

# **HUMAN RESOURCES AND QUALITY IN SMALL AND MEDIUM ENTERPRISES OF CERAMIC INDUSTRIES**

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## **SUMMARY**

The starting of a Plan of Quality Improvement in a small or medium company, requires on the one hand an obvious commitment of the leading staff, beginning from department clerks in charge and bosses in direct contact with the workers, until the General Manager / Director, and on the other hand, an active participation of all the workers in order to improve continually.

Therefore some motivating and recognizing schemes for the employees in the Quality Plan must be worked out, beginning with the setting-up of individual as well as collective ways of participation, in order to take advantage of all the creativity and initiative of the workers and to employ all their useful ideas. As individual participation schemes we have objectives of quality and programmes of suggestions for improvement. The collective participation is being carried out through quality groups.

Around this participation there have to be mechanisms that motivate the workers to contribute with their ideas to the improvement of work: there we offer programmes of training, communications and acknowledgement.

It is obvious that in a small or medium enterprise, where these mechanisms are set up, the workers will see a clear way to participate and that they are taken into account regarding the quality improvement, that they are being trained in order to keep improving, that their ideas are taken up and that their projects are acknowledged, in short their motivation and commitment to the company and their integration in it will radically have increased and will have turned into the best company active. This is one of the key secrets of the enterprises leading in quality and competitiveness.

## 1. THE IMPORTANCE OF QUALITY IN THE PRESENT ECONOMICAL ENVIRONMENT

The fuel crisis of 1973 and 1979 with the following price increase of untreated and raw material created strong breakdowns in the at this time prosperous western economy and could be seen in high rates of inflation and unemployment, as well as important lacks of balance in commerce of the industrialized countries.

That was the cause for the change of a sway of demand with an importance of producing and later cheap producing (everything manufactured was sold) into a sway of offer, where the client / user can choose between several / many options, and if he is not satisfied, he can change it for a different trademark.

The main attribute of the present economical environment is competitiveness, which means that one must have lower or equal prices than the competition, with a higher level of quality. The first requires an adequate structure of costs, wherefore it is necessary to have a quality strategy affecting all areas of the company.

Beginning with the design, one must have products and services corresponding to the customers' needs which can be fabricated at a minimum cost and are reliable. Following by manufacturing, in order to be competitive in costs one has to do things well at the very first try, forgetting the trinomial "production - inspection - reparation", for besides not being profitable, it creates unavoidably junk and reprocessing.

And followed by commercialization and post-sales-services, competition means avoiding errors in delivery, in invoices, deliver long-holding products without defects, as, if these objectives are not met, higher costs are unavoidable, which cannot be held by the product in the present environment.

The setting-up of a total quality strategy and competitiveness in enterprises requires a clear commitment of all the leading staff with the improvement process, beginning with the general manager / director until the very last clerk in charge, and means at the same time a complete change of the strategy of human resources, where the workers get a capital importance, whose participation becomes decisive when it comes to improve.

The participation has to be shown in a way that individual ideas are taken up, as well as collective ones. The programmes of improvement suggestions with a tiny cost of setting-up, can develop an important roll when collecting ideas of any type, which, when being carried out bring obvious profits and savings to the company, and allows the workers to feel integrated in a global project of improvement. In this context, the quality groups play an important roll, collecting the ideas and experiences of the components and having a multiplying effect when seeking improvements and setting them up, which rise the level of quality in all areas of the company, as well as the clients' satisfaction.

In order to be efficient, the ways of participation have to allow not only the taking into account of voluntary and spontaneous contributions coming from programmes of suggestions and quality groups, but they have to be a useful instrument to meet the enterprise's aims, through a good distribution, which means individual participation through aims, with a specific inclusion of aims of quality (which in a field as the ceramical one, can and has to be carried out at a level of all leading staff), and the carrying-out of projects in order to improve processes aiming at the elimination of defects and a reduction of delivery time, and increase consequently the customers' satisfaction.

In the following lines we are going to explain the total quality strategy in a small or medium company, as in the field of ceramics, with a special stress on the harmonization of the strategy of human resources with an improvement of quality levels and an increasing satisfaction of the customers.

## 2. STRATEGY OF TOTAL QUALITY

The satisfaction of the customer requires among other aspects, products without defects, delivery terms according to their needs and competitive costs. To achieve this, one must have a strategy of total quality, with allround quality programmes: design, delivery, products, direct and indirect processes or actions and after-sales service backed up by a strategy of human resources, where the active participation of the workers in the plans of improvement is something unchallengeable.

The aim of the designing quality programme is the design of products which satisfy the client completely, with a better quality than the substituted products and better than the competitions', to be delivered in a before hand fixed term, which should always be shorter than the competitions'. This programme requires an exact knowledge of the market, knowing its needs and trends, and the key aspects of which are the CYCLE TIME of the designing process, development and cost, which involves an active participation of Production from the very first prototypes on.

The aim of the delivery quality programme is to achieve defectless and punctual external deliveries, trying to minimize and later eliminate reception inspections. Here the authorization of suppliers is more and more important, beginning with an adaptation to the company norms, and in the near future an approval of the their quality system adapted to an international quality guarantee system (norms EN 29000). The quality programme of the producing processes has the following aims:

- Design of processes "zero defects"
- Avoid that the defects advance to the following step.
- Avoid repeated defects by prevention.

In order to meet these requirements, process "controls" have to be established, which means measurements of the results of intermediate steps, with a feed-back of these results to those who carry out each step. The processes must have an integrated control, that means they must be a part of the process itself.

The product quality programme is being held up by the other programmes, being its aim to guarantee that the specifications of the products are met from the moment on, the product is finished until it reaches the customer.

An analogy can be established between the direct or productive processes and the "indirect" processes or actions, and among them the most important one is the logistic process, which controls the whole measure of materials, depending on its good or bad performance on the one hand the delivery term (vital for the customers' satisfaction) and on the other hand the levels of stocktaking (important for the costs). The concept of PROCESSING CYCLE TIME gets a high importance in this process, which we could define as the time required for the process, that is to say the time required from the moment of the reception of the customers' order until the product is delivered to the clients' house. The basic idea of this methodology is that we can't measure averages, but individual cycles, and every cycle taking longer than the limit marked by us, is a "defective" process. Eliminating activities "without any added value" these defective cycles can be avoided and the average value reduced. Other important indirect processes are invoicing, accountance, payment of invoices, etc; and all of them must have specific improvement programmes thus reducing "defects" and "cycling time".

These programmes have to be completed with a specific one to satisfy the client, the basic aim of which is the rise of the level of satisfaction by meeting the previous programmes and by an adequate support.

All these programmes are held up by an active participation of the workers in the improvement, for which it is necessary to have at one's disposal several elements which will be explained in the following chapters.

### **3. HUMAN RESOURCES AND PARTICIPATION IN THE IMPROVEMENT OF QUALITY**

When all persons integrated in the organization of a company assume that the elimination of defects can be reached and try to do their work well "at the first try", it comes to such a difference that one can speak of the birth of a NEW CULTURE in the company.

The quality is the fruit of the participation of all and everybody of the employees. This is a key principle to achieve an effective implantation of a total quality strategy. It is the responsibility of the direction to establish a participation scheme that motivates the acting and taking of responsibilities of improving the quality by everybody.

This is not only a movement of delegation, but also of cooperation, following the participating managing style, trying to collect the intelligence and experience of the workers, who normally are not given the possibility to express their opinion about improvement of their own daily work, and give it to the company's service, producing thus a multiplying effect.

These problems have to be resolved by creating an initiative by participating schemes, among which we distinguish individual and collective participation.

### **4. PROGRAMMES OF IMPROVEMENT SUGGESTIONS**

A way of participation in the improvement of quality, which normally is individual, although it can also be applied on quality groups, are the PROGRAMMES OF IMPROVEMENT SUGGESTIONS or IDEAS-LETTERBOXES, very much used in Japan, as well as in the big Northamerican and European Corporations, although the approach varies from one to the other side of the Pacific Ocean.

An improvement suggestion is any proposal that contributes to the improvement of a situation in the company, an area, a process, any activity in its widest sense, meaning improvement of quality, reduction of costs, improvement of security, of a product, of ergonomics, atmospherical conditions, in short, any aspect of the enterprise under one's responsibility.

The fundamental difference between suggestion-programmes and other ones is in their approach that may allow or not the presentation of proposals regarding the own work, and the acknowledgement, which is meant to be symbolic in one case and in another case a proportional part of the saving / improvement. The basic philosophy of these suggestion programmes is the idea that no suggestions related with the job itself should be presented (in general very regulated), as it stands in the descriptions and aims of the job, due to the fact that the whole staff (managers and workers) have the obligation to improve everything they do, that means, that a part of their time should be dedicated to a change of the way of doing things in order to improve quality and productivity. In this case any suggestion of improvement has to be awarded corresponding to the saving it meant to the company, normally being between 15 % and 25 %. A different position that can be seen in many companies, especially in Japanese ones, is that without dropping the above mentioned philosophy, every employee has to be acknowledged for any idea he gives the enterprise, being this remuneration symbolic if the idea is related with his own job and proportional to the saving / improvement, in case it is not related with his job.

We think that both systems are valid, and there can be many variants and possibilities, and the managing staff has to choose which of the possibilities could be best adapted to the working of their own company. Anyway, the suggesting programmes are a great tool to collect normally individual ideas (which in most of the cases can be brought forward by quality groups, even though that does not normally happen), in order to improve quality and productivity.

Some think that an improvement suggestion programme can only be carried out in big companies with many resources. But this concept is wrong, because in a field like the ceramical one, with a lot of small and medium companies, an improvement suggestion programme can be carried out in a very simple and economical way. For this a definite commitment of the managing staff is required, a step-

by-step-introduction, beginning with a test-area, with people enthusiastic about the idea, and a committed leader. The necessary norm is a cardboard which should be in reach of all workers, as well as a letterbox to insert their ideas.

In the case of small companies, the programme has to be run and every suggestion approved and in any case awarded by the manager, normally being the department boss, so that he gets a global vision of the suggestions approved and awarded, and thus gets a uniformity of standards. A follow-up of the programme, in order to correct in due time any deficiencies of its working, should allow and extension of the mentioned programme to other departments or sections, and finally to all the enterprise. For its consolidation, it is necessary to complete it with adequate programmes of communication and acknowledgement which we have mentioned before.

## **5. PARTICIPATION THROUGH INDIVIDUAL QUALITY AIMS**

Much has been written about the direction through aims, and it is a system being employed in big companies, but very seldom in small or medium companies outside the commercial field. However it is a tool of a participative direction which can perfectly be carried out in a field as the ceramic one, and it is a complement that is almost irreplaceable in case you want to make participate in the big aims of quality in the company all the bosses, officials in charge, directors, etc.

A system of direction through aims requires their definition on company level, in order to go down, step by step to every person in charge of this organization. Normally it is the general director or manager who distributes the charges in an adequate way to those depending directly on him, and so on, until all of the department bosses are committed. This requires a structure of jobs with a clear definition of their qualifications and responsibilities and a clear outline of the applicants who can carry them out. Among the aims we have to distinguish clearly between **THE AIMS OF QUALITY AND PRODUCTIVITY IMPROVEMENTS**. Hereunder we understand the reduction of defects in the different productive processes, an increase of consignments free of defects, an adaptation of delivery terms to the customers' needs, the clients' satisfaction (this is a good example for the commercial departments), the "quality" of the purchasing orders, the "quality" of the invoicing process, etc.

These aims must be established by the boss who is immediately superior, and approved by the next level of direction, in order to achieve an "assent" between the person who receives the aims and the one who establishes them. The aims should be fixed at the beginning of the economical year of the enterprise, the time when the counsel of administration fixes the global aims of the company. At the end of the business year, each boss has to "evaluate" the officials in charge depending on him, following standards known by everyone and established by the staff department, in case such a department exists. In this evaluation the degree of fulfillment of every aim can be seen, as well as the efforts dedicated and the difficulties found. The final result will be a general evaluation, a "mark", and the salary rise or possible promotions of every department boss may depend on it. This individual participation scheme for aims has to be complemented with adequate "quality measurements" showing objectively the improvement of quality regarding reduction of defects, satisfaction of the customer, mistaken invoices etc.

It is often told that it is difficult to carry out a direction programme of aims, including quality, even if it is only meant for the leading staff, having more advantages than disadvantages. The answer is, that the difficulty is the initial ignorance of how to carry this programme out, but the enterprise can count with the help of an expert consultant, and the disadvantages will be found only there where no efficiency can be seen. And this individualized system shows better than anything else, who contributes really to improve the levels of quality in the company, and who doesn't. In our opinion, this is the best way to achieve that all responsible clerks feel really integrated in the global improvement of the company's quality.

Its extension to a lower level, until the workers, is in a field as ceramics quite problematic in small and medium enterprises. The bosses have to feel "promoted" when the company gives them the responsibility of a participation in the direction, and they have to motivate the workers who depend

on them in order to assume the corresponding part of the improvement.

## 6. QUALITY CIRCLES

Not very well-known is the concept of the Northamerican General Mc Arthur, to help the Japanese industry with a statistical quality control, supported by Dr. Deming and Dr. Juran. It was Dr. Duran who thought that not only the department of quality control but all the leading staff and the rest of the employees have to be involved in the improvement of quality.

These were the fundamentals of the quality circles which came up some years later. It was concretely Dr. Ishikawa, who in 1962 prepared a work that established the bases of these circles, beginning with participative test groups, using statistical methods of quality control as an instrument to resolve problems.

Today these millions of circles are a national phenomenon in Japan, where several millions of persons participate. In United States they began in the middle seventies, and later in Western Europe. In Spain they began to develop in the eighties with a rather low penetration and a rather irregular distribution, depending on fields and geographical areas. It can be said that they are introduced in the field of automobiles, among big manufacturers and in the auxiliary industry. The geographical zones correspond to industrial demography, being most enterprises with quality groups in Catalonia and in the Basc Country. In the field of ceramics, only few experiences are known.

There are several different names and even contents regarding these circles, and in the papers describing the composing elements. In general there are some common characteristics, although for some special points the company will have to define:

- Small group of employees (between 4 and 10) who belong to the same section or department and/or carry out a similar job.
- They meet voluntarily. This is probably the most out-standing characteristic of these circles that guarantees the members that it is not a compulsory programme rising from lower to upper level, as the members are being supported by the direction in the widest meaning of the word.
- Leading and coordination can be carried out by the department boss who builds the whole circle, but sometimes the leader can also be a worker or a professional member of the circle, with acknowledged image and capacity for the leadership and elected by the circle itself or by the manager / director.
- The meetings are periodical and regularly programmed during the working time. In companies with a lot of direct staff and chain work or continuous work, as it is the case in the field of ceramics (staff concerned with production) the meetings are held at the end of the normal duty. In general, the first group, being working time, does not pay the circle's meeting hours, while in the latter they are paid as overtime. Of course the leading staff has to watch that nobody joins the circle without participating actively and only doing "overtime". One hour a week is recommended.

The circles are meant to resolve problems. The selection of an item is carried out by brain-storming. When resolved the problems are presented to direction. It is carried out by a member, being this a measurement of motivation, for the leader normally presents everything. The leading staff on a corresponding level approves the solution or not. The quality circles are in charge of the implantation of approved solutions and verify that the problem keeps being solved.

A programme of quality circles as the one we are seeing, needs besides the leaders and members also a coordinator or facilitator. This coordinator is responsible for any support of the leaders:

- Contact with other organizations
- Relations of the circles with the manager / director
- Guarantee the availability of materials
- Follow-up and evaluate the results
- Training of the leaders and eventually of the members.

The coordinator of the quality circles has to be a person with a good knowledge of the organization and its operations and in the normal case of running such a total quality programme it has to coincide with the coordinator or depend on him.

Once the circle is established, the first meetings should be a training for the members carried out by the leader with a suitable didactic material and approaching above all statistic tools and techniques of analysis and resolving of problems. Previously the coordinator and the leaders must have been trained, in courses inside the company and / or with the help of an external consultant.

For the training sessions as well as for the general meetings the circles must have a room especially prepared for this occasion, with suitable material, with corkboards, slides projector, boards, marking pens, etc. In case of a company with a high level of informatization, the room will be equipped with a terminal and a printer.

Once the first circle is established, with people who are enthusiastic about the idea and committed to the company, the working starts with the training and after that the first problem is chosen by a brain-storming. Once the item is chosen, the circle collects data about it and solves it after several sessions, using on of the usual techniques. They prepare a plan of implantation and present the closed item to the leading staff. If necessary, other departments are involved, even though it is required that the circles treat problems concerning their own activities, as if not so, difficulties can rise when trying to resolve them. And if that happens in the first time, frustrations could follow. The aims of a programme of such a quality circle are:

- Promote the participation and motivation of the worker.
- Achieve a better integration as a team.
- Improve the workers' attitude towards the enterprise.
- Increase the quality of products and services of the section / department, and consistently improve the satisfaction of the company's clients.
- Reduce costs, by improving the position of competitiveness.

Finally we could say that the programme of quality circles lacks of any sense if it is not integrated in a programme of total quality.

## **7. OTHER GROUPS OF QUALITY IMPROVEMENT**

The quality circles as above defined cover several areas and problems that do not extend to 100% of the improvements that can be achieved. There are problems that affect some departments and sections and which the leading staff want to resolve without waiting for a circle to chose them as their own problems, because, as we have already mentioned, the main characteristics of these circles are their voluntarily participation and their autonomy regarding the selection of the item to be treated, with general lines marked by the enterprise, and that in general concern the work but exclude labour and similar problems.

Therefore exist other groups of quality improvement which the companies call either groups for quality improvement, or progressing groups etc. and which can be distinguished from the circles in three aspects:

- The participation of the members is compulsory, depending on the leading staff's decision.
- The components use to belong to different departments.
- They are established in order to resolve a problem or study a project of quality improvement and are generally dissolved as soon as the item has been closed.

The improvement teams or progressing groups are run in a very similar way as the circles, approaching the solution of problems, although the orientation is more technical than motivational as it uses to be in the circles.

For a correct working of these circles or teams, the key is a minimum of burocracy. There is only

one document which the quality groups have to fill in when the meeting is closed, which is the record, naming those attending the meeting, delay at the beginning of the session, a short summary of the items treated and the plans of actions with the responsables to carry them out, as well as the deadline. A copy of this record has to be given to the leader's boss, another one to the coordinator of the circles and at the same time the coordinator of quality of the company. As we have already mentioned, these quality groups run in Spain in many big, medium or small industrial as well as service-enterprises. In the Community of Valencia there are some great examples of programmes of quality groups in large multinational as well as in small enterprises of less than 50 persons, achieving in some outstanding cases levels of participation as the Japanese do.

In all the cases where they are correctly implanted, the programmes of group quality give important profits, especially in items of quality or productivity improvement of activities in one's own section, and what is even more important is that they contribute in a decisive way to the integration of the workers, professionals and leading staff of companies, they promote the teamwork and create the habit of constant improvement, in short they create what we call "QUALITY CULTURE"

## **8. TRAINING PROGRAMMES, COMMUNICATION AND ACKNOWLEDGEMENT**

Among the schemes of motivation of human resources, there are three main programmes: Training, Communications and Acknowledgement.

The training is necessary to carry out a quality programme in the company. It must be offered on all levels, for the managing / directive staff as well as for intermediate bosses and workers.

For the higher levels the training has to be general, with special emphasis on strategic subjects and the global summary of the different programmes which make up a strategy of total quality. They should also know the contents and meaning of the courses for the other leaders and workers. A third aspect would be covered with courses of change of attitude, because in short, the starting of a total quality strategy and its associated programmes means a cultural change, a rupture with the anterior habits, where doing things well from the start has to be ingrained in all the company's staff, and those who should be the permanent example and the motor of change are the managers.

The intermediate leaders have to receive some aspects of the training of the superior bosses, as well as basic statistical help, techniques of analysis and problem solving, group dynamics and meeting know-how (they are going to be in many cases leaders of groups of quality), all this complemented with specific training in the improvement of the quality, of the products which are under their responsibility.

The workers will receive specific training applied to the improvement of the quality of their job, which will include elementary statistics, techniques of analysis and problems solving at a basic level, as well as specific aspects related to the quality of the products with which they are working.

The training has to be given by qualified people, some of whom can be of the company itself, and others from outside. As important as the part-taking in courses and seminars is the planning of the training for quality, which should be carried out by the responsables for quality and staff in the case that we are talking about, small and medium companies of the ceramic sector. This should be done with the approval of the directors themselves and in many cases with their direct participation and also with very qualified exterior help.

To achieve the active participation of all workers in the improvement of quality it is of vital importance to establish a system of communication which is quick, efficient and of wide acceptance. This permits everybody to know the quality strategy to which the company is committed, its specific programmes, the objectives to be reached, as well as the achieved aims, individual and collective, which forms one of the most efficient generators of motivation. Any type of programme of internal publicity can be suggested in this context, in the case that they are all complementary and not exclusive, and also of reduced cost and perfectly accessible to the medium type of company in the ceramic sector to which we are referring in this booklet. The most important means of communications

are the following:

- Meetings with the bosses of all the staff of the section and with the directors of all the staff of the company.
- Company magazines dedicating one or two pages of each edition to subjects of quality.
- Monographic magazines or booklets dedicated to subjects of quality and their acknowledgement.
- Displays in busy places, where everybody has to pass, for example the dining room, with quality achievements, mainly expressed, with indicators of quality, where one can clearly appreciate the achieved improvement, aims of the groups of quality, such as prize givings; in the last two cases with photos of the corresponding groups of quality.
- Posters of allusive items of quality given out within all the company.

An important aspect in the working of the groups of quality is the fact that leaders' meetings are held periodically to facilitate the exchanging of achievements, experiences and problems. This forms a part of the training of the leaders and of the communication between them and the coordination/direction of quality.

The acknowledgement of quality has an important roll in the support of strategy of total quality. Although it has to be implanted in the general politics of acknowledgement which the company has, it must possess distinguishing features and be enfocussed to the collective acknowledgement.

The objectives of the prizes for improvement in quality are:

- Public recognition of efforts made to improve the level of quality (in the case that it is quality synonymous of the client's satisfaction, fundamentally external, but also internal).
- Motivation and stimulation for the workers who receive it.
- Incentives for those who could be rewarded with prizes in the future.
- Form of transmission of concepts, ideas and techniques of quality.

It is recommendable that the prizes are symbolic gifts and that they are given in public acts. The bases for the prizes and the criterium of selection should be simple and well-known, and it is recommendable to give the prizes to collective achievements fundamentally for groups of quality for projects with tangible improvements achieved. Individual contributions can be given prizes also and exceptionally.

The prizes can be at company level and also at department or section level if they are in groups inferior to 200 people, it is recommended that they are only at management level, so as not to create proliferation of prizes. At the prize giving the highest managing staff should attend to show the importance that the high management gives to the quality and the acknowledgement of their achievements.

## **9. SUMMARY AND CONCLUSIONS**

In the last pages we have tried to express the importance that the starting of a strategy of total quality has so that a small and medium company of any type in general and in particular of the ceramic sector, is competitive in present economic environment, characterized by a very wide offer of all types of products and services.

And within that strategy of quality the human resources is of capital importance, for which some specific programmes have to be available to integrate them in the efforts of quality improvement and competitiveness of the company. These programmes go from the direction through aims (limited to leaders), programmes of suggestions for improvement, groups of quality, to the programmes of training, communication and acknowledgement.

The starting of these initiatives isn't at all expensive and is perfectly accessible for small and medium companies in the ceramic sector. Some exterior indication might be necessary, but its

consolidation depends on a clear commitment from the manager / director to the improvement of quality without whose continuous support it is not possible to achieve results. Once the management team is sure which is the objective and doesn't stop in its determination to be in a continuous programme of improvement, the company changes its mentality, in short the so called culture of quality is within reach.