Flexible Management System for Occupational Safety and Quality

Annett Grossmann\textsuperscript{a} & Hans Martin\textsuperscript{a}
\textsuperscript{a} University of Kassel, Germany
Published online: 08 Jan 2015.

To link to this article: http://dx.doi.org/10.1080/10803548.1999.11076418

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the “Content”) contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at http://www.tandfonline.com/page/terms-and-conditions
Flexible Management System for Occupational Safety and Quality

Annett Grossmann
Hans Martin

University of Kassel, Germany

In the 10 analysed companies it is necessary to create a management for flexible processes and a structured flexibilisation of these processes. This represents the basis for the retention of existing flexibility and occupational safety.

The strategy for a management of flexible processes leads,
- firstly, to a structuring of company procedures whilst still retaining the necessary flexibility and certification ability as laid down by standards No. DIN EN ISO 9000ff. and,
- secondly, to the keeping of the demands of an occupational safety management system.

In this article the inclusion of co-workers stands in the foreground. This will be combined with the goal to utilise their experience and their acceptance of the solutions worked out.

quality management flexibility occupational safety
process management flexible process

1. THE PROBLEM

The development over the past few years shows that many small and medium-sized companies require a flexible and norm-conformed quality management (QM) system that includes safety measures. External and internal demands for continual improvement of the quality and safety of products and processes must be combined and find themselves in accordance with health-promoting work conditions as laid down in the EEC guidelines (Richtlinie des Rates, 1989). The present implementation of standard requirements for QM systems after standards No. DIN EN
ISO 9000ff. in Germany is often carried out to the detriment of necessary safety goals and proven flexibility structures. The room for manoeuvre in the standards is not recognised or left not utilised for fear of losing the certification standard of the QM system.

From this arose the aim of the research project “Flexibilisation of Quality Management Systems after standards No. DIN EN ISO 9000ff. in the Context of Simultaneous Task Completion in the Total Product Development Process in Small and Medium-Sized Companies (SME)”\(^1\). The research project led to the development of a further plan to support companies in analysing their management system for quality control and for safety measures with respect to simultaneous task completion, secondly, in evaluating them, in flexibilising them, and designing them to be more norm-conformed (Mengedoht, Grossmann, Robeck, & Fiestas Cueto, 1997). On the basis of procedures developed in this project, a model of an integrated and flexible management system of company processes for quality control and safety measures at work is presented in this paper.

2. DEFINITION OF QUALITY AND SAFETY MEASURES

Quality is defined as the “totality of characteristics of an entity that bear on its ability to satisfy stated and implied needs” (Standard No. DIN EN ISO 8402:1995; Deutsches Institut für Normung [DIN], 1995, p. 9). An entity may be, for example,

- an activity or a process,
- a product,
- an organisation, a system, or a person, or

For the present paper that means that an understanding of quality refers to products, processes or activities, an organisation or a system, and to the quality of work conditions of employees.

---

\(^1\) The research project was supported by the Arbeitsgemeinschaft industrieller Forschungsvereinigungen “Otto von Guericke” (AIF). The responsibility for the project lay with the research curatorium “Forschungskuratorium Maschinenbau e.V.” in the association “Verband Deutscher Maschinen- und Anlagenbau e.V. (VDMA).”
Quality management consists of "all activities of the overall management function that determine the quality policy, objectives and responsibilities, and implement them by means such as quality planning, quality control, quality assurance and quality improvement within the quality system" (Standard No. DIN EN ISO 8402:1995; DIN, 1995, p. 15). This means that "Quality management [is] the responsibility of all levels of management but must be led by top management. Its implementation involves all members of the organization" (Standard No. DIN EN ISO 8402:1995; DIN, 1995, p. 15).

The QM system represents the organisation structure, procedures, processes, and means necessary to realise quality management (Deutsche Gesellschaft für Qualität, 1995, p. 31). It creates the necessary conditions for the securing, furthering, and constant improvement of the quality of products and the processes connected. Here, it is necessary to define the tasks, the areas of responsibility of individual co-workers in a company (Pfeifer, 1993, pp. 343ff.).

With the EEC guidelines (Richtlinie des Rates, 1989) on safety measures and their implementation in national law by the Occupational Safety Law in Germany (Arbeitsschutzgesetz, 1996), a comprehensive concept of safety measures was introduced into the framework of the law. On the one hand, a basic duty of the employer is laid down to take the necessary safety measures for achieving and keeping healthy conditions for employees. Beyond that the employer has to carry out, with the help of studies, regular assessment of the dangers of company processes and conditions. Furthermore, suitable occupational safety organisation and means, which are integrated into every company level and contribute to the growth of the danger awareness of all employees, must be at hand. Employees are to bring in their experience from daily work into company safety measures in order to enhance company promotion of health after the recommendation of World Health Organisation (WHO) in the Ottawa Charter (1986). These duties of the employer and employee are to have the effect that work in companies can be carried out in keeping with the needs of the people involved.

From the side of the International Labour Organisation (ILO), occupational safety institutions and companies are recommended to install occupational safety management systems in the companies, parallel to QM systems. In Germany, a possible integration of both management systems has been discussed for the past few years and some companies have built up such integrated model management systems. But there is
as yet no widespread initiative with that aim. This paper is to introduce a model that can further the integration of both these aims.

3. ANALYSIS AND RESULTS

Within the framework of the aforementioned research project empirical studies were carried out in 10 companies. The selected companies are characterised by the following six criteria:

- independent companies,
- number of employees between 50 and 250,
- highly customer oriented,
- final products in small lots,
- variety of parts manufactured by the company is between middle and high,
- flexibilisation of the existing or building of a new flexible quality management system.

The aim of the study was to gain information about how the flexibility demands from outside affect the existing organisation structures—including the aspect of comprehensive occupational safety—and about which company processes show a special need for flexibility and structuring. On the basis of typical orders, the product development process in the respective companies was analysed. The analysis laid particular emphasis on semistandardised interviews with 119 employees from various function areas and hierarchic levels involved in the product development process. The areas studied were the structure and process organisation, the communication and cooperation structures, the internal customer-supplier relations, and the management of quality, process, and occupational safety.

The selection of employees for the interviews represents the personal structures of the engineering industry in Germany (Grossmann, 1998).

In the semistandardised interviews, the questions asked in the first step were about tasks and activities of the employee. The second question was about received information (e.g., documents, inquiries, written or verbal instructions) and products (e.g., parts in process or final products) from internal suppliers, which start tasks and activities of the employee. The third question asked about the framework of the employee, which means instructions or agreements, which are taken into consideration by
the employee, for example, legal provisions or sales planning of the management. The fourth question concerned existing possibilities of employees to check arriving information and products if they are complete, faultless, and up-to-date. The fifth question asked about missing information and products and ways to get them. The sixth question was related to decisions of the employee: Which decisions does the person make alone and which decisions does he or she make with colleagues or with a superior? The seventh question dealt with the results of the work and asked about internal co-workers who receive these results in the form of information or products (here called internal customer). The eighth question concerned possibilities of employees to check generated information and products if they are complete, faultless, and up-to-date.

Finally, all questions from one to eight could lead to statements about internal customer-supplier relation and would help to identify problems and potentials of improvement.

The ninth question asked about flexibility. This means demands of flexibility from the company as well as from the individual person. Furthermore, it means reactions to these demands from the company and the individual person. The tenth question asked, as a conclusion, about the general positive and negative estimate of information flow, cooperation with colleagues, and processing of tasks in the company.

The evaluation of the semistandardised interviews was done by qualitative and quantitative methods. These methods are, for example, Content Analysis and Frequent Analysis (Mayring, 1993).

In addition, an analysis was made of the technical and organisational conditions, of documents, and of particular detailed questions.

The studies in the companies concerned produced characterisations of the existing work organisation, which were supportive for the flexibility of these companies. The product development processes in the companies were analysed with respect to flexibility, quality of process, and work and were assessed accordingly. In the companies concerned, it was ascertained that it was necessary to create management for flexible processes and a structured flexibilisation of processes. This represents the basis for the retention of existing flexibility and occupational safety.

Finally, results of the analysis are processes with a higher demand on flexibility for an effective Flexible Management System for Occupational Safety and Quality. These processes are
• product definition,
• purchasing,
• manufacturing,
• production planning and controlling.

The four model companies were selected if they had a need to improve one of the aforementioned processes.

4. A MODEL FOR A FLEXIBLE MANAGEMENT SYSTEM FOR OCCUPATIONAL SAFETY AND QUALITY

4.1. Organisation of a Flexible Management System for Occupational Safety and Quality at Management Levels

The organisation of a Flexible Management System for Occupational Safety and Quality (OSM and QM system) takes place at individual levels of management (see Figure 1). The diverse management levels presented in the literature were summarised as

- the normative-strategic level and
- the operative level.

In the studies of the companies, it was found out that seven entities were decisive for quality control and occupational safety. These are the following areas: company organisation, production organisation, staff organisation, work organisation, work hours and task of employees, and functional entities (work equipment and company resources). These areas are organised in the following model according to company flexibility in normative-strategic management and implemented though concrete measures at the operative level. Here, the respective measures, which are specifically relevant to a given company, must always be selected.

4.1.1. Normative-strategic and flexible quality and occupational safety management

It is the task of normative quality and occupational safety management to deduce principles of flexible QM and OSM systems from the general corporate philosophy and policies. In the process, quality and safety norms are constructed, a preventive occupational safety policy, a quality
policy, and a general quality culture are determined. The normative principles must be regularly measured against the external and internal circumstances of the company and be updated in order to take account of environment technologies and the society, which is of importance to the company.

For example, for the construction of an integrated management system for quality, occupational safety, and environmental protection it can be of significance if an important customer of a company asks for proof that his or her products are being manufactured under environment-friendly conditions with high functional quality. It is then the task of normative quality and occupational safety management to initiate the establishment of a management system stating general and concrete aims.

It is the task of strategic quality and occupational safety management to push ahead bigger changes in companies. This includes, for example, the continual direction of the services offered by the company on the market to the expectations of potential customers. Likewise, it includes the company’s internal and overall checking of the effectiveness of the
structure and process organisation with the aim of increasing company performance ability and the assessment of the work situation by employees with the goal of humane work conditions.

For example, the strategic goals of one model company are

- economic success,
- customer orientation,
- personnel development with the aim of self-acting employees,
- improvement of product quality, and
- development of a Flexible Management System for Quality and Occupational Safety.

Decisions concerned with flexible company organisation are the subject of planning and the task of strategic management. Here, the company policy, aims, and strategies—among other things, for co-worker leadership, production programme planning, quality control, test planning, and so forth—have to be defined so that the flexibility of the company is positively influenced. Principal decisions may be, for example, that

- the leadership in the company comes about through agreements on goals and the delegation of instructions, responsibilities, and authority to departments, or
- the individual initiative of employees in fulfilling company performance goals is strengthened by cooperative, flexible organisation units (self-regulative teamwork).

In the area of the flexibility of production organisation, the conditions at the normative-strategic level must be created by organisational decisions. The aim is the flexibility at the occupational safety level, quality, productivity, and capacity. Principal decisions may be, for example, to organise the production organisation via self-regulating groups, to introduce simultaneous engineering in the development department, or to organise health groups and groups for continual improvement with the aim of optimising the production process under the aspect of occupational safety.

For a flexible personnel organisation also basic decisions at the normative-strategic management level are necessary in order to create conditions for company flexibility, quality, and both comprehensive and preventive occupational safety. It must be laid down in principle how personnel planning is to be carried out in the face of changing personnel needs in a flexible QM and OSM system, how qualified employees are
to be found, and which measures are necessary for the further qualification of employees for a flexible QM and OSM system.

At the normative-strategic level for the flexibility of work organisation, measures are determined, for example, by

- decisions in principle concerning humane work task structures,
- decisions on the delegation of tasks, on decision structures and cooperation relations,
- existing work hours models, and
- decisions on the structure of work,

which are implemented at the operative level. Thus, for example, the introduction of teamwork, quality, or health groups at the normative-strategic level are fixed in order to ensure company flexibility.

Decisions in principle on the flexibility of employees in the event of changes in work hours and work tasks have to be taken at the normative-strategic level. Thus, for example, it has to be defined in what areas further education or training will take place via the flexible QM or OSM system, whether the work and check tasks of employees are to be comprehensive and not repetitive, and whether room for individual action on the part of employees is to be extensive and complex.

For the area of the flexibility of functional entities (work equipment and company resources) decisions in principle for flexible and safe equipment must be made at the normative-strategic level. For example, it must be decided for each specific company whether, taking quality and occupational safety requirements into consideration, flexible manufacturing systems are to be used or not.

4.1.2. Operative and flexible quality and occupational safety management

It is the task of operative quality and occupational safety management to secure the quality of performance under humane work conditions. The central point here is to give employees responsible organisational freedom to pursue the quality and occupational safety goals agreed upon using their own judgement. They must have the possibility to bring their experience to bear upon the way in which they carry out their work and to develop. This is the only way to ensure the quality asked for and the safety of the products, processes, and work conditions, and the flexibility of performance. The responsibility of individual and experience-based work guarantees situative checking, correction, and re-adjustment of
performance. The characteristics of operative quality and occupational safety management are short decision times and situative, pragmatic correction on the part of employees.

For the realisation of a flexible company organisation, the measures developed at the normative-strategic level are carried out by communicating concrete instructions to the operative level. Thus, in leadership by goal agreement, for example, employees must be given concrete goals and project groups, quality circles, or health circles with concrete goals must be formed for the creation of flexible organisation units.

For the implementation of a flexible production organisation, it is recommended to organise task completion at the operative level in a process-oriented fashion. In these processes complete units of the total task are carried out. At the beginning of a process, there is a planning phase at the operative level in which the capacities necessary for humane work conditions are determined. There are milestones defined during the process for a continuous assessment of quality, costs, and time.

The planning of a flexible personnel organisation at the operative level refers to concrete personnel measures. These are, for example, employment of personnel, implementation, further education, or work-specific training. In a planning phase at the beginning of the process and at milestones during the process, it is ascertained whether for the realisation of the quality of the planned process additional personnel is required. Here, the structure and organisation of a flexible process takes into consideration that in the planning of a process, in the solving of problems, and in the assessment of processes completed all co-workers concerned take part.

The implementation of a flexible work organisation is carried out at the operative level again by checking the quality of work processes. Process protagonists and their responsibility and potential stand-ins for these processes are decided. It is stipulated

- when decisions are to be made,
- how they are to be prepared,
- who is to take part in them, and
- who is to make the decisions.

For the process-internal and overall cooperation, temporal and communication points are determined. The participants are decided beforehand and all concerned are informed. All information necessary for task completion, for example, about work conditions, quality and
costs, start and closing dates of parallel activities, are put at the disposal of participants and set at the beginning of the process.

The flexible use of employees in the event of change of work hours and tasks is again something that is carried out by concrete steps at the operative level. In the planning of the tasks in the process it is important, for example, that the process contains planning, executive, controlling, and releasable activities. The satisfaction and the experience of employees can be increased, for example, by

- qualification measures via a flexible QM and OSM system,
- the design of products,
- the procedure of task completion,
- temporal and content coherence of simultaneous task completion,
- the effects of their own planning and decisions in other areas, and
- the employees' participation in the construction and further development of a flexible QM and OSM system.

For the area of flexible functional units, measures can be formulated at the operative level which concern, for example, technical conditions of task completion and which, as with the procure of identical computer numeric control (CNC) systems, can exclude the dangers for employees and task completion errors, or act as good ergonomic tools to make simple handling possible.

The transfer of all these measures takes place at the operative management level through the organisation of Flexible Processes.

4.2. Quality and Market Adjustment Through Flexible Process Management and Organisation of Flexible Processes

Implementation of the measures listed in the previous section is carried out at the process, that is, operative level. The special demands on the processes of task completion can be summarised as follows:

- At the beginning of the process all information necessary for task completion must be collected and ready, so that the planned course of the process, that is, the start and finishing dates of activities and expected costs, can be fixed.
- The major interfaces for the exchange of information and coordination of activities must be defined.
• After the conclusion of the process, an assessment of it—if possible with the participation of all employees—should be carried out in order to find out possible improvement potential for the structure, the organisation, and the safe execution of the process as well as for the quality of the process result.

In the following section a strategy is developed, which makes possible the implementation of measures of quality and occupational safety at the operative level using a model of flexible processes.

With the aid of this strategy developed for a management of flexible processes, the requirements of standards No. DIN EN ISO 9000ff. and of occupational safety according to the German Occupational Safety Law (Arbeitsschutzgesetz, 1996) can be met and the necessary flexibility can be retained or even increased. Processes in which the task to be completed and the peripheral conditions change, are termed flexible processes and can be structured and planned with the aid of this strategy.

The model of flexible processes (Figure 2) gives the organisation framework for such processes. The structural characteristics are the start phase, process execution plan, problem solving process, milestones, and process review.

![Figure 2. Model of flexible processes.](image)

The start phase is a structured beginning for processes for the gathering of information, the clarification of the exact process task, and the conditions in the interests of detailed process planning.
The *process execution plan* is a representation of the contract-specific process steps including all partial processes and their relations during completion.

*Milestones* are temporal and content decision points in the process. One can differentiate between planned and event-driven milestones:

- Planned milestones are part of the process course plan and comprise temporal and content decision points in the process at which defined interim results must be achieved.
- Event-driven milestones are the result of a disturbance or a deviation from the planned solution route. They can lead to a correction of the process or initiate a *problem solution process*.

A *review of the process* serves in assessing the process and offers the possibility of evaluating structures and methods with respect to their suitability for the achievement of the quality of process result required and aimed at. A process assessment can form the basis for improvement projects to optimise the QM and OSM system.

The start phase, the planned, and event-driven milestones form the framework in which flexible processes can be correctly controlled. These are added to by measures towards process control, that is, towards the control and correction of the solution route, such as process supervision and problem solution processes.

This model of flexible processes makes it possible by its structure to include employees in the planning and implementation of the processes. This can happen in such a fashion that interdepartmental project teams can be formed for the analysis of individual parts of processes and for the formulation of improvement potential and solutions. It can be expected that employees will identify more with solutions worked out by themselves (Pfeifer, 1993).

### 5. ASSESSMENT OF THE FULFILLING OF THE CRITERIA OF HUMANE WORK STRUCTURES

The model of the QM and OSM system makes possible taking decisions as regards company policy, aims, and strategies at the normative-strategic management level, which meet the requirements of humane work structures. For the realisation of the decisions made, implementation is carried out by communicating concrete instructions to the operative...
level. This can happen, for example, via the formation of start phase meetings and problem solution groups.

The individual elements of the developed flexible QM and OSM system on the basis of the requirements of humane work structures according to Emery and Thorsrud (1982)

- holism as a guiding principle,
- a variety of demands,
- possibility for social interaction,
- autonomy and room for individual action,
- opportunity to learn and develop, and
- participation in the planning of task completion

are discussed and assessed in the following section on the basis of the requirements of humane work structures. Here, it is taken into consideration that in the planning of a flexible QM and OSM system emphasis is put on the planning of the intellectual regulation level, as this level plays a central role in the mastering of tasks.

### 5.1. Holistic Approach

Holistic tasks with a sensible and comprehensive task connection and a clear beginning, development, and conclusion of the task are supported by the structure of flexible processes and their demonstration. Through these structures employees receive support in overviewing the complete task completion and can plan their activities more closely in connection with the contract and the process as a whole. Here, it is laid down at the normative-strategic level whether employees are to receive feedback through their own checks of work results or whether they are to be carried out by other employees.

The holistic quality of activities can be increased for the employee, for example, though training measures on the planned utilisation of products, the composition of products, the process of task completion, the temporal and content coherences of flexible task completion, and the effects of their own planning and decisions for task completion in other areas.

Through the holistic quality of processes it is possible for employees to see the danger potential of the work in its context and to behave in a preventive fashion. At the same time they can steer the process in such a way as to limit danger.
Through the organisation of flexible processes with the aid of start phase meetings at the beginning of the process, procedure plans during the running of the process, and the execution of process reviews at the close of the process, it is possible for employees to see that their tasks show a sensible and comprehensive task connection, a noticeable beginning, development, and conclusion.

5.2. Variety of Demands

The planning of work tasks with a high variety of demands is achieved by ensuring that the flexible process contains planning, preparatory, performative, and controlling activities through its structure, with varying degrees of complexity for the individual employee. Together with other employees, the process planning and preparation is done in the start phase meeting. The execution of the process is done during the process completion through one or more responsible employees. Control is carried out at regular milestones or—if necessary—at event-driven milestones. The signal to continue the process occurs if the check at the milestones was carried out and the process control stated that the process was running without snags and safely. If the process control stated that the process was not running without snags or safely, then a problem solution process must be carried out by employees and it too must be reviewed. Only after that can the process continue.

A variety of demands makes it possible, on the one hand, for various demands on body functions and the senses to come into play. Thus, diverse abilities, knowledge, and skills of employees are brought into play in the surveillance of the disturbance-free course of the running of machines and the simultaneous surveillance of the disturbance-free course of the main process “contract execution” in connection with the service process product completion. This contains at one and the same time a dimension that is demanding and one that is enhancing for a person. Through the variety of demands, on the other hand, the process can be perceived by the employee via different signals and, thus, gets higher attention through this multicoding than monotonous processes do. Thus, the employee is put in the position to react earlier and faster in dangerous situations.
5.3. The Possibilities of Social Interaction

The possibilities of social interaction are brought in through planning together, execution, control, and decisions for the continuation of the process made by several employees, for example, in the start phase meeting or in the joint problem solution process. Temporal and content communication points are determined for the process-internal and overall cooperation. The participants are decided on beforehand and they are informed. This transparency makes possible a transfer of experience of health-endangering situations between employees. At the same time this contributes to increased awareness of dangers, which is put into practice through health-conscious behaviour in the work process.

All information necessary for task completion and start and closing dates of parallel activities are put at the disposal of participants and set at the beginning of the process. Important intersections for the exchange of information and the coordination of activities are defined and the dates for meetings of all participants at which task completion is reviewed, and if necessary corrected, are fixed. Through the necessary communication and cooperation of employees, the development of employees’ social abilities—such as health-promoting behaviour norms or solidarity reflection—is supported.

The building of a flexible QM and OSM system at all management levels makes possible the organisation of an internal company information flow. In the process, the decision on internal customer-supplier relations, for example, is made at the normative-strategic level. Here, decisions are made on the supplier and the activity-generating information, or on the product, the activities and responsibilities, and the customer and the type of information or product to be handed on. Thus arises a transparency of the information flow. This makes possible a low-disturbance and up-to-date information flow between the individual intersections of the hierarchic levels and function areas.

Work towards the transparency of task completion happens via the structure of the QM demonstration at two levels. On the first, employees are given an overview of the total or service process, that is, the internal customer-supplier relations. At the second level, the demonstration of the work and check instructions for the individual positions is carried out. This framework allows a contract-related adjustment of activities to changing conditions without effecting basic organisational changes.
5.4. Autonomy and Room for Individual Action

The autonomy of employees is supported by the possibility of carrying out tasks independently. It is possible to execute tasks in different work styles. For this reason individual activities are no longer described as flow charts, but as checklists. These have the advantage that the execution of the most important quality-relevant activities and the attention to dangerous work phases are ensured. The sequence of parts of activities can be decided by employees themselves. Consequently, various action strategies are possible. They take different inclinations of employees into consideration.

In the mastering of flexible processes and their demonstration in the QM manual, responsibilities are no longer given to individual employees, but to complete work teams, function areas, or organisation areas. Employees as a group are then responsible for keeping the plans as arranged (among other things, including occupational safety) and for the production of work results in keeping with quality demands. This fits the requirements of the ISO 9000 family, which does not expressly require a person-related demonstration of responsibilities. “For a quality system ... these processes and the associated responsibilities, authorities, procedures and resources should be defined and deployed in a consistent manner” (Standard No. ISO 9000-1:1994; International Organization for Standardization [ISO], 1994, p. 17).

5.5. Learning and Development Opportunities

Learning and development opportunities result, on the one hand, from the variety of tasks and the greater room for individual action and, on the other hand, through the training programmes to be carried out. For top management, training has to communicate “an understanding of the quality system together with the tools and techniques” (Standard No. DIN EN ISO 9004-1:1994; DIN, 1994, p. 48). “Training should be given to the technical personnel to enhance their contribution to the success of the quality system” (Standard No. DIN EN ISO 9004-1:1994; DIN, 1994, p. 48).

It is still the case that the qualification of employees happens via the participation-oriented idea and the introduction of a flexible QM and OSM system and the connected company-specific further development
of requirements of standards No. DIN EN ISO 9000ff. Employees are included in decisions of their own department and in the problem solution process beyond their own department, integrated into developments and can generate opportunities from that for their own further development.

5.6. Participation in the Planning of Task Completion

Having employees share in the construction and further development of the flexible QM and OSM system supports the successful execution of this process, as employees can bring in their knowledge of work tasks and the production system into the creation of procedures and work instructions and safety stipulations. Knowledge, facts, and skills are built up. They increase the readiness to take on responsibility.

The employees' participation is the basis for the successful implementation of the structure and organisation of flexible processes. In the course of this, employees are given the opportunity to take part in the planning of the process in the start phase, in the decisions at regular milestones, in the problem solution process at the time of the event-driven milestone, and in the process review phase.

6. CONCLUSIONS

The present article concerns the installation of a Model for a Flexible Management System for Occupational Safety and Quality. This system is suited for companies that have

- a high customer orientation,
- final products produced in small lots, and
- a medium-to-high variety of parts manufactured by the company.

An important basis for the model is the organisation of a Flexible Management System for Occupational Safety and Quality at different management levels. These are the normative-strategic and the operative level. The transfer of the measures at the normative-strategic and operative level takes place with flexible processes (Figure 2). This model has to be adapted to the conditions of each company.

The strategy for the management of flexible processes leads
• firstly, to a structuring of company procedures whilst still retaining the necessary flexibility and certification ability as laid down by standards No. DIN EN ISO 9000ff. and
• secondly, to the keeping of the demands of an occupational safety management system.

Here, the inclusion of co-workers stands in the foreground in order to utilise their experience and their acceptance of the worked out solutions. The implementation of the strategy can happen via numerous checklists for the analysis and assessment of company procedures, for the development of a preventive occupational safety structure and of flexible processes in companies.

REFERENCES


ADDITIONAL REFERENCES


[Development of quality assurance systems for small and medium sized enterprises. Final report for the research project "Aid for the implementation of quality assurance systems for small and medium sized enterprises of the mechanical engineering industry"]. Frankfurt, Germany: Verband Deutscher Maschinen- und Anlagenbau e.V. (VDMA).


