout this study.

This work will detail what performance indicators are, defining them and showing their importance through real examples. Indicators are the first step for a company to be able to apply routine management. Through the information generated by them and their control, it is possible to identify problems, solve them, and develop improvement plans. The quality tools make use of this information to identify the causes of existing problems, solve them, guarantee the execution of successful actions already implemented, and promote the continuous improvement of the processes employed in the organization.

The quality tools show how employees should direct their activities to act in a precise, systemic way and optimize the time of their actions. There are several examples, as exposed in the work, of success in the application of such tools. Once precise performance indicators and the ability to use quality tools, a company can insert them in the analyzes and actions carried out in the daily lives of its employees. Routine management, in this sense, ensures that these pillars will be used in the best possible way.

Aiming to show the importance of using routine management in companies in the chemical industry, in this work the methodology used was Bibliographic Research, making a literature review on the subject and seeking, in secondary sources, support on the subject addressed. This work also has an exploratory nature to the concepts of performance indicators and quality tools. An interview was also carried out, in which information was collected about the use of such tools integrated with performance indicators and the application of routine management in companies in the chemical industry.

2 LITERATURE REVIEW

2.1 PERFORMANCE INDICATORS: CONCEPTS AND APPLICATION EXAMPLES

As exposed by Sperling and Sperling (2013, p. 313) "The term indicator comes from the Latin, indicate, which means to indicate, reveal, point out, assimilate.". This shows that the purpose of the performance indicator (PI) is to reveal something, more precisely: to provide information. And it is through the information that you can implement immediate actions or develop a robust strategic plan to solve problems or make improvements.

As presented by Mann and Kehoe (1994), it is necessary to have a sophisticated method to measure the influence of activities occurring in a company on business performance. Many companies employ technical quality improvement concepts but fail to interpret their impact because they cannot measure it (Huge, 1990). And for this measure to be carried out using a sophisticated method, the company must make use of performance indicators.

Based on the above-mentioned performance indicators, it is possible to understand that their analyzes must be carried out in an interrelated way since the information they bring is often complementary (as in the example of operational inefficiency as a possible cause for the increase in accidents). In addition, it is understood that the use of a system of performance indicators is of paramount importance as a strategic management instrument in an organization that has or seeks success. It will be exposed throughout the work how this information brought by the indicators can be well used through routine management.

One of the first steps is to analyze the benchmark, which allows the company to make comparisons. This helps to understand how it is positioned in the market. Taking the area of basic sanitation as an example, Sperling and Sperling (2013) state that for the inspection of the sector, Brazilian law institutionalized the use of indicators through Law No. 11,445/2007 (BRASIL, 2007). This makes it possible to have the same criteria for carrying out inspections in different companies. In this way, companies can be inspected easily, since they use the same metric to find out about aspects of the company that are of interest to the supervisory body.

Thus, for performance indicators to fully employ their function, their information must be democratized (Cardoza and Carpinetti, 2005). Employees must have access to the IDs, know how to interpret them, and that they are also aware of the necessary actions to be taken to achieve good results. In this way, the information and development of the company can be achieved by everyone (Martins and Neto, 1998). The use of visual management is a successful alternative widely used by companies to democratize the information brought by performance indicators.

Pacheco and Cremonese (2014) propose an approach to implement standardization and visual management in a company in the metalworking sector to improve the company's productivity. The authors' work achieved good results through the approach that led them to the use of visual management for the organization of the workplace, mainly for the tools used. But this was only possible to be evaluated due to the existence of a company productivity indicator. To illustrate the need to work with indicators in an integrated way, such work also monitored the quality level of the products produced through an ID, this was necessary to ensure that the increase in productivity did not generate a detriment to quality.

Valentine et al. (2014) implemented spot management to improve production results in a large textile company in the state of Rio Grande do Norte. The work achieved expressive results of up to 68% increase in the daily productivity of looms. The first stage of its applied methodology was the choice of indicators for measuring performance, followed by the use of tools such as 5W1H and the Cause-Effect diagram.

It exposed how performance indicators can be used for decision-making and actions. This means they can be used for both reactive and proactive actions. And both types of actions, based on the results of indicators, have a great chance of contributing to the company's objective (Martins and Neto, 1998). And visible management is fundamental for immediate actions and for the involvement of everyone in the company in the quest to achieve its objectives.

2.2 THE QUALITY TOOLS

Performance indicators are fundamental for the application of tools aimed at continuous improvement and quality. They are responsible for providing accurate and necessary information for carrying out analyses, whether deep (using many indicators in an integrated manner) or not, for decision-making. The importance of using such tools will be exposed, explaining them, illustrating how some of them are integrated with performance indicators, how they can be used in the routine of members of a company, and some applications in companies in the chemical industry.

According to Junior (2010, page 4) Quality tools "are used as support in the development of quality or to support decision-making in the analysis of a given problem". Still, according to the author, such tools have great potential to identify root causes[1] of problems, such as the Ishikawa diagram and the 5 whys, and help in solving problems such as 5W2H.

It is possible to observe in the literature great results achieved through the application of quality tools in companies in the chemical industry. These results include, for example, the reduction in the cost of maintaining physical-chemical analysis equipment (Miranda and Santana, 2018), the identification and resolution of failures in the production of ethanol from sugarcane (Medeiros and Silva, 2017), in the control of procedures adopted in the production of medicines to meet the strict quality requirements (Alencar et al., 2004), and even solve quality problems that occur in pulp and paper producing companies (Tzaskos and Gallardo, 2016).

2.2.1 Consolidated Quality Tools

Brainstorming is a well-known and widely used tool. It aims to suggest ideas for the possible causes of a problem or solutions for it. It is usually carried out with a team that democratically suggests such ideas (with the participation of all) and, only in the first instance, committed only quantitatively, not qualitatively (Tzaskos and Gallardo, 2016; Medeiros and Silva, 2017). This means that team members initially come up with ideas without a strong commitment to preconceived concepts.

A tool used to identify the root causes of a problem is the “5 whys” method, doing this through questions. It was developed by Professor Taiichi Ohno. The questions are always “Why?” and are done sequentially. The first “why” allows you to explore the problem from an operational point of view, the second explores it through the intrinsic logic of the problem, the third allows you to analyze the limits of the problem, the fourth makes a conceptual analysis and the fifth finds solutions (Medeiros et al. Silva, 2017).

By using the "5 whys" a person or a team can identify causes for problems in a non-superficial way. This means that the tool prevents wrong statements from being made about the true causes of a problem. In the study of a problem, it is possible that the first causes thought for the same are superficial and these

[1] Facts that are the primary generators of the problem(s) in question

are just consequences of a true root cause, and not itself properly speaking. For example, considering an equipment downtime problem, a possible cause could be a power outage. However, the power outage may just be a consequence of the true cause, which could be a defect in the power transmission system. In the example, the root cause of the problem would wear or any defect in the transmission line, and the power outage in the equipment is just a consequence of the true cause.

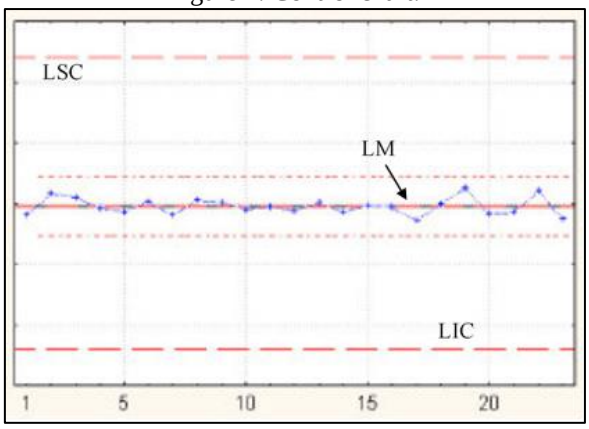
Another widely used tool to identify the root causes of a problem is the Ishikawa diagram, also known as a cause and effect diagram or fishbone diagram. Such a diagram is a tool that induces its users to identify possible causes of the problem through the analysis of six factors, called 6M. The 6M are labor, method, raw material, machines, measure, and environment. The analysis of the 6M can show possible causes for a problem that would not be thought of with a simple brainstorm. Assuming that a person tends to blame the operator of a particular reactor for problems that have occurred, if he uses the Ishikawa diagram together with a team he will be better able to suggest other possible problems not only related to the operation, such as an unfavorable temperature due to the lack of acclimatization in the sector (environment) or even errors in the calculations of the substrates that the operation of the sector in question receives (raw material or measurement).

Junior (2010) describes the use of the tool in the following steps: determination of the problem to be analyzed, a survey of the possible causes and recording them in the diagram, construction of the diagram using the 6M, analysis of the record to identify the true causes and, for Finally, fix the problem. Still, according to the author, the results are the result of brainstorming, in which the ideas are documented through the diagram. A simple brainstorm might not cover enough factors to drive the analysis to the true root cause.

In addition to what has already been exposed, it is necessary to have means of identifying the parameters (IDs) that are used together with these tools and a classic practice for viewing what is happening in the company. Statistical process control (SPC), in general, is the set of tools that make it possible to evaluate the statistical control of the process in question. For several processes of industry, some parameters need to be controlled, as already shown by the present work such parameters are the performance indicators. Visualizing the behavior of these parameters is essential for identifying possible anomalies that are affecting, in some way, the process in question.

The CEP shows the variability of a parameter and makes it possible to control the process over time (Alencar et al., 2004). Through it, it is possible to determine whether or not the established process is under control, that is, whether there are anomalies that interfere with the procedure in such a way that there is an impact on the controlled results. In the CEP there are control charts through which it is possible to detect deviations in such parameters (Alencar et al., 2004). In this way, it is possible to take corrective action and quickly reduce the quantity of out-of-spec products. According to Valentin et al. (2014), the sooner an anomaly is identified, the greater the chances of obtaining effectiveness in the actions implemented for its resolution. Figure 1 shows an example of a control chart.

Figure 1: Control chart.



Source: Adapted from Alencar et al. (2004).

Next, equations 1, 2, and 3 are presented for calculating the horizontal lines of the classic control chart.

$$LSC = \bar{x} + 3 * \frac{\bar{s}}{\sqrt{n}},$$

Eq. (1)

$$LM = \bar{x},$$

Eq. (2)

$$LIC = \bar{x} - 3 * \frac{\bar{s}}{\sqrt{n}},$$

Eq. (3)

Where $\bar{x}$ is the sample mean, $\bar{s}$ is the standard deviation and n is the sample size.

Using control charts, it is possible to analyze whether the process in question is stable or not. A process is said to be stable when the parameter illustrated on the chart is randomly distributed close to its mean. The visualization of trends, either increasing or decreasing, cycles or points outside the control limits may suggest that there is interference in the process or that it is not capable of producing the necessary results for that parameter (Alencar et al., 2004).

An expression used to refer to the classical practice mentioned earlier is Gemba Walk. This expression means going through the operating sectors of a company to identify problems and sources of waste. The word Gemba has a Japanese origin and means “place where things happen” (Baraldi, 2017).

According to Freixo (2018), to carry out the Gemba Walk in a methodological way, it is necessary to: prepare the team so that they understand the purpose of the practice, create a plan establishing key

questions to be asked, write down the observations for later analysis, carry out the event in different schedules, repeat the practice other times.

2.2.2 The PDCA Methodologies and SDCA Cycle

PDCA is often used by business management (Miranda and Santana, 2018). It is a tool that allows application improvements methodologically and can be used systematically in the routine of organizations (Machado et al., 2016). The PDCA cycle means a plan, execute, verify, and act correctly, in English: plan, do check, action (Miranda and Santana, 2018). It enables applied and continuous improvement through the fulfillment of its stages in a cyclical way.

The PDCA cycle is also known as the Shewchart cycle or the Deming cycle. The tool was developed in the 1930s in the United States. But its use and wide dissemination only started in post-war Japan with the work of Deming. The tool aims to promote the improvement of a process or activity methodically and efficiently. In addition, it is an important tool for quality-oriented management (Sardinha et al., 2008; Alves, 2015).

According to Campos (2004), the PDCA tool is used to continuously achieve goals and solve problems and should be used in the routine of employees in an industry. Alves (2015, p. 4) explains that "The PDCA [...] can be used in any organization to ensure business success, regardless of the area or department (sales, purchasing, engineering, etc.). The cycle is described as:

- P – Plan: At this stage, goals are established through the analysis of performance indicators, and how the goals will be met is planned, such planning is also done according to the company's guidelines and policies. It is at this stage that the problem to be solved is chosen (Alves, 2015). Tools such as the Pareto chart and the Ishikawa diagram help in decision-making in choosing the problem to be solved first and in the study of the possible root causes for the problem, respectively;
- D – Do: In this step, the tasks are performed according to what was planned in the previous step. New procedure standards are often established at this stage (or modification of an existing standard) to meet the proposed goals. It is also necessary to collect data for the analysis of the efficiency of the method used and subsequent corrections, if necessary (Alves, 2015). Thus, training takes place, the action plan is executed and data is collected to verify the efficiency of the actions carried out (Campos, 2004);
- C – Check: In Check, the effectiveness of the method used is evaluated through the data collected. One must judge whether the actions are taking the indicators to the desired level. It is in this phase that errors and failures are detected (Alves, 2015);
- A – Action: According to Sardinha et al. (2005, p. 3): "after verifying the results of the execution carried out, if necessary, preventive actions should be taken, method improvement or correction of items outside the planned standard". The better the planning and analysis

carried out previously, the smaller the number of corrections and also the time spent in solving them.

The application of improvements based on results based on performance indicators through the PDCA cycle brings excellent results, as will be explained in this work. However, there may still be errors in executing the methodological plan proposed by the PDCA tool and still not being able to consolidate the result obtained after the proven improvements. This can occur due to the non-follow-up of the actions and improvements performed. To prevent this from happening, it is also necessary to act strategically to maintain what was done, using the SDCA cycle to maintain improvements (Machado et al., 2016; Sardinha et al., 2018).

The SDCA must be applied in a similar way to the PDCA, that is, in a cyclical way and using the information from each stage for the works of the next stage. SDCA means standardize, execute, verify, and act, in English: standard, do check, action (Machado et at., 2016). According to Campos (2004), the SDCA is used to maintain the result obtained in the PDCA. SDCA is a very important tool in routine management, as it ensures compliance with the same, making use of the newly established standards.

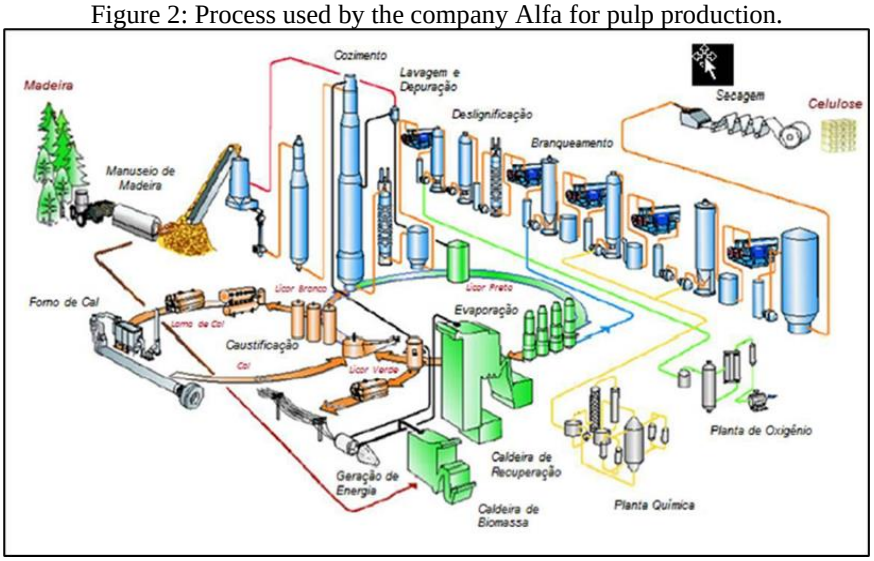
3 SUCCESS CASES IN THE APPLICATION OF ROUTINE MANAGEMENT

3.1 A LARGE PULP AND PAPER COMPANY

As in the study by Peixoto et al. (2015), this work will use the name Alfa to refer to the company of that work. The company Alfa used as a reference for the application of routine management the book "Management of the day-to-day work routine", written by Campos (2004).

Before portraying the application of routine management in the company in question, it is interesting to identify the process flow used by the company in the production of pulp. Figure 2 shows this flow. The process boils down to cooking, bleaching, drying, and pulp extraction from the wood.

Figure 2: Process used by the company Alfa for pulp production.

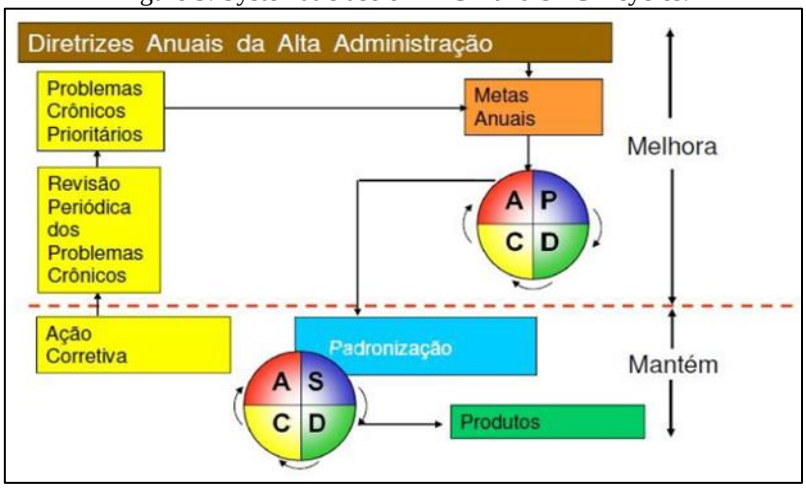


Source: Peixoto *et al*. (2015).

Image provided by the company Alfa and used in Peixoto's work. The Alfa company plans its annual goals considering its internal scenario. It has improved control of its procedures through performance indicators and CEPs (Peixoto et al., 2015). According to the author, this was of fundamental importance for the analysis of what was happening in terms of the problem. The company's operational functions carried out corrective actions for the problems that occurred. Chronic anomalies were reviewed and prioritized, and the resolution of chronic problems classified as priorities entered the strategic plan drawn up by the company's top management.

According to Peixoto et al. (2015), the company used PDCA to resolve chronic anomalies identified in the company's strategic planning. Since such anomalies had their resolution obtained through the cyclic method, good results, both in terms of process efficiency and in terms of product quality, were maintained using the SDCA tool. This system is shown in Figure 3.

Figure 3: Systematic use of PDCA and SDCA cycles.



Source: Peixoto *et al*. (2015).

Based on this survey, annual goals are determined, and the PDCA tool is used to correct and solve priority problems. Finally, the SDCA is applied to maintain the standardization of the results, thus guaranteeing an efficient process and a product within the technical specifications. In this way, the company balanced the activities of the operational functions and senior management with management that guarantees the proper use of IDs and quality tools, providing both improvement and maintenance.

In the Alfa company, the operation function reported the anomaly to the direct supervisors, that is, to the supervision function. In addition, the operators also immediately removed the symptom of the anomaly. Soon after the supervision function, it was checked whether, because of the anomaly that occurred, the established standard could be applied or not. This is because in many cases anomalies prevent compliance with the standard.

An example is set out for better understanding: if in a given sector the valves of the oxygen supply system are controlled through electronic devices and they stop working, it may be necessary to carry out the necessary controls manually, operating manually. different from the established procedure. The

supervision function will carry out the analysis to guide the operation on how to act in these situations. It is also worth mentioning that recurring problems may require the creation of new standards. For the given example, a procedure to control the valves manually could be created, but this is only if the problem is repeated because the fundamental priority is the solution of the root cause, which leads to the failure of the electronic devices. To identify the root cause, in this case, a tool such as the "5 whys" could be used and ensure the proper functioning of the standard system. Guidance on how this can be done follows the routine management used by Alfa.

After evaluating the supervision, the standard procedure may or may not be followed, depending on the guidance given. If it can be followed, an analysis of the anomaly occurring at the Alfa company is conducted, followed by immediate action on the cause. If there is a need to proceed differently from the established standard, the reason for this is identified and the need for new training is verified. Whether or not the standard needs to be met, a report of the anomaly is made and this is reviewed by the company's supervisory and managerial function.

After reviewing the reports, Alfa's Process Engineering team establishes priorities regarding anomalies using the Pareto chart, as already explained. Anomalies are resolved by working on the root cause and, when necessary, a new standard operating process is established. It is worth noting that to ensure accurate compliance with all the steps described, it is of fundamental importance that the company has well-structured performance indicators and forms of control. As already evidenced by Peixoto et al. (2015), the company Alfa uses CEP charts for such control.

An interesting highlight made by Peixoto et al. (2015) was that frequent training was carried out for operators. It is evident that within this system used by the company Alfa in its routine management, the operators' reports are fundamental. As already exposed in the present work, Campos (2004) explains that the two activities of the operation are to comply with standard operating procedures and to report anomalies. At Alfa, a simple report is not made, but through the training carried out, the operators have enough knowledge to block possible problems caused by some anomaly, and, many times, such anomalies do not need to be reported to the supervisory function, since the performance of the operation alone is enough for its resolution.

Peixoto et al. (2015) conclude that Alfa has become a leader in the sector thanks to the practices mentioned in this work. Practices that are part of your fundamental routine management. The author also concluded that the company works systematically, acting on the problems that occurred through a system of prioritization and identification of the root causes, making use of the PDCA and SDCA. Such identification can be done through many quality tools, some of the main ones and well consolidated in their use were exposed in chapter two of the present work, as well as tools for the resolution of such causes.

As is evident, the operators of the company Alfa have a relatively improved knowledge about the area of operation and the equipment they use, however, the author proposes the use of management guidelines, which contributes to the general view of the employees about the company, such as its goals,

vision, and mission. Peixoto et al. (2015) made such a proposal because operators do not demonstrate improved knowledge about other areas. This is important since many problems in the industry have their causes and consequent needs for integrated action between two sectors or more.

In addition, the author also proposes the use of a methodology for the company's cash management. This proposal was made to democratize the information about the success of actions applied to the reports of anomalies made by the operation function, so that it can, in addition to monitoring the actions, also make new suggestions.

3.2 A LARGE STEEL PRODUCTION COMPANY

As described earlier, it is practically impossible for a company to operate for a long time without anomalies. In addition, it must act in such a way as to always ensure the improvement of its processes to grow in competitiveness and remain consolidated in the market. This topic shows how routine management was applied in a large successful multinational company, a steel producer, located in southeastern Brazil so that anomalies are quickly resolved and processes are continually improved, that is, by applying the improvement to be continued. Of all the good practices that make up the routine management of the company, those identified as the most important will be highlighted.

In addition, comparisons are made between the routine management of such a company and its application in a large company in the automotive sector. The automotive sector company also has a unit in southeastern Brazil. The following descriptions were mainly based on the information collected in an interview with a person who is a reference in the subject and who has already worked in both companies. Throughout the subtopic, the companies will be referred to as Beta company, the steel producer, and Gama company, from the automotive sector, to keep their names confidential and continue the use of the Greek alphabet started in the previous topic.

Before going into detail about how the company Beta makes use of routine management to solve anomalies in an agile way, it is worth mentioning the structured use of the Gemba Walk used by it. The company, like many others, has processes that are critical to the quality and delivery of its products to internal and external customers. It also has a structured 5S program, an essential basis for continuous improvement, control of its performance indicators, management of the standards to be executed, and support for the activities of its operators.

The Gemba Walk is used to ensure that these important aspects of the business are working properly. Beta uses Gemba with a predefined structure, such as the route to be taken and the items that need to be checked during the walk. It checks the correct operation of the critical parts, to assess the appropriate conditions. The functioning of the 5S in the sector in question is also verified, the indicators of the area exposed through the visible management, the fulfillment of the established operational standards, and the support given to the operators are also evaluated.

In addition to the Gemba Walk, the company Beta also has a practice called quality rounds, held fortnightly. In these scheduled rounds, the company's quality sector team carries out rounds with a system similar to that of the Gemba Walk. However, the quality round focuses on the quality of the products and processes used, according to the rigidity adopted by the company. The deviations found by the quality sector team in the round are taken to the coordinator of the area in question and, together, they carry out an action plan to properly deal with the deviation or deviations found.

All anomalies or possible sources of anomalies detected in these practices are treated according to the company's fault handling system. The practice of Gemba at Beta proves to be effective in dealing with any problem that could become critical if it were checked only when it already had an impact on the company. In this way, major problems are avoided.

Beta also has an improved system for handling failures (TF), that is, anomalies. The treatment of anomalies in companies, in general, uses a set of quality tools to identify the root cause of the problem and solve it. The people involved in handling Beta failures are chosen according to the multidisciplinarity required to solve the problem in question and its complexity.

If the report concerns a problem with equipment, for example, the team will be composed, among other people, of a maintenance technician, the coordinator, if necessary, and the machine operator. If the problem is related to quality, the quality technician or the quality engineer is added to the team. Being a problem related to the environmental sector, the treatment plant operator and the environmental analyst are called to compose the team. The people called to be part of the team will always be chosen based on the problem. This means that it will not always be necessary to have a supervisor or a coordinator. In this way, those responsible for managing the company can deal with other important issues as well.

In this system there is a complete description of the problem that occurred, the relevant details for its resolution, and the immediate actions implemented, that is, blocking actions. Blocking actions are intended to ensure that the anomaly does not generate a major impact on the IDs, whether they are production, quality, safety, or other indicators. In TF, after the blocking action, the cause and effect diagram and 5 why tools are used to identify the root cause and the 5W2H to plan the action plan to be carried out in the definitive treatment of the cause. The maximum time to resolve the issue. For 90 days, evaluations are carried out to verify the effectiveness of the implemented actions. If the desired results are not achieved, corrective actions are taken or a new TF is opened, following another systematic.

When the cause and effect diagram and the 5 whys are not enough to identify the cause, or the action plan made is not effective for the treatment, a new TF is opened according to another systematic. For this new TF other people are involved. In the first one, supervisors and coordinators are avoided in the treatment. However, in this second systematic, they are constantly asked to be part of the project, since it has a higher level of complexity.

The second TF opened for failure has a longer cause analysis time and a richer and more accurate information stratification. Before, the first one was aimed at solving the problem quickly. Having great

complexity, however, the second TF proposes, in addition to the more exhaustive analysis, the execution of an action plan whose chain of help involves members of higher parts of the company's hierarchy.

Explaining how Beta makes use of the Gemba Walk and the quality route to identify anomalies, and how the company handles its failures, it is also worth mentioning the programs used to ensure proper functioning and compliance with routine practices and standards. that guarantee the success of the company.

As for the guarantee of compliance with the established standards, the company Beta conducts constant process audits. Each coordinator is responsible for carrying out such audits twice a week. In these audits, it is verified, according to a form with a pre-defined checklist, if the process is being fulfilled according to the established company's standard documents, that is, the SOPs. Audits are programmed in such a way that verification of the standard of all operators in all procedures performed by them is guaranteed.

Audits and quality rounds are also used to collect good practices. This means that the Beta company makes use of its routine to check possible ideas that arise from the operators themselves or other people involved to identify opportunities for improving the processes used by it.

Some important meetings are also part of the company's routine for the leveling of information between the different parts that constitute its hierarchy. In these meetings, performance indicators are shown and dialogues are created to solve problems and improve the practices adopted by the company. One of these meetings is "the safety hour", in which information about accidents and other important practices for the safety of employees is transmitted, engaging everyone in a clear objective of the company, that is, to have no accidents.

Beta also holds performance and improvement meetings, operational management meetings, and area performance dialogue meetings. In the latter, employees have the opportunity to be congratulated due to the good practices adopted and the contributions made to the constant improvement of the company and the work environment. In the performance dialogue meetings, the machines, quality, and requests for help needed are also discussed.

The Beta company also has an operational excellence program, which generates great financial returns by addressing problems. There are specific people to lead improvement projects, including using tools such as PDCA. Such financial results also come from following the correct routine, the Gemba Walk, the qualifying round, routine meetings, and many other practices adopted by Beta.

After the main points that were identified as the most important in the management of the routine applied by the company Beta, it will be briefly exposed how the company Gama applies the management of the routine through level meetings and how this system helps in the treatment of failures, comparing with the company Beta.

The company Gama has three level meetings, called in this work as N1, N2, and N3. The participants of N1 are the operators, mechanics, supervisors, and the quality team. It has a duration of five minutes. At this meeting, the main indicators are shown to participants in six classes: safety, machine, production and

availability, quality, cost, and 5S. Each of the classes has an operator that is responsible for filling in the indicator in question and displaying it. After discussing the class indicator, an action plan is drawn up based on 5W2H to solve the problems. The area supervisor brings the top three issues to N2.

Supervisors, the quality coordinator, and the manager participate in N2. It has a duration of 30 minutes. In this meeting, more detailed indicators are presented for the same six classes and the problems raised in the N1 meetings are discussed. Based on the problems raised in N1 and the new ones identified in the indicators used, TFs are opened and the three main problems are chosen to be taken to N3.

In the N3 meeting, all unit managers and the director participate and it has a duration of thirty minutes. At this meeting, the problems faced are discussed and a strategic plan is made to resolve them. In addition, each manager leaves the meeting responsible for a TF.

Observing the organization of the Gama company, it is possible to notice a robust system in the treatment of emerging failures and the survey of problems along the hierarchy, depending on their complexity. Based on this, the Beta company could adopt this system of raising the TFs by its hierarchy, making use of routine meetings. In this way, the opening of TFs that are not capable of solving some anomalies due to their complexity can be avoided.

4 CONCLUSION

Based on the detailing of routine management and the fundamental pillars for its application, that is, the performance indicators and the use of quality tools, it is concluded that routine management can be applied in companies in the chemical industry and that it is fundamental in maintaining the company in the market and in achieving expressive results.

It is concluded that performance indicators can transmit information of paramount importance for the strategic planning of companies, as long as they are accurate to represent the philosophy adopted by the company. It becomes evident through its detailing and real examples described in the present work that the lack of IDs can lead to the bankruptcy of companies, since they will not be able to interpret the moment in which the organization takes place and not even verify the real results. the application of its actions.

It also becomes evident, through the examples of the application of performance indicators and the engagement of employees in the results transmitted through them, that it is fundamental for a company to democratize the information contained in the indicators. This means that all employees, from senior management to operators, are engaged in the organization's objectives and mission so that efforts are concentrated on solving problems and implementing improvements for the company's livelihood.

Through the description of quality tools, it is concluded that the use of indicators is of fundamental importance for the precise performance of everyone in the company. By detailing the main quality tools used by companies, it is possible to verify that they have a wide possibility of application in companies in the chemical industry. Being of fundamental importance in the achievement of great results.

The study shows that quality tools allow employees to act in an organized, methodological, and systematic way. With them, it is possible to identify the true causes of the problems that occur, create action plans in a strategic and precise way to solve them, guarantee the execution of the successful actions already implemented, and promote the continuous improvement of the processes used by the organization.

It is concluded that the use of robust tools such as the PDCA and SDCA cycle is capable of guiding employees to act precisely and continuously in solving problems and maintaining appropriate procedures. The guarantee of good results through the proper application of quality tools becomes clear in the examples described throughout the work, in their direct applications in companies in the chemical industry, showing concrete results and directly linked to the implementation of such tools.

Through the examples, it also becomes evident that quality tools can be applied in several sectors within the chemical industry. This includes applications from improving the use of equipment to reducing maintenance costs to identifying failures in the production line.

Through the examples of the application of routine management described in the work, it is concluded that it helps in obtaining great results for companies in the chemical industry. Through the examples, it becomes evident how routine management uses performance indicators and quality tools to guide employees to act precisely, according to the relevant activities of each one. It is noted the involvement of routine management from the top management of a company to its operators, and that routine management allows the use of all of them to contribute to the common organizational objective.

There is an important influence of routine management in the development of a large company in the pulp and paper sector, named in this work as Alfa. Making such a company, even with a few years of existence, a reference in the market. The routine management at Alfa company guarantees the agile resolution of anomalies by treating the failures that methodologically occur in the company and making use of quality tools. The importance of using the PDCA and SDCA cycles in implementing improvements and maintaining good practices and adopted standards is also evident.

Finally, it is also concluded that the use of routine management by the company Beta, a large multinational steel producer, makes it a reference in the sector. In addition, routine management and the use of quality tools guarantee the maintenance of the company's success in its production processes, through the handling of failures that occur and the continuous improvement employed. However, the Beta company could adopt a more effective failure-handling opening system, through level meetings as it happens in the Gama company.

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