



COVER SHEET

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Introduction

During the last 30 years, quality became more and more important for every company. Challenge was to create new product and innovative services, answering customers' needs, and monitoring costs and delays.

This assignment will present my reflexion on Quality and Quality Management. In a theory part I will present, define and explain difference aspects of Quality and Quality Management. With those I will add some critics and analytical reflexions.

For each point, I will also use the example of a quality-oriented French company, Charlalte Réservoirs, which can illustrate and complete these two notions.

Presentation of Charlalte Reservoirs

Charlatte SA is a French company, regrouping two different activities: First the section Reservoirs, which design and manufacture different kinds of tanks and vessels, and Charlalte Manutention, which build ramp vehicles for the airports and which is based in America. Here we will only speak about Charlalte Reservoirs.

For over 40 years, Charlatte has been the world leader in hydropneumatic vessels. This technique has today become a generic term: “a Charlatte”. The major part of the manufacture is comprised of pressure vessels with and without bladder for drinking water, raw water, wastewater and irrigation. The company can also design special vessels for specific orders.

Charlatte is present in over 80 countries and five continents, has a capital of 3.5M € employing less than 200 employees, and export represents over 50% of sales.

An experienced aftersales service and on-site assistance from technicians complete their large range of products and expertise.

I chose this company because it creates both product and services. We will see that the two of them are highly quality-oriented, and their approach is quite clear, efficient, and approach well the different definitions of this course.

Last year, I have done an internship in this company, so I discovered its processes, and Quality Management Policy.
You can see more information about this company in the appendix.

Quality

Definitions

Quality is a general aspect, which can appear in many different part of a company. We first give a general definition: The Quality of a product or a service is its ability to satisfy or exceed the needs and expectations of the customer.

Some notes about this definition: we first see that to encompass quality the concept of the customer is quite central. Thus, the customers' studies will become central for quality-oriented company.

We can distinguish the quality for a product and a service considering the customer needs. For a product, we will have notion such as Durability, Safety, Flawlessness, or Performance; and for a service we will find Credibility, Courtesy, Responsiveness, or Access.

Importance

At first, it seems quite obvious that every company has to take quality as a priority, because of the number of competitors, and the customers' needs. It is also admitted that quality increase productivity, profitability and efficiency (Bergman p. 52, p. 60) However today, many companies tend to overpass quality in the field, because it costs a lot in time and money, and it is seen as a "bureaucratic jail" which finally doesn't help for the every day's problems. Despite the fact that quality as a value remains intuitive for everybody, it is a long and complex process, and entails new methods and vocabulary. Quality is sometime hard to handle and becomes a word almost taboo.

Nonetheless, quality is one of the major rule for Charlatte, which use the norm ISO 9001: 2000, a Quality Manual, a common database, many controls, signs and audits, and several people (Quality Coordinators, Quality managers) to handle and spread quality in all the segments of the company.

Finally, this costly strategy paid because today Charlatte becomes well-known all over the world because its high-quality products.

Aspects

Of course, quality has several dimensions, first we can see quality as a goal, and then it has not the same definition concerning services and products.

When we speak about Product quality, the vocabulary will be about Reliability, Durability, Safety, Flawlessness, Appearance, Environmental Impact, Maintainability, or Performance. And the qualities of a service will be more about Service: Reliability, Tangibles, Empathy, Courtesy, Responsiveness, Communication, Access, or Credibility. (Bergman p. 33)

We can also see quality as improvement of a system, distinguishing the External quality (to improve responses to complains and lacks of compliance) (Bergman p. 301) and the Internal quality (To decrease disturbances, improve stocks and flaws, to adjust and re-work to have a well-oiled machine) (Bergman p. 216).

Quality Management

So Quality is an aim that each company wants to be as close as possible. And since 30 years, many tools and methods have been invented to help every quality-oriented organization, which want to reach this goal. In this part we will present the main principles of quality management.

Today, companies often use what we will call TQM (Total Quality Management) to implement and improve quality. A definition of this can be "a constant endeavour to fulfil, and preferably exceed, customer needs and expectations at the lowest cost, by continuous improvement work, to which all involved are committed, focusing on the processes in the organization". (Bergman, p. 34 to 37)

This sentence is really fundamental because we can find every points: firstly the fact that Customer needs are again the key (as well as in the Quality definition), and then that it's a continuous work, for the entire company, and that the main thing to take care about are processes. We can add one thing: Every decision shall be taken considering real facts. (Bergman p. 38)

Techniques

In substance, each company has first to define and precise its customer needs. For that there are many tools, such as Needs Analysis (Mainly before the beginning of the production, but after as well companies need to remain aware, with for example technological watches) and Satisfaction Measurements (Bergman p. 316) with questionnaires and surveys.

To illustrate that the TQM is a continuous process, we can take the example of Deming, who has stated 14 fundamental points about the cycle of improvement in an organization, and created the so called Deming Wheel, or PDCA: It's a simple method which has to be repeated continuously. First Plan, so establish the objectives, then Do so execute the plan, then Check the results and compare against the goals. And finally Act to take the corrective action to vanish the differences between actual and planned results (Bergman p. 80, p. 384). And do it again, it's a good circle which will improve automatically the process. It can be done at every level of the organization, from the main strategy to the basic production. Today, this method is generalized in the Kaizen Method (Bodek, 2010).

Other methods have to be employed, such as single and double loop learning, or the 6-sigma methods. And when you reach a goal you have to aim even further: 99% correct is not sufficient, today some companies aim "99.99966% correct is sufficient", which means that the products (manufactured) will have statically 3.4 defects per million. (Bergman p. 542)

The TQM process has also to involve all fields and to commit everyone. To motivate people and to stimulate participation, fulfilling all levels of the Maslow's hierarchy of needs, or managing information and responsibility (Carlzon, 1987). Today companies can use Kaizen method as well, which will improve Teamwork, Personal discipline, and Morale (Bodek, 2010). But they also have to think about their entire organization and their culture, and for instance adopt both a Machine metaphor to use Taylorism principle and to improve inspections (Bergman p. 74), and Brain metaphor to benefit from the single and double loops methods of a learning organization (Bergman p. 392).

So finally TQM has to focus on processes in the company, and to base decisions on fact. "Processes" are everywhere in a company, from the supply of the raw materials to the delivery of the final product, and at every levels (Strategic to production, without forgetting

Horizontal Processes such as maintenance and cleaning). Fortunately we can distinguish two different kinds of processes to handle and improve:

- Technical processes (such as manufacturing a product, stocking, transporting, supplying) will be handled using for instance the seven improvement tools which are data collection, Pareto Charts, Histograms, Cause-and-effect diagrams, scatter plots, stratification, control charts (Bergman p. 216, p. 269)
- Management processes (Decision processes, verbal-data based processes) will be improved using another toolbox called the seven management tools regrouping diagrams, charts, and analysis (Bergman p. 512).

We can notice that quality has to be present during the entire life cycle of a product: according to the Taguchi's Philosophy we will even think about quality during the design of a product (Bergman p. 135, p. 188).

To harmonize reference and evaluate Quality systems, there are some norms, such as the Norms ISO. A norm is a model to have the same vocabulary, and to have a reference to compare with other actors. That will prove that the company has good practises. That won't speak about the quality of the product, but about the organization and its System, and it's a confidence's tool between customers and suppliers. For example, the norm ISO 9001 will prove that the quality management of a company is focused on processes, and aimed to fulfil customer needs.

TQM for Charlatte

We can see that Charlatte follow a Quality Strategy, which fulfil the points of the Total Quality Management:

First they focus on Customers, using Satisfaction Surveys, and Client listening (Figure 3). They also put themselves in the place of a customer, asking "What I need?", "Have I trust and confidence?", "Am I Happy with the results? ". And they use the answer to better adapt their offers.

Then, there is a huge focus on Processes; in fact every process is defined precisely with an Identity sheet presenting inputs, outputs, objectives, actors, and quality and performance indicators of the process (Figure 4). They also use an entire process mapping (Figure 2) to better see each process in the organization. Each actor can use hyperlinks to see their role in the manufacturing chain, and every problem can be seen from the raw materials to the final product, and the team can act rapidly and clearly to fix it.

Of course, every decision is based on facts, every actor collects a big amount of data to a common database, and there are many data-analysis every day.

There is also a Non-conformity process: for each problem, a non-conformity sheet is written, data is analysed to make (if needed) an anomaly sheet that will entail a corrective action. Finally, there often are steering committees, with a synthesis of all data to plan the next step of strategy. So there is an implicit PDCA that work quite well (Figure 1). Little problems of everyday are fixed "in live" using a dashboard system. And two or three times a year, there are also big audits, intern or extern, to validate quality norms and to discover a possible system problem.

Finally, we can notice that Charlatte use a Second Loop Learning, because each year, quality systems, rules and norms are questioned and improved. So the improvement is continuous.

To let everybody be committed, Charlatte created function sheets for every employee, defining precisely roles and responsibilities (Figure 5). Signs are also placed in all the fields of the plant, with figures and advise. Employee can buy some shares to get more involved,

and because the company is not too big (only one production site), it seems like a big family where everybody knows everyone with a good ambiance and not a too strong hierarchy (we often can see the quality director or the production director speaking with technical workers).

Of course, everything is not perfect, and there remain some quality problems in Charlotte Company. For instance there is a little lack with the information system: when a problem appears, there will be many back and forth before the solution gets adopted. With an efficient information system, that would not take so much time and imply so many people. But now the company has a little routine, which is quite efficient, and perhaps a too big change may disturb a lot this system during months.

Conclusion

To conclude this paper, we can stress the fact that due to the number of controls on each vessel (Visuals, X-Rays, Liquid penetrant inspections, acoustics and ultrasounds controls...), with an appropriate data analysis, Charlotte's products have one of the best quality in the world. But this quality is not only a question of controls, but also of relations with customers, of management of processes, of strong entrepreneurial culture and of continuous quality improvement.

Charlotte strategy was ambitious, but it finally succeeded, assuring efficiency and profitability, and the company now aim to improve again this system, to reduce the number of intern non-conformity, to reduce manufacturing price and to improve productivity. In my opinion, to have an internship in this company, and to write this paper made much more clearly the concepts of quality and quality management. I now know very well the TQM theory and its application on the field. That helped me a lot to refine my career project.

References

This paper has been written using mainly the book of the course:

- Bergman, Klefsjö, (2004), *Quality from Customer Needs to Customer Satisfaction*, Studentlitteratur.

Each time I quoted it, I specified the pages concerned.

I also used:

- Carlzon, (1987), *Moments of Truth: Organization studies*, Cambridge MA: Ballinger
- Bodek, Norman, (2010), *How to do Kaizen: A new path to innovation*, Vancouver

And the following websites:

- <http://stage-operateur-antoine-b-2011.jimdo.com>

Personal website about my internship at Charlotte company. (In French).

- <http://www.charlatte.fr/2006/csa/index.html>

Official Charlotte's website.

I finally used personal data from Charlatte Company, collected during my internship, and not available on the Internet.

Appendix

History of Quality for Charlatte

Since its creation in 1961 Charlatte Réservoirs SAS has placed emphasis on the quality of its products.

- Charlatte was certified ISO 9001 version 94 in 1998.
- In 2002 Charlatte was certified ISO 9000 version 2000.
- In 2002 Charlatte obtained approval for its site in Migennes, to manufacture to ASME with Stamp “U” and “UM”, as well as National Board approval.
- In 2003 Charlatte achieved NSF approval (National Sanitation Foundation USA) for its vessels destined for use with potable water.
- In 2005 renewal of our ISO and ASME certifications.
- In 2006 Charlatte obtained ACS approval for surge bladder vessels up 2000 liters to 120000 liters.

All Charlatte vessels are manufactured according to European Standards and norm 97.23.CE unless otherwise requested by our clients i.e. ASME.

All components in contact with potable water have been tested and certified by the relevant authorities.

Figures

This section presents some examples to illustrate my paper. All the figures are from the Charlatte Quality Manual. They are in French because I don't have the document in English. The real format allowed hypertext: every buttons and texts were clickable.

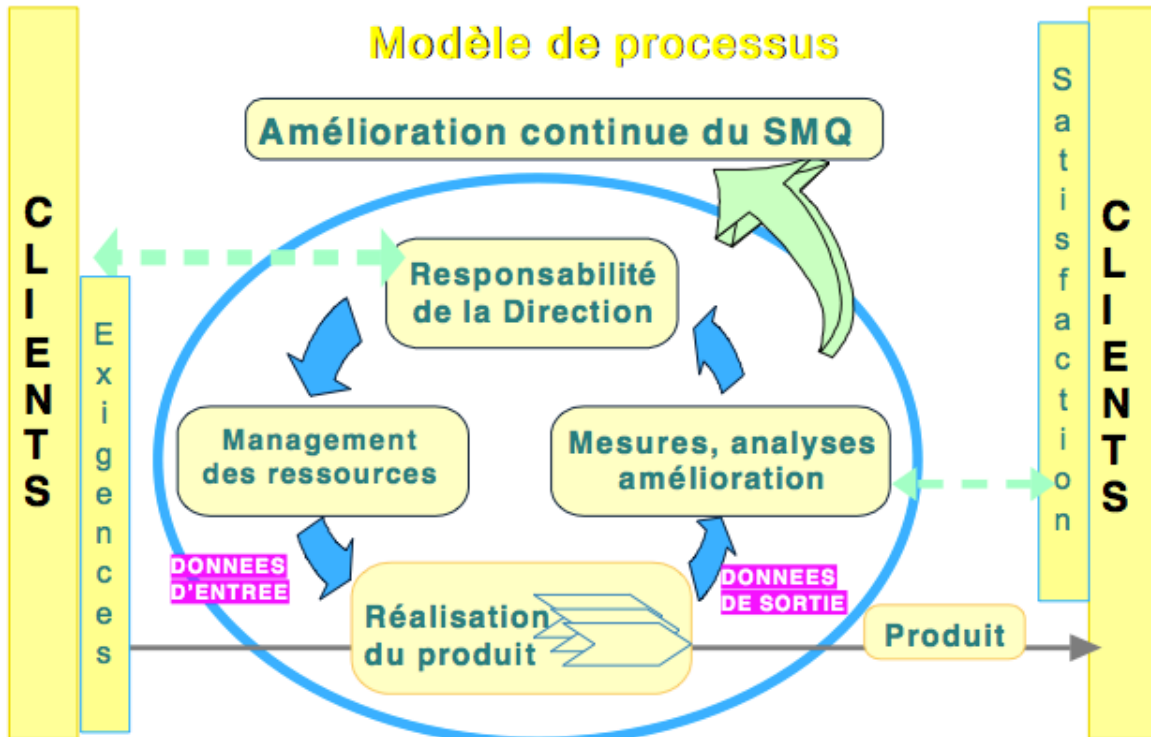


Figure 1: The PDCA Model, valid for every process

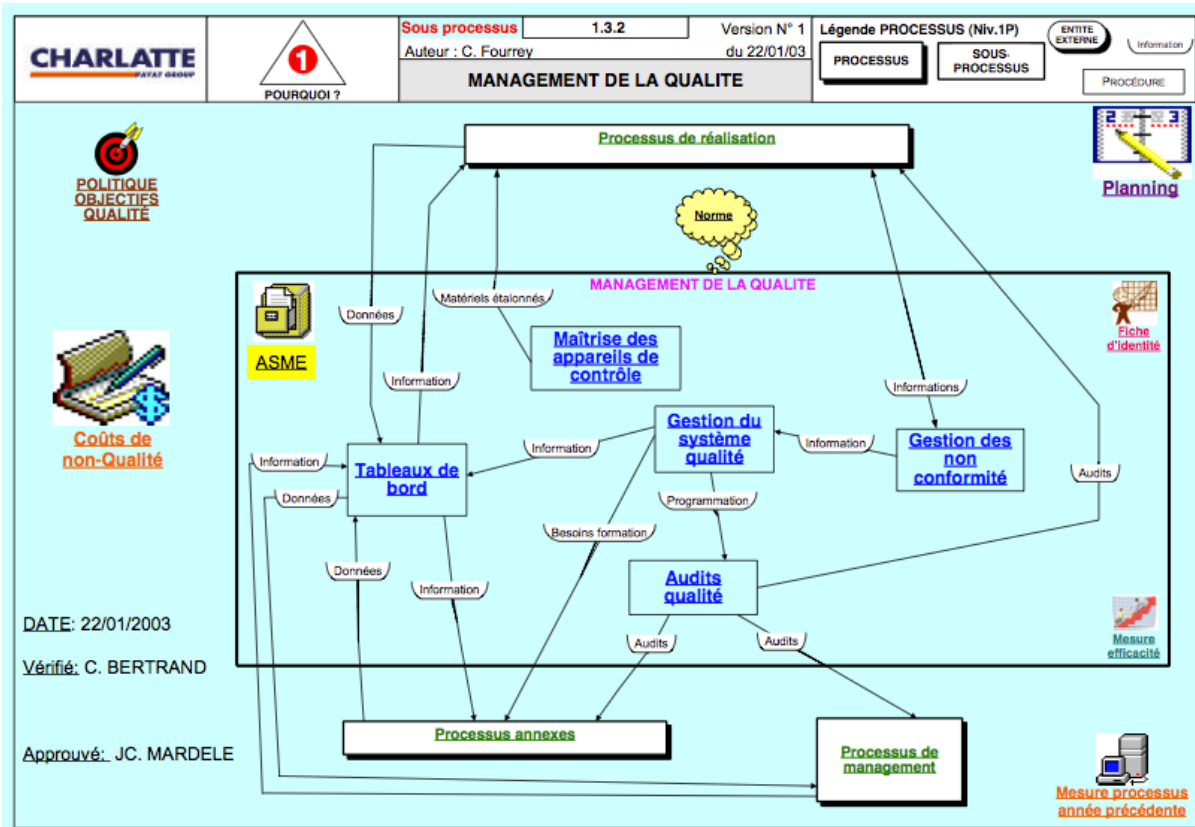


Figure 2: An example of Process "Quality Management"

ENQUETE DE SATISFACTION

Adressée à :

A retourner à : CHARLATTE - Service Commercial

Rue Paul Bert
89400 MIGENNES

ou par fax au : 03.86.92.30.01

A l'attention de :

IMPORTANCE DU CRITERE	CRITERE DE SATISFACTION cochez les cases correspondantes	EVALUATION
peu important très important		peu satisfait très satisfait
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1. ACCUEIL	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	1.1 Attente téléphonique	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	1.2 Efficacité et qualité des contacts	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2. RELATIONS COMMERCIALES	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2.1 Qualité de notre offre technologique	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2.2 Disponibilité du service commercial	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2.3 Réactivité aux demandes	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	2.4 Renseignements et offres	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	3. REALISATION DE LA PRESTATION	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	3.1 Conformité aux spécifications	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Figure 3: Extract from a satisfaction survey

CHARLATTE FAYAT GROUP	CARTE D'IDENTITE DE PROCESSUS	Ref. :
TITRE :		
PILOTE :		
FINALITE :		
DONNEES D'ENTREES :		
VALEURS AJOUTEES :		
DONNEES DE SORTIE :		
DOCUMENTS APPLICABLES (Procédures, Instructions) :		
RESSOURCES NECESSAIRES (M.O. - Matériel - Adm - Financier)		

Figure 4: Extract from an process identity sheet

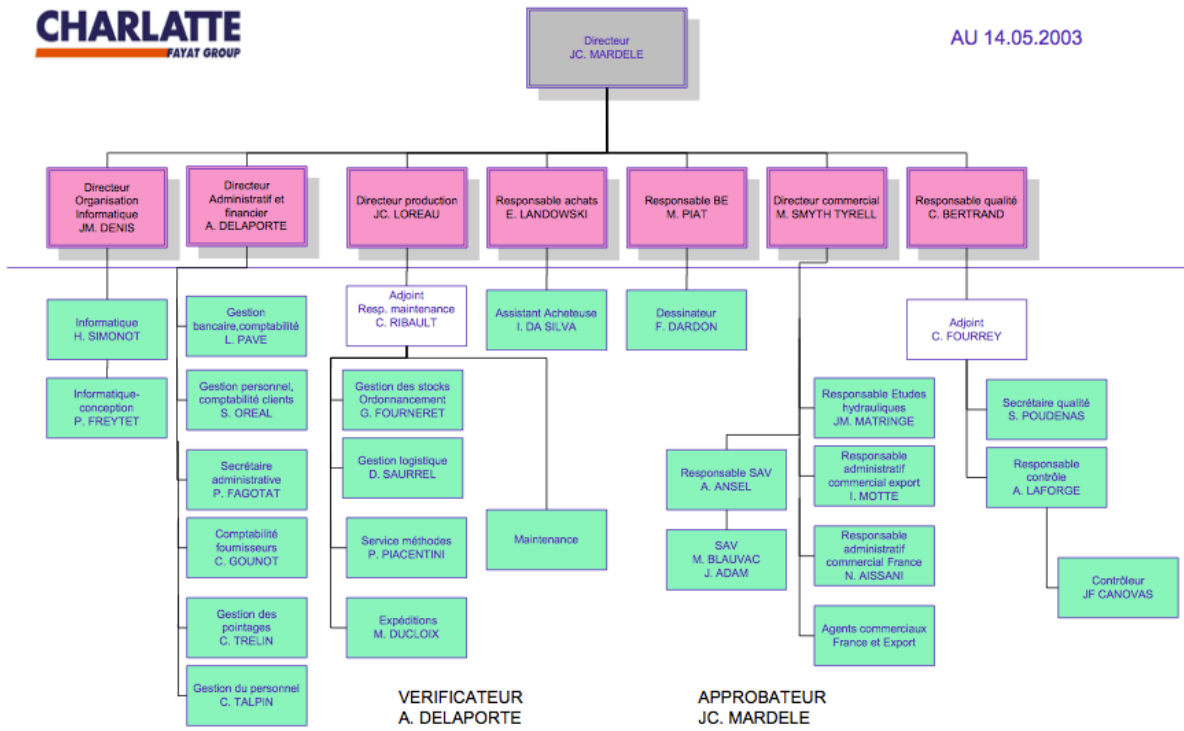


Figure 5: Charlatte organization chart, with all the different functions and the hierarchy